環境省
Ministry of the Environment

平成 14 年度環境省委託

第 11 回　環日本海環境協力会議 報告書

THE 11TH NORTHEAST ASIAN CONFERENCE
ON ENVIRONMENTAL COOPERATION

5-6 December, 2002　Bo’ao City, Oionghai, Hainan Province
People's Republic of China

平成 15 年 3 月

社団法人　海外環境協力センター

はじめに

本報告書は、平成14年度に社団法人海外環境協力センターが、環境省から委託を受けた「環日本海環境協力推進事業」により、平成14年12月5日(木)から6日(金)に中国海南省・博鰲において開催された「第 11 回環日本海環境協力会議」(The 11th Northeast Asian Conference on Environmental Cooperation)に参加し、その結果をまとめたものである。

本会議は中華環境保護基金会（China Environmental Protection Foundation)、海南省国土・環境・資源庁（Land, Environment and Resource Department of Hainan Provincial Government）の支援を得て、中国国家環境保護総局（SEPA）によって主催された。中国、日本、韓国、モンゴル、ロシア連邦の５カ国の中央政府、地方政府、研究機関、ＮＧＯの関係者が出席した。国連環境計画／アジア太平洋事務局(UNEP/ROAP)の代表者も会議に参加した。

会議は初日のシンポジウム「環境教育と国民意識啓発」で幕を開け、各国の専門家及びNGO等から各国における活動が紹介された。引き続き本会議では、①水環境の改善、②都市部における大気環境の改善、③WSSD（持続可能な開発に関する世界サミット）と北東アジア環境協力についての討議が行われた。中央政府だけでなく、地方公共団体やNGOなどの主要グループをも含める、NEACのオープンな参加プロセスは、WSSDのフォローアップとして特に重要であると認識された。

国際的な連携が重要になる中、今後の環日本海環境協力会議の果たすべき役割は、ますます重要となってきている。

平成15年3月

社団法人海外環境協力センター

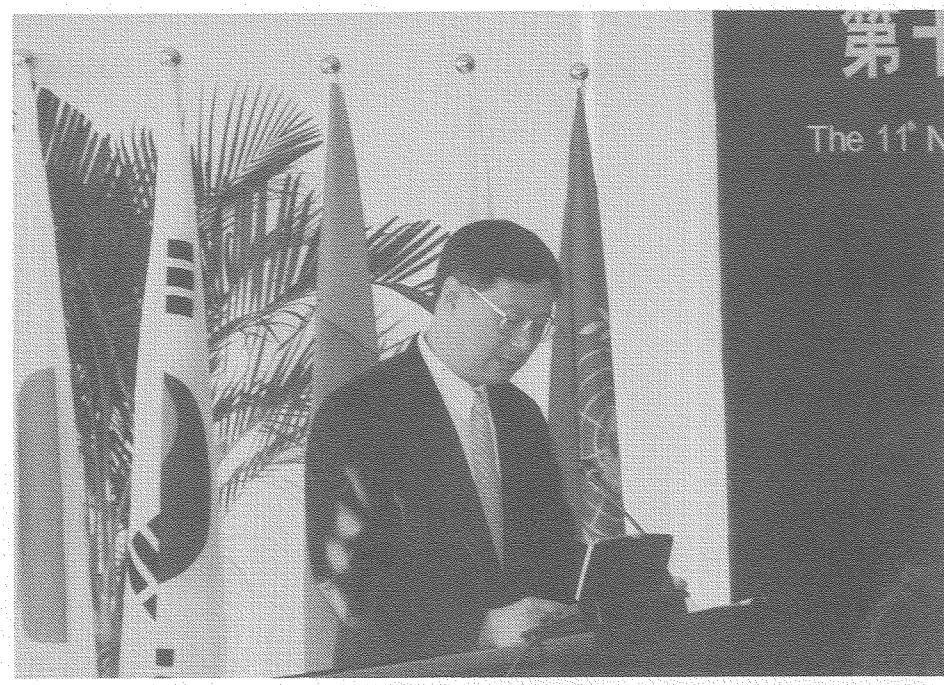
理事長　　森　　仁　美

開会挨拶

中国国家環境保護総局国際合作司長
Mr. Wang Zhijia

山田範保環境省大臣官房審議官

中国海南省副省長
Hon. Mr. Li Lihui



会議風景

目　次

Ⅰ　概　要

概　要

１．会議名称：　第 11 回環日本海環境協力会議
The 11th Northeast Asian Conference on Environmental Cooperation

２．主　催　：　中国海南省・博鰲

３．開催日時：　平成 14 年 12 月 5 日(木) － 6 日(金)

４．開催場所：　Golden Coast Hot Spring Hotel

５．参 加 者：

中国	17 名
日本	12 名
韓国	9 名
モンゴル	2 名
ロシア	2 名
国連環境計画(UNEP/ROAP)	1 名

【日本からの参加者】

山田 範保	環境省大臣官房審議官
小川 晃範	環境省地球環境局環境協力室室長
小高 都子	環境省地球環境局環境協力室環境専門員
岡島 成行	大妻女子大学家政学部教授・(社)日本環境教育フォーラム専務理事
谷口 文章	甲南大学文学部教授・日本環境教育学会事務局長
三田 哲朗	富山県富山県生活環境部次長
佐野 敦	富山県富山県生活環境部環境政策課技師
吉村 陽	兵庫県立健康環境科学研究センター大気環境部研究員
石飛 博之	(財)環日本海環境協力センター事務局次長
吉野 昇	(財)環日本海環境協力センター事務局課長補佐
白山 肇	(財)環日本海環境協力センター調査研究課副主幹研究員
伊藤 政志	(社)海外環境協力センター技術部長

６．使用言語：　英語、中国語

７．プログラム・会議内容：

(1) **開会式　開会挨拶**　　*12 月 5 日(木)　9:30-10:00*

国家環境保護総局国際合作副司長	Mr. Zhang Shigang
海南省副省長	Hon. Mr. Li Lihui
国家環境保護総局国際合作司長	Mr. Wang Zhijia
環境省大臣官房審議官	山田 範保
韓国環境運動連盟環境教育センター長	Ms. Sun-Hee Joo

(2) **基調講演** *12月5日(木) 10:30-12:30*

【講演者】

中国	国家環境保護総局国際合作司長	Mr. Wang Zhijia
日本	環境省大臣官房審議官	山田 範保
韓国	環境部国際協力局長	Mr. Jae-Young Ko
モンゴル	Planning Officer Strategic Planning and Management Department Ministry of Nature and Environment of Mongolia	Ms. Kharkhuu Khishigjargal
ロシア	Head Department on the Water Management Ministry of Natural Resources of Russia	Mr. Sergey Bednaruk
UNEP	Deputy Regional Director, UNEP/ROAP 国連環境計画アジア太平洋地域事務所次長	今田 長英

(3) **公開シンポジウム** *12月5日(木) 13:30-16:30*

「環境教育と国民意識啓発」
Environment Education and Public Awareness

【開幕演説】

中華環境保護基金会常務理事	Mr. Xu Qinghua

第1部

【議長】

環境省大臣官房審議官	山田 範保

【発表者】

中国	国家環境保護総局宣伝教育中心	Ms. Cui Dandan
日本	甲南大学文学部教授・日本環境教育学会事務局長	谷口 文章
韓国	環境運動連盟環境教育センター長	Ms. Sun-Hee Joo

第2部

【議長】

中華環境保護基金会常務理事	Mr. Xu Qinghua

【発表者】

中国	中国環境報	Mr. Li Ruinong
日本	大妻女子大学家政学部教授 (社)日本環境教育フォーラム専務理事	岡島 成行
韓国	仁川市環境政策局長	Mr. Kyu-Heung Lee
UNEP	Deputy Regional Director, UNEP/ROAP 国連環境計画アジア太平洋地域事務所次長	今田 長英

(4) **Sessions for 11th NEAC** *12月5日(木) 17:00-18:30*

セッション1
「水環境の改善」
Improvement of water environment

【議長】
中国国家環境保護総局国際合作副司長　Mr. Zhang Shigang
【発表者】
中国　環境監測総站　Ms. Chen Guang
日本　(財)環日本海環境協力センター調査研究課副主幹研究員　白山 肇
韓国　環境部水質課長　Dr. Young-Sung Park
モンゴル　Planning Officer
Strategic Planning and Management Department　Ms. Kharkhuu Khishigjargal
Ministry of Nature and Environment of Mongolia
ロシア　Head　Mr. Sergey Bednaruk
Department on the Water Management
Ministry of Natural Resources of Russia

セッション2　*12月6日(金)　9:00-10:30*

「都市部における大気環境の改善」
Air quality improvement in urban area
【議長】
環境省大臣官房審議官　山田 範保
【発表者】
中国　環境科学研究院国際合作処長　Mr. Zhang Yutian
日本　兵庫県立健康環境科学研究センター大気環境部研究員　吉村 陽
韓国　環境部大気環境政策課長　Mr. Jung Kyun Na
モンゴル　Planning Office
Strategic Planning and Management Department　Ms. Kharkhuu Khishigjargal
Ministry of Nature and Environment of Mongolia

セッション3　*12月6日(金)　11:00-12:30,*
14:00-15:00

「WSSD（持続可能な開発に関する世界サミット）と北東アジア環境協力」
WSSD Summit and NE Environmental Cooperation
【議長】
韓国環境部国際協力局長　Mr. Jae-Young Ko
【発表者】
中国　国家環境保護総局国際合作副司長　Mr. Zhang Shigang
日本　環境省地球環境局環境協力室室長　小川 晃範
韓国　環境部地球環境局長　Mr. Suho Seong
ロシア　Senior Specialist　Dr. Tatyana Petrova
Ministry of Natural Resources
of Russian Federation

(5) **全体会合　議長総括の採択、閉会**　*12月6日(金)　16:30-18:00*

【議長】
中国国家環境保護総局国際合作司長　Mr. Wang Zhijia

Ⅱ　議長総括

<英文・和文>

Meeting Summary

11th Northeast Asian Conference on Environmental Cooperation

December 5-6, 2002 Bo'ao, Hainan, China

The 11th Northeast Asian Conference on Environmental cooperation (NEAC) was held 5-6 December 2002 in Bo'ao, Hainan, China. The Conference was hosted by State Environmental Protection Administration (SEPA) of China, with support from China Environmental Protection Foundation and Land, Environment and Resource Department of Hainan Provincial Government. Participants were from central and local governments, research institutes and NGOs from the five member countries, namely, China, Japan, Republic of Korea, Mongolia, and Russian Federation. A representative from UNEP/ROAP also attended the meeting.

The subjects discussed at the 11th NEAC were as the following:

- Current and major environmental policies for environmental preservation and ways for enhancing environmental cooperation in Northeast Asian nations
- Improvement of water environment
- Air quality improvement in urban area
- WSSD summit and Northeast environmental cooperation
- An open symposium on Environmental education and public awareness

Opening of the meeting

The Conference opened with an introductory speech by Mr. Zhang Shigang from SEPA, followed by welcoming address from Mr. Li Lihui, Vice Governor of Hainan Province on behalf of the Provincial Government and Mr. Wang Zhijia, on behalf of SEPA. Congratulatory addresses were then given by Mr. Noriyasu Yamada from the Ministry of the Environment of Japan, Ms. Sun-Hee Joo, from Korean Federation for Environmental Movement.

Keynote Speech

Following the opening ceremony were keynote speeches given by the delegation heads from each participating country. Brief reviews over the current environmental policies in each country were given as well as some major on-going projects in each country. In addition, more attentions were given on the solutions over global environmental issues through enhanced regional cooperation. The potential influence of WSSD held in Johannesburg over regional environmental cooperation is also addressed. Delegation from Japan introduced the third Water Forum in March 2003 in Japan and extended invitation to other countries. At the end of this session, the representative of UNEP/ROAP was invited to give a speech on the progress in environmental cooperation and on-going projects in this sub-region.

Open Symposium - Environmental Education And Public Awareness

The afternoon session started with an open symposium on environmental education and public awareness. Experts from NGOs including China, Japan and Korea actively participated in the forum. Their presentations mainly cover the concept and framework of environmental education, the current environmental education activities in each country, the role NGOs and media play in promotion of environmental education and public awareness, and the current achievements. Representatives from Mongolian and Russian delegation were also invited to introduce the environmental education and public awareness in their countries.

Session 1 – Water Quality

The session was focused on the improvement of water environment. Representatives from all five countries made presentations. All countries agree on the necessity and urgency for proper management to protect the water environment. The topics as covered are mainly the auto-monitoring stations for water quality established in China, the joint international water management project between local governments, water quality management policy based on watershed and water supply management in Korea and policy and actions for prevention and treatment of water pollution in Mongolia, and water quality standards and the framework of

water management in Russia.

It was noted that comprehensive measures for watershed management such as pollution prevention programs with the adequate pollution reduction measures are necessary to protect the water environment in this region.

Session 2 – Urban Air Quality

The second day started with a session on air quality improvement in urban areas. Status and major issues in air quality management were discussed, with main focus over the air quality in China, measures for atmospheric environment at the level of local government, Japan, the air quality management and special measures for the capital region in Korea and Mongolia. Attentions given were from policy issues, laws established, and measures adopted to specific problems such as green house gas emission, No_x pollutant, acid rain, and motor vehicle emissions, etc.

It was noted that more international and regional efforts are needed to tackle regional environmental problems such as the dust storm.

Session 3 – WSSD and future regional cooperation

Discussions on the WSSD and the possibility of enhancing environmental cooperation in Northeast Asia were then held. It is recognized by all that the WSSD held in Johannesburg in September shall have great impact over the regional cooperation. Participating countries shared a view that it is desired for the countries in the Northeast Asian region to further strengthen regional cooperation to implement the outcome of WSSD. They all showed the expectation that NEAC will continue to play an important role to exchange information and experience and to promote environmental cooperation in Northeast Asia.

It was noted that the open participatory process in NEAC, involving not only national governments but also major groups including local authorities and NGOs is particularly important in the follow-up to WSSD. In addition, the future work by NEAC should be carried out in close cooperation and consultation with the regional multilateral organizations such as ESCAP, UNEP/ROAP, etc.

Closing of the Meeting

The participants all appreciated the excellent organization of the conference by the Chinese Government and welcomed the intention expressed by the Government of Japan to host the 12th NEAC in 2003. The dates, venue, duration and agenda of the conference will be finalized by the host country in collaboration with other participating countries at least three months in advance.

（仮訳）

議長総括

第 11 回環日本海環境協力会議

2002 年 12 月 5 日-6 日、中国海南省、博鰲

第 11 回環日本海環境協力会議（NEAC）は 2002 年 12 月 5～6 日、中国海南省・博鰲において開催された。会議は、中華環境保護基金会（China Environmental Protection Foundation）、海南省国土・環境・資源庁（Land, Environment and Resource Department of Hainan Provincial Government）の支援を得て、中国国家環境保護総局（SEPA）によって主催された。中国、日本、韓国、モンゴル、ロシア連邦の５カ国の中央政府、地方政府、研究機関、ＮＧＯの関係者が出席した。国連環境計画／アジア太平洋事務局（UNEP/ROAP）の代表も会議に参加した。

第 11 回 NEAC で討議された議題は下記の通りである。

- 北東アジア地域諸国における環境保護および環境協力強化のための現在の主要な環境政策
- 水環境の改善
- 都市部における大気環境の改善
- WSSD （持続可能な開発に関する世界サミット）と北東アジア環境協力
- 環境教育と国民意識啓発に関する公開シンポジウム

会議の開会

会議は、SEPA の Zhang Shigang 氏の開会のスピーチで幕を開け、続いて海南省政府を代表して海南省副省長 Li Lihui 氏と、SEPA を代表して Wang Zhijia 氏が歓迎の挨拶を述べた。日本環境省の山田範保氏、韓国環境運動連盟の Sun-Hee Joo 氏が祝辞を述べた。

基調演説

開会式に続き、各参加国の代表者による基調演説が行れた。各国の現在の環境政策を概観するとともに、現在各国で進行中の主要なプロジェクトが紹介された。加えて、地域協力の強化を通した地球環境問題の解決により多くの関心が向けられ、また、ヨハネスブルグで開催された WSSD が、地域環境協力に与える影響についても言及された。日本の代表は、2003 年 3 月に日本で開催される第３回世界水フォーラムを紹介し、各国の参加を促した。このセッションの最後に、UNEP/ROAP の代表が、この地域における環境協力と現在進行中のプロジェクトの進展について発表した。

オープン・シンポジウム―― 環境教育と国民意識啓発

午後のセッションは、環境教育と国民意識に関する公開シンポジウムで幕を開けた。このフォーラムには、中国、日本、韓国などの研究者、NGO 等の専門家が積極的に参加した。発表は主に、環境教育の概念や枠組み、現在の各国における環境教育活動、環境教育と国民意識を促進する上で NGO とメディアが果たす役割、これまでの成果について網羅するものとなった。モンゴルとロシアの代表も、自国における環境教育と国民意識について紹介した。

セッション１――水環境の改善

セッションでは、水環境の改善に焦点があてられた。５カ国すべての代表者が発表した。５カ国とも、水環境保護のための適切な維持管理の必要性と、緊急性に同意した。中国で設置されている水質自動モニタリング・ステーション、地方政府間での国際協力による水質管理プロジェクト、韓国における流域・上水管理に基づく水質管理政策、モンゴルにおける水質汚染防止・処理のための政策および措置、ロシアにおける水質基準と水管理の枠組みなどの話題が主に討議された。

この地域の水環境を保護するためには、適切な汚染削減対策を含む、汚染防止プログラムのような、流域管理のための統合的な対策が必要であることが認識された。

セッション２ ――都市部における大気環境の改善

２日目は、都市部での大気環境改善に関するセッションで始まった。大気環境管理の状況や主な問題について討議され、特に、中国における大気環境、日本の地方公共団体レベルでの大気環境保全対策、韓国とモンゴルにおける大気環境管理および首都地域での特別対策に焦点があてられた。温室効果ガス排出、窒素酸化物、酸性雨、自動車排気ガスなど、特定の問題に対して制定された法律、採用された対策など、政策問題の観点から注目が集まった。

砂塵嵐などの地域的な環境問題に対処するには、より国際的かつ地域的な努力が必要であることが確認された。

セッション３―― WSSD（持続可能な開発に関する世界サミット）と北東アジア環境協力

WSSD および北東アジアにおける環境協力の強化の可能性について討議が行われた。９月にヨハネスブルグで開催された WSSD が、地域協力に多大な影響を及ぼすであろうことは、全員が認識している。WSSD の結論を実行に移すためには、北東アジア地域の国々が、地域協力を強化していくことが望ましいというのが、参加国の共通の見解である。情報や経験の交換、北東アジアでの環境協力の促進のために、NEAC が引き続き重要な役割を果たしていくことが期待されている。

中央政府だけでなく、地方公共団体や NGO などの主要グループをも含める、NEAC のオー

プンな参加プロセスは、WSSD のフォローアップをするに際し特に重要であると認識された。さらに、NEAC の今後の活動は、ESCAP や UNEP/ROAP など、地域の国際機関と密接に連携・協力しあって実施されるべきである。

会議閉会

全参加者は会議を見事に運営した中国政府に感謝の意を表し、2003 年の第 12 回 NEAC を主催するという日本政府の意向を歓迎した。会議の日程、会場、期間、議題については、少なくとも３ヶ月前までに、主催国と参加国との協力によって決定される。

Ⅲ　会議資料

Opening Ceremony

Opening Speech On
Northeast Asia Environmental Cooperation

Li Lihui, Governor of Hainan Province

Bo'ao, Hainan, China

(2002 Dec. 5-6th)

Distinguished Ladies and Gentlemen:

I am very glad to attend the opening ceremony of the 11th Northeast Asia Environmental Cooperation held in Boao here today. First of all, please allow me, on behalf of the government of Hainan Province, to express the ardent congratulations to this conference, to express warm welcome to the officers, experts, and scholars from China, Japanese, Korea, Russia and Mongolia, and to the representatives from ESCAP and UNEP. Welcome to Boao Hainan joining in this regional environmental cooperation conference which of significant importance.

Recall the last century, the human beings created tremendous materials, but at the same time suffered from the environmental degeneration. Since the 1972 United Humanity Environmental Conference, Nations all over the world began the campaign on environment protection. Today, we get together in Boao Hainan, circulate to each other the achievement we made during last year, communicate the experience, and discuss the cooperation plan on environment protection. We do believe, through the great efforts of our five countries, the Northeast Asia environmental cooperation will enter a new stage in the 21st century.

The way of improve Hainan province is to insist in sustainable development policy, to establish an ecological province. Since the found of Hainan province in 1988, the local government has been carrying out the strategy of improving the economics and environment in phase. While speeding

up the economic, we strengthen pollution prevention and cure, and ecological protection, and keep the environmental quality in kilter. Hainan province is one of the places with high environmental quality in our country even in the world: blue sky, green sea, white sand beach, luxuriant coco trees, etc. Our Hainan province, with elegance environment, is keeping the leading position in environmental primary index in our country.

Nowadays, Hainan is implementing the new century environment protection programming according to "The Design Compendium on Hainan Ecological Province Construction" which is approved by the People's Congress Council, to strengthen environmental integrative administration, emphasize environment protection and building, further improve the urban and country environment in Hainan province, promote people's life, and contribute to the Chinese sustainable development. I sincerely welcome you delegates to put forward constructive ideas and suggestions on the Hainan ecological province construction and the protection of environment. And hope we can get more support and help both from international and domestic, can develop technology communion and cooperation from international and domestic, promote the Hainan into a province with flourish economic, rich people, cultural society, and graceful environment.

We do believe, through strengthen the regional cooperation in EP field, hand in hand, make contribution to the world, we certainly can build a desirable and glorious homestead for our posterity.

Finally, I sincerely wish for the success of this meeting.

Wish you all well and enjoy the time in Hainan!

Thank you!

Keynote Speech

Keynote Speech, 11th NEAC

Progress and Prospective for Environmental Protection in China

Wang Zhijia

Director General, Department of International Cooperation, SEPA

December 5-6, 2002 Bo'ao, P.R. China

Dear Distinguished Guests, Ladies and Gentlemen,

Good morning.

The 11th Northeast Asian Conference on Environmental Cooperation as hosted by State Environmental Protection Administration opens today in Bo'ao, a beautiful seaside city in Hainan Province. First of all, I would like to take this opportunity to extend, on behalf of SEPA, my warm welcome to every attending delegate and sincere congratulation to the opening of the conference.

As a result of joint efforts from all member countries, NEAC has become an important mechanism for maintaining dialogue among governmental departments for environmental protection in China, Japan, Korea, Russia and Mongolia. In the 11 years since its establishment, understanding of the other member countries is enhanced through exchange of experiences and extensive dialogues and cooperation in environmental protection related areas.

Now, I would like to take this opportunity to give a brief review of environmental protection in China and our future planning.

China was formally admitted to WTO last year. China, as a

as environmental implications. The Chinese government, while concentrating on the trade and economic development, has included the concept of sustainable development as the basic national strategy and environmental protection as the basic national policy that should be adhered to for long term.

In light of the above, key indicators for sustainable development are included in the tenth five-year plan for national economic and social development. Capacity building of national environmental protection authorities is enhanced, and a number of eco-projects have been initiated. Enforcement of environmental protection is highlighted in the strategic reform of economic structure, and mitigation of environmental pollution is regarded as an important task in the optimization of the energy structure. As a result that ecological protection is greatly emphasized, planning in the development of the western area and the Three-Gorges Project are made by taking into full account of compliance with ecological rules.

Practice through the years has showed greater investment on ecological construction and environmental protection and leading role of the government over environmental protection and sustainable development. As indicated by statistics, a total sum of 580 billion RMB has been invested on environmental protection and ecological construction from 1998 to May of 2002.

As the world largest developing country, China has taken effective measures in realization of the double objectives

for poverty eradication and improvement of the environment. During the year 1998 to 2001, 42.7 billion RMB has been invested by the central government in vegetation protection, subsidy to the local farmers and encouraging measures to restore over-cultivated lands to forests and grasslands. By the end of 2001, great achievements have been made in ecological improvements with 1.18 million hectares of cultivated land restored as forests and grasslands and 1.1 million hectares of afforestation. In addition, great investment has also been made in pollution prevention and treatment, ecological construction, consumption of water resource, promotion of environmental protection related technology and capacity building in environmental monitoring.

In spite of the marked achievements in economic growth and environmental protection, China is now faced with the double challenge from domestic issues over sustainable development and counteractions against the globalization of world economy brought by China's entry into WTO. Urgent solutions to a number of issues need to be reached so as to maintain high economic growth and sustainable development in China. The issues are mainly the strategic reform of the current economic structure, radical change of economic growth model, population explosion, contradiction between rapid urbanization and weakness of urban infrastructures, ineffective control over ecological degradation and ecological destruction in some areas.

Taking into consideration of the above, China has adopted

objectives for environmental protection and development consistent with economic development.

The objectives are:

By the year 2005, reduce the total pollutant discharge by 10% and discharge of sulfur dioxide in dual-control regions by 20%, mitigate environmental pollution, bring ecological and environmental degradation under primary control, improve the quality of the environment in urban and rural areas especially in big and medium-sized cities.

Three major tasks for environmental protection are identified in the tenth five-year plan for environmental protection. Control the total pollutant discharge and mitigate environmental pollution. During the period in which the tenth five-year plan is implemented, the estimated annual growth of national economy is 7%, provided that 10% reduction, as compared with the figures in 2000, of total pollutant discharge be achieved by 2005. This should be realized through strategic reform of economic structure and measures to achieve win-win situation between economy and environment in industry, agriculture, and rural and urban areas.

Preventive measures over industrial pollution: strengthen environmental impact assessment for new projects, close down factories with heavy pollution based on legal requirements, encourage the overall compliance of discharge of industries and companies, promote cleaner production and actively establish eco-friendly industrial zones.

Preventive measures over agricultural and rural pollution: develop ecological and organic farming, promote organic production, strengthen environmental monitoring and supervision over food production base, enhance food safety and combine centralized pollution control over township enterprises with overall planning of local environmental protection.

Environmental protection measures in cities: enhance the construction of environmental infrastructure in cities, set up model cities for environmental protection and gradually cover the middle and western part of China.

Conduct treatment of environmental pollutions in key areas to maintain substantial improvement in the quality of the environment. Efforts in prevention and treatment of water pollution in key river valleys such as Huaihe River, Haihe River, Liaohe River, Taihu Lake, Chaohu Lake and Dianchi shall continue and treatment of air pollution shall be conducted in key areas with high sulfur dioxide discharge and high control requirements of acid rain. Integrated treatment of urban environment shall be conducted with special focus on the Green Olympic Games to be held in Beijing. Treatment of marine environment shall be conduct with special attention to Bohai Sea, and prevention and treatment of water pollution in the Three-Gorges water reservation areas and water transmission system throughout the north and south part of China shall be given great importance.

Ecological and environmental protection shall be emphasized so as to bring ecological and environmental degradation over control. Ecological and environmental investigation over the middle and eastern part of China shall be conducted and used as the basis for planning ecological functional areas in provinces and regions. Several areas for ecological protection have been set up in the head source of Yangzi River and Yellow River, Dongting Lake, Boyang Lake, Talimu River and north wing of Yinshan Mountain, etc. Efforts on the establishment of ecological provinces and model ecological regions shall continue. Construction and management of natural reserves shall be strengthened and wetland protection shall be emphasized and enhanced. Ecological protection shall be strengthened in developing the western part of China, with special regard to ecological protection measures in key projects such as gas and power transmission throughout the western and eastern part and construction of Qinghai-Tibet Railways.

To achieve the above, a combination of legal, economical and technical measures as well as necessary administrative measures shall be adopted. Economic policies and market-oriented mechanism shall also play an important role. The investment over pollution treatment as identified in the tenth five-year plan is 700 billion RMB, which accounts for 1.3% of the GDP during the same period. The Chinese government will develop and further improve favorable environmental

protection policies and probe the way to establish market-oriented mechanism that will direct more public investments to environmental protection. Cooperation with international organizations and multi-lateral developing institutions in ecological and environmental related areas shall be strengthened so as to attract more international funds, technology and talents to environmental protection projects. The Chinese government shall strengthen its commitments to environmental protection, develop economic and tax policies that facilitate environmental protection, improve preference measures over integrated resource consumption, expand financing of the capital market, reform the fee schedule on sewage discharge, and raise funds for environmental protection in various ways.

The market-oriented mechanism provides one of the effective solutions for environmental issues. Market orientation, enterprise focus and expertise shall be embedded in the pollution treatment mechanism in China. Disposal Fees for urban sewage garbage and solid waste shall be charged to attract foreign and domestic public investment on the construction of urban infrastructure for environmental protection. The fee schedule shall gradually be raised so as to ensure the normal functioning of the equipment installed. As we have estimated that the environmental protection industry in China will be growing at the rate of 15-20% in the coming 5 to 10 years. China has now entered into a new era of building a well-of

society in an all-round way and speeding up reforms and opening-up so as to achieve socialist modernization. Under the circumstance of globalization of the world economy and elaboration of labor division among countries, it has been recognized that economic growth as facilitated by technical progress based on interactions between information development and industrialization will form the trend for future development. Obsolete production methods with high resource consumption and heavy pollution would gradually be eliminated. This would require opening up and active cooperation. Environmental cooperation and exchange among countries would contribute to the solution of environmental issues in the global context. There is solid base for cooperation in the sub-region of Northeast Asia, especially among the five attending countries of individual strength and expertise. I believe that the NEAC will play an important and active role in facilitating environmental cooperation among all the member countries. At last, I would like to wish everyone a successful and fruitful meeting.

Thank you!

Keynote Speech

Northeast Asian Conference on Environmental Cooperation
5 - 6 December 2002, Qionghai, Hainan Province, China

Noriyasu YAMADA
Councillor, Minister's Secretariat
Ministry of the Environment, Japan

Mr./Madam Chairperson,
Distinguished Delegates,
Ladies and Gentlemen,

It is my honor to have this opportunity to present my views on recent progress in international and domestic environmental management. My speech highlights, at first, some important international environmental issues, and then major focuses in Japanese environmental polices.

Global and Regional Issues

(1) Climate Change

I would like to start my speech with the issue of "climate change". Climate change could endanger our earth and therefore tackling with the issue calls for global participation. The Kyoto Protocol is the first and significant step to address the issue. Because the framework to implement the Protocol were finalized by Marrakech Accords at COP7 in November 2001, the current focus of the world is on the entry into force of the Protocol. The WSSD Plan of Implementation provides, States that have ratified the Protocol should strongly urge States that have not already done so to ratify the Protocol in a timely manner for the early into force. As of 13 November, 97 States ratified or acceded to the Protocol amounting 37.4% of the total carbon dioxide emissions for 1990 of these states.

The Japanese government ratified the Protocol on June 4, 2002. In order to achieve its six percent reduction target under the Protocol, the Japanese government adopted the New Guidelines of Measures to Prevent Global Warming in this March and amended the Climate Change Policy Law in this May. Under the Guidelines, the Japanese government adopts a "step-by-step" approach. In 2004 and 2007, the Government shall conduct a comprehensive review of the emission trends and the effectiveness of measures, and following the review additional measures will be conducted where necessary.

The government adopted the New Climate Change Program in March which compiles more than 100 packages of policies and measures.

With the implementation of the Kyoto Protocol, we need to explore the ways to achieve the ultimate objective of the UN Framework Convention on Climate Change, which is to stabilize the concentration of green house gasses to a safe level. The IPCC Third Assessment Report confirms that significant cuts in global emissions will be necessary to achieve the objective and therefore we need to take further steps following the Kyoto Protocol.

The COP8 of the UNFCCC in this November discussed issues concerning participation of developing countries in the efforts to address global warming. It is important that the mitigation actions already taken in both in Annex I and non-Annex I countries were noted in the Delhi Ministerial Declaration. The Declaration requires Parties to promote informal exchange of information on actions relating to mitigation and adaptation to address climate change. Informal information exchange is a small window of opportunity which has opened up for developing common rules enabling all countries to participate in carbon dioxide emission reduction. It is crucial whether we can take advantage of this window or not. In this regard, the ratification of the Kyoto Protocol and the effective voluntary actions to reduce per capita greenhouse gas emissions by China is highly appreciated in the international community.

(2) World Summit on Sustainable Development (WSSD)

The World Summit on Sustainable Development (WSSD) held in this year was the crucial occasion to renew worldwide commitment and to accelerate the effort toward sustainable development. The Summit adopted the Plan of Implementation and the Johannesburg Declaration on Sustainable Development.

Japan had worked actively to contribute to the success of the Summit all through the preparatory process including at sub-regional and regional levels. From the standpoint of environmental conservation, Japan highlighted two points. First point is the recognition that conservation of the global environment is an indispensable condition to achieve sustainable development. The second point is the importance of reformation of unsustainable production and consumption patterns both in developed and developing countries through improving efficiency and sustainability in the use of resources and production processes, and reducing resource degradation, pollution and waste. Now, the follow-up of the Summit at the multilateral fora is important to make the Summit real success.

Type 2 partnership/initiatives are a unique and important component of the Summit outcome. They are unique because they are not negotiated agreements

but voluntarily declared commitments. They are programs and activities for sustainable development to be carried out in partnership of different countries or groups. Participants may include central and local governments, international organizations and non-governmental organizations. Japan submitted thirty initiatives in many areas including water, forest, biodiversity, energy, education and sanitation.

Water was one of the major issues at the Summit. Japan will host the Third World Water Forum (WWF) in March 2003 to continue the discussion on water issues in broad-range. The Forum will provide an opportunity for participants to share their experience with proven actions and best practice supported by sound research, science, and theory, that have facilitated sustainable solutions to water problems.

(3) Regional efforts

I would like to introduce some regional programs which are important for cooperation in northeast Asia sub-region.

<*Tripartite Environment Ministers Meeting among China, Korea and Japan*>

The Tripartite Environment Ministers Meeting among China, Korea and Japan (TEMM) continues to work to strengthen environmental cooperation among the three countries and also contributes to environmental conservation in Northeast Asia including Mongolia and east Russia. The fourth meeting was held in Seoul this April.

At this meeting, special attention was paid to dust and sand storm in this region. The three countries recognized the need to strengthen monitoring capacity to combat sandstorms. They also stressed the necessity to strengthen linkages with other environmental administration in this region and international organizations.

TEMM is also promoting project-style cooperation. Ongoing projects include an environmental education network, joint training of environmental officials, an environmental industry roundtable and website. The three countries share the responsibility and cost of the projects. Projects are managed with the participation of many stakeholders including researchers, NGOs and the business community.

<Asia Pacific Forum for Environment and Development (APFED)>

The Asia Pacific Forum for Environment and Development (APFED) was formally launched last October. In order to explore a model for sustainable development, which is fair and suitable for Asia Pacific region. APFED consists of 23 members and is expected to compile a final report by the end of 2004. The first meeting was held in Thailand in January of this year and the second one was held in Indonesia in May.

The Indonesia meeting focused on the APFED message to WSSD which consists of recommendations and commitments. The recommendations deal with specific topics including fresh water resources, renewable energy, trade, finance and urbanization as well as cross cutting issues such as good governance and capacity building. The third substantive meeting is scheduled to be held in Guilin, China in January 2003.

<Acid Deposition Monitoring Network in East Asia (EANET) >

It is concerned that acid deposition would give serious impact in North-east Asian region as industry in this region grows in the future. Substance causing acid deposition is transported for very long distance across the border so that international cooperation is necessary to combat with this problem. Acid Deposition Monitoring Network in East Asia started its activities on a regular basis in January 2001. Currently twelve countries are participating, which are China, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, the Philippines, Republic of Korea, Russia, Thailand and Vietnam.

The Forth Session of the Intergovernmental Meeting and Second Scientific Advisory Committee on EANET were convened in November 2002 in Bangkok, Thailand. In the Intergovernmental Meeting, delegates from participating countries discussed important issues to future development of EANET, such as the Work Program and budget for 2003, future financial arrangement. And Lao PDR was approved to be a new participating country.

<ASEAN+3 Environment Ministers Meeting>

Representatives from China, Japan and Korea met with ASEAN environment ministers on 21 November in Vientiane, Lao People's Democratic Republic. It was the first ministerial meeting between ASEAN and three countries. The meeting discussed the potential areas for future environmental cooperation among ASEAN and three countries and agreed to send a consultative mission to these countries.

Progress in Domestic Environment Policies

(1) Establishment of a Recycling-based Society

Japan faces some serious problems related to waste, including shortage of landfill capacity, illegal dumping and dioxin emissions. More fundamentally, waste reduction and recycling are necessary in order to achieve sustainable production and consumption patterns.

The Basic Law for Establishing a Recycling-based Society was enacted in May 2000. The "Extended Producer Responsibility" principle was adopted in the law. The government has been developing a basic plan to implement the law. Recycling regulations for containers and packaging, some household appliances, construction and demolition waste, and food waste have been added to the regulatory framework for waste management.

Proper management of scrapped automobiles is an important area of recycling as five million of cars and trucks are disposed of in Japan every year. The government promulgated a new law for the promotion of end-of-life vehicles recycling in July this year.

(2) Biodiversity and Natural Environment

Japan is endowed with rich biodiversity. It is a big challenge to conserve it under the strong pressure of the large population and economic activities in such a small country.

The first National Strategy on Biological Diversity was adopted in 1995 according to the Convention on Biological Diversity. The government revised the Strategy in March 2002. The revised Strategy was given more important status as the mid- and long-term plan for the whole government.

The government launched the Nature Restoration Project last fiscal year. The Project aims to restore or rehabilitate once impaired areas for development to their own healthy ecosystems. The government started a wetland restoration project which restores the natural course of a river which has been straightened for flood control. The Diet adopted a nature restoration bill yesterday. It could provide solid base to pursue this type of projects with participation of multi-stakeholders.

(3) Environmental Pollution

Japan has been strengthening measures for environmental pollution especially in

newly emerged areas and more difficult areas.

Soil contamination in urban areas poses serious concern to human health and the environment. It also becomes a grave problem from the viewpoint of land utilization. The Soil Contamination Control Law was enacted this year to deal with this problem. The law provides for obligatory investigation of soil contamination, the inventory of contaminated sites and administrative order to the polluter or land owner for cleaning up the contaminated sites.

In regard to air pollution in metropolitan areas caused by motor vehicle emissions, the government has set up more stringent emission limits for newly-produced vehicles. The Automobile NOx and Particulate Matter Control Law, which was strengthened in 2001, provides various measures for vehicles, including particulate matter emission regulation for diesel vehicles. The government promotes the use of low emission vehicles including natural gas and hybrid vehicles. It is scheduled to change all government-owned vehicles for ordinary use amounting to 7,000 units to low-emission vehicles by 2004.

With regard to the multilateral environmental agreements, Japan acceded to the Stockholm Convention on Persistent Organic Pollutants on 30 August this year. The Ministry of the Environment has been conducting environmental risk assessments of chemical substances including suspected endocrine disrupters. The Ministry of the Environment has worked on preparation for the ratification of the Cartagena Protocol on Biosafety including submission of a bill to the next ordinary session of the Diet in 2003.

(4) Environmental Activities in the Private Sector

One recent focus of Japanese environmental policy is to encourage good environmental management in the private sector. The Ministry of the Environment has been promoting such activities as environmental management system, environmental accounting and environmental reporting in the private sector.

Because the government is a big sector consuming goods and services itself, green governmental procurement is an important step to decrease environmental pressure from the public sector. This approach would develop a market and promote production of environmentally friendly goods and services. The Law concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (green procurement law) was enacted in 2000. An

inventory of and criteria for eco-friendly goods have been prepared and reviewed every year based on the law.

Mr./Madam Chairperson,
Distinguished Delegates,
Ladies and Gentlemen,

In closing, I would like to thank the State Environmental Protection Administration of China, China Environment Protection Foundation, and Land, Environment and Resource Department of Hainan Province Government. I sincerely hope that this eleventh meeting of the Northeast Asian Conference on Environmental Cooperation will be a forum for further enhancement of environmental exchange in the region.

Thank you for your kind attention.

KEYNOTE SPEECH

The 11th Northeast Asian Conference on Environmental Cooperation
Hainan Province, China, 5-6 December 2000

Presented by Jae-Young Ko,
Director General of the International Cooperation Bureau,
Ministry of Environment, Republic of Korea

(1) Introduction

Honorable Chairperson, and ladies and gentlemen!

It is a great pleasure for me to join you today at this gathering of environmental stakeholders on behalf of the Korean government to discuss the latest environmental issues and environmental policy achievements in each country. I extend my gratitude to the State Environmental Protection Administration of China for their superb organization of the 11th NEAC in this beautiful province of Hainan as well as to the China Environment Protection Foundation (CEPF) and the Government of Hainan for their support.

(2) Evaluation of the NEAC

The first Northeast Asia Conference on Environment Cooperation(NEAC) was first held in 1992 with officials from 5 countries in Northeast Asia participating. These participants came to an agreement that local governments, NGOs and other interested parties should join the conference to turn it into an open policy forum where various environmental issues can be discussed. Ever since then, it has contributed to promoting a mutual understanding and increasing public environmental awareness among different countries.

Since the emphasis on the importance of regional environmental cooperation at the Rio Earth Summit in 1992, various multilateral cooperative channels have been established, such as the **NEAC**, **NEASPEC**(the Northeast Asian Subregional Program on Environmental Cooperation), **TEMM**(the Tripartite Environmental Ministers' Meeting) and **Eco-Asia**(the Environment Congress for Asia and Pacific) in an effort to jointly seek solutions to regional environmental problems in Northeast Asia. Although all the programs are important for their own distinct functions, NEAC is especially meaningful in that it retains several distinctive features, and based on these features, it has been performing a significant role in various Northeast Asian regional environment cooperation projects.

<Diversity of the Participants>

First of all, NEAC is a discussion forum attended by environmental officials, local governments, NGOs as well as many other interested parties, for an open discussion and exchange of knowledge and information. Especially The 10th NEAC, held in Incheon in 2001, was especially meaningful in that the first NGO session was held; NGO delegates of the Northeast Asian regions as well as internationally active NGO representatives participated to discuss diverse environmental issues and regional cooperation plans.

<Diversity of the Topics>

The second feature of NEAC is the diversity of the agenda items. Subject matters discussed in NEAC is unlimited in its scope (encompassing water quality, atmosphere, wastes, biodiversity, acid rain, climate change, regional environmental cooperation as well as many other global environmental issues). Therefore, host nations have chosen their own issue of interest besides the ones of common concern to the whole region, as the main topic of the conference.

<Policy Development Forum>

Thirdly, NEAC serves as a forum for policy development through the sharing of information and experience, including various outcomes from the implementation of respective environmental policies in each nation.

<Starting Point of New Cooperation Projects>

Even though NEAC does not undertake any specific collaboration projects or have resources, it has laid the foundation for more extensive collaboration in Northeast Asia, as demonstrated by the conclusion of environmental treaties and TEMM activities through both formal and informal discussions among Korea, China, and Japan during the North-East Asia Conference on Environment Cooperation.

Accordingly, as a development strategy in the future, the above mentioned features of the NEAC should be utilized effectively. At the 9th NEAC held in Mongolia, Korea proposed a new framework for regulating the objective and functions of the NEAC, in which the structure of NEAC is divided into governmental session (I & II), local governmental session (III), and NGO session (IV) to ensure participation of NGOs and the local governments.

However, the capacity of the local governments and the NGOs differ in accordance the circumstances of each nation, and some local governments and NGOs are not capable enough to form a global network. But since the role of local governments and NGOs are becoming more essential in settling regional environmental problems, each nation should make an effort to ensure their participation and sponsor the formation of their network.

<Basic Direction and Major Environmental Policies of the 21st Century>

Next, I will give you a brief overview of the basic direction for Korea's environmental policies and major accomplishments of recent environmental policies.

(3) Basic Direction of the Environmental Policy in the 21st Century

In the dawn of the 21st century, the Ministry of Environment is trying to promote policies for the environmental preservation based on the following basic policy paradigm.

First, we're seeking to achieve an economic growth based on the environmental preservation, and implement an environmental preservation policy which can contribute to the economic development.

Second, we plan to shift from supply-based policy to the one that focuses on demand management, while stressing the need for resource use efficiency.

Third, in dealing with environmental problems, we instituted a preventive framework in which the

aggregate environment and pollutants are pre-assessed and taken into consideration.

Fourth, since today's environmental problems require full-scale involvement from every member of the society, we're trying to institute an environmental administration system that secures citizens' full participation and their collaborative partnership.

(4) Introduction of the Major Policies

Within the framework of the environmental policy paradigm mentioned above, I will introduce you two major projects which the Korea Ministry of Environment is focusing on - the Prior Environmental Review System, and the Eco-2 Project.

<The Prior Environmental Review System>

As part of the Prior Environmental Review System, the Ministry of Environment is implementing the 1) Blue Sky 21 Project, 2) Comprehensive Measures for Water Management of the Four Major Rivers, 3) Resource-cycling Waste Management, and the 4) Framework for Sustainable Land Management.

1)Blue Sky 21 Program

First, In order to bring up Korea's air quality to the level of advanced countries by 2012, our government initiated the Blue Sky 21 Project. Blue Sky 21 introduces total pollution load management, and the emissions trading system in which industries that generate pollutants below the allowable level can sell their emission permits to those that have not.

In addition, Blue Sky 21 contains comprehensive measures to abate air pollution from automobiles. For manufactured vehicles, emissions standards will be strengthened while the supply of zero to low-emission vehicles expanded.

2) Comprehensive Measures for Water Management of the Four Major Rivers

Second, After establishing the comprehensive water quality protection measures in 1998 for Paldang Reservoir, which supplies drinking water to 20 million people in Seoul and its vicinities, Korea proceeded with the efforts to provide clean water to every citizen by formulating similar measures and laws for the other three major rivers. These measures introduce the total pollution load management, the User Pays Principle and the designation of riparian buffer zones.

With the completion of this step, Korea became one of the few countries in the world that administers holistic and precautionary policies to all of the major river watersheds.

3) Resource-cycling Waste Management

Third, Korea introduced the Extended Producers Responsibility (EPR) system in recent on a voluntary basis, in which the producers of 6 kinds of products*(home appliances, glass, fluorescent bulbs, PET bottles, metal cans, tires, and lubricants)* agreed to treat their discarded products in an environmentally sound manner. EPR will be enforced by law starting January 2003.

4)Framework for Sustainable National Land Management

To prevent reckless development and preserve ecosystem integrity, the Ministry of Environment is strengthening national land management measures. First of all, we plan to preserve the Korean peninsula as an ecological organic structure by establishing an cological Network" with the Great Baekdu Mountain Range, the DMZ, and the coastal and island areas as the three major eco-axis. Also, we will develop and provide a "national ecosystem map" and "national ecosystem information network."

<Eco-2 Project 2002>
In order to realize sustainable development, Korea developed the Eco-2 Project. The project seeks to achieve Symbiosis between Environment and Economy through the development of clean technology and industry and the integration of environmental and economic policies.

Environmental technology development is one of the main components of the Eco-2 Project. Starting in 2001, Korea has been implementing the 10-year Eco-Technopia 21 project for the development of cutting-edge technologies. With the investment fund of 830 million USD, the project supports about 100 specific projects.

Environmentally friendly business management is another principal component of the Eco-2 Project. As of August 2002, 131 companies have been issued a certificate for outstanding management. *(These companies are linked through the Nationwide Environment Network in which they exchange information and provide technical assistance and consultation services to small- to medium-sized enterprises.)*

(5) Conclusion

In conclusion, I would like to make a number of proposals regarding ways to better implement regional cooperation projects and secure budget for the strengthening of regional environmental cooperation in Northeast Asia.

1) The securing of funds and cost sharing among countries for regional environmental cooperation is the biggest challenge that we must address. In order to make multilateral cooperation projects successful, voluntary participation from countries is essential. And to induce voluntary participation, we must guarantee equal opportunities for participation in cooperation projects and create an environment for voluntary contribution to the project fund. TEMM projects among Korea, China and Japan are an outstanding example for this. While the three countries participate equally in the joint projects, costs incurred by project implementation for environmental improvement in a particular country is borne by that country.

2) Moreover, we should find ways to involve international bodies like ADB, GEF, World Bank, UNEP, and ESCAP in environmental cooperation projects in Northeast Asia. At the 4th TEMM held in Seoul last April, Korea, China and Japan agreed to invite participation and financial support from international bodies in our fight against dust storms and desertification. Recently, the three countries and Mongolia have accelerated our efforts to let people know that dust storm and desertification in Northeast Asia are not confined to a particular country or region, but constitute a global problems that requires prompt global action. As a result, dust storm prevention project*(Technical Assistnance for prevention and control of dust and sandstorms in NE Asia)* received 1 million USD from GEF and ADB starting in early 2003. We plan to develop and implement a preliminary project with the participation of countries from Northeast Asia and international bodies starting next month.

The development of a joint project with international funding is a huge achievement for the environmental diplomacy of our region, and it gives us a lot to think about in terms of strengthening environmental cooperation in Northeast Asia. One thing that we must continue making efforts at is to let the world know that environmental problems in our region are global environmental problems that have serious effects for our collective future.

With this final note, I would like to close my presentation. Thank you ladies and gentlemen. And thank you again to the Government of China, CEPF and Hainan Government for hosting this meaningful conference.

Keynote speeches By Kh. Khishigjargal, Officer of Strategic Planning and Mangement Department of Ministry of Nature and Environment of Mongolia.

The natural environment of Mongolia is very sensitive and means to restore it after certain disasters are very limited; therefore , it is not easy to protect the natural environment from degradation. During the transition towards a market economy, we are in great danger of loosing our ecological balance. This mainly because organizations and private citizens are using our natural resources in unsustainable ways only for their own personal gain, without any responsibilty for the future. We have urgent need to create pre-conditions to control the use of our natural resources and to maintain the ecological balance in our nature.

Mongolia through its Constitution, 1992, has assured or guaranteed the right of citizen's to live in healthy and safe environment and stated that public shall own the land and natural resources and protected by the state. Based on this fundamental principle Mongolia is quided by sustainable and eco oriented socio- economic development policy in harmony with the nature. Creation of legal basis for the environment and natural resources protection and rehabilitation are to pay more attention of the Mongolian Government, which are included to the package of 25 environmental laws, passed by the State Great Khural since 1994. In addition to this nearly 23 Environmental National Programs on protecting biological diversity, Combating desertification, Water and Special Protected areas and others were approved during this period and currently under the implementation.

Mongolia also has joined to 10 International Environmental Conventions since 1994. The main trend of Mongolian development in the 21 century is based on the principles of sustainable development. In order for Mongolia to reach susutainable development, it has to shape a social economy policy , which will provide a sustained grouth in its GDP, this can be achieved through the introduction of ecologically sound technology and the production of quality products that can meet the needs of population. In 1997, government policy on ecology was developed and deliberated by the Parliament. The document is aimed to establish legal and economic bases for achieving ecological balance which is central ideal of Mongolian sustainable development for the next twenty years. Within the government action plan included main objectives and 3 of them are environmental priority issues included: a) to provide sustainable development, ecological balance; b) promote of land reform; and c) mitigation of air, water, soil and environmental pollution in the major towns. The implementation of Good governance on human security Program of the Mongolian Government for the period 2001-2004 will be important step for the activity and Policy for the future sustainable development of the country.

Currently we are developing the Poverty Reduction strategy in Mongolia. Whilst people living in poverty are seldom the principal creators of environmental damage, they often bear the brunt of environmental damage and are often caught in a downward spiral, whereby the poor are forced to deplete resources to survive, and this degradation of the environment further impoverishes people.

The original sources of economic and social development of Mongolia are territory and natural resources. Last september Mongolian Parliament has approved the new "Land law" and "Law on land privatization to Mongolian citizen" which will play very significant role for protection and sustainable use of land resources.

In our difficult economic situation, international cooperation, programs and projects all will have an important role. For example, there are several ongoing projects on environmental protection, elaboration of some legislation, training of national staff, equipment needs in which international participation is needed. An excellent opportunity has surfaced whereby taking an active role in implementing the projects and programs in relation to the above mentioned policy documents and in using effectively financially effective sources such as the Global Environmental Facility . We are now facing , the problem of Global climatic changes, which may have several negative impacts on the ecological systems and on the socio economic development of Mongolia, and which therefore, needs special attention.

Northeast Asia possesses enormous and complementary potential in geopolitical. High technology, capital and know how terms, as well as in labor and natural reources, but it remains virtually unexplored. This potential has the possibility to propel the region into a position where it could become largest and most powerful economic area in the world. It is good that there are a number of mechanisms for monitoring and supervision of environment within and beyond North East Asia including the East Asia Asid deposition monitoring network (EANET) , the Action plan for the Protection, Management, and Development of Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP), and the Asia Pacific Network for Global Change Research (APN). Currently, there is no mechanism specially addressing water issues at the subregional level in North –East Asia. There are many areas where further efforts must be made in the implementation of Agenda 21. In the Northeast Asian subregion, China and Mongolia are seiously affected by the land degradation and desertification. Both countries have adopted national action programmes to combat desertification. Currently, there is no specific mechanism for cooperation regarding biodiversity conservation in Northeast Asia.

The diversity and complexity of ecolgical systems and mechanisms of natural disasters , as well as their international dimention require international cooperation to promote observation, research and the development of relevant technologies. There is also growing need to enhance the sharing of scientific data and encourage its use worldwide through making the best use of information tehcnology. The existing mechanisms and other existing platforms in monitoring and supervision of environment within and beyond North-East Asia to be strengthened and expanded in their activities. In addition to these already existing mechanisms, there is the need for the subregion to develop innovate ways to link monitoring and assessment activities and the actual process of formulating policies. In order to foster subregional cooperation to combat desertification and land degradation, the opportunities provided by the current climate change mehcanisms could foster joint efforts from both countries affected by desertification and other countries not directly affected but having potential to contribute to the solution of these problems. In that prespective, mechanisms and potential under the Kyoto Mechanism or other possible frameworks could be explored at the subregional level.

The establishment of networks among national actors involved in biodiversity conservation activities and organization of workshops that would serve as forums for exchange of information and experience. Using such mechanisms can enable countries to cooperate in identifying and designating tarnsboundary protected areas and promote a regional inventory of critical ecosystems, habitats and species in the subregion . In long term perspective, developing subregional arrangement s similar to the ASEAN Agreement on the Conservation of Nature and Ntural Resources and the ASEAN framework protocol on access to genetic and biological resources could be considered .

Creating such mechanism especially addressing water issues in NEA for the exchange and sharing of experiences and developing general principles and minimum standards for the sustainable management of water is desirable. Strategic water management plans should be prepared that cover the complete basin in order to coordinate water management between the different jurisdictions and offer a framework for negotiation on how to find solutions for upstream – downstream conflicts.

Enhansing the activities, of the existing mechanisms such as EANET and developing ways to ensure cooperation among them would foster effective subregional cooperation towards sustainable development. Given that North East Asia is composed of countries at different levels of development , mechanisms for regional cooperation through wich technology can be transferred from more advanced countries to less developed ones can offer opportunities for improving production process industries. Developing networks among such national organizations will enable countries to exchange experiences and promote technical cooperation in the area of cleaner production.

Air Pollution

The most serious pollution problem in Ulaanbaatar is the air pollution which caused by low quality technologies used in small and medium sized industries associated with the fact that operators don't have sufficient training and knowledge in pollution issues. The main sources of the Ulaanbaatar's pollution are; power station, ger areas and car. 4 thermal power plants, which are using 5 million tons of coal annually more than 40.000 automobiles from 500 different brands, 75.000 gers households which are use 200.000 tons of coal and 160.000 m3 of firewood for fuel, dusts from eroded and degraded lands, 65.000 hectares of coal ash reservoir, 250 coal fired boilers using 400.000 tons of coal are increasing the air pollution of Ulaanbaatar and stimulating the diseases caused from a population. According to the research 90 kg of poisoned emissions are allocated per 1 citizen of Ulaanbaatar

48 percent of Ulaanbaatar's pollution gers, Mongolian traditional housing units. Wood and coal are used in household stoves for cooking and heating in every single ger. Toxic substances such as carbon monoxide are emitted into the air and are spread to the neighborhood from the stoves short stacks affecting the health of inhabitants in the ger area. We have no pollution control devices in use. For emissions from wood and coal fuel.

During the bitterly cold and long winters, smoke – attributable to incomplete combustion of 75.000 ger district household stoves, lies over towns. It is major cause of respiratory complaints and diseases. Air pollution index in Ulaanbaatar is 2-5 times higher than permissible. Mongolia has one of the highest greenhouse emissions in the world. Each ger district family expenduture on fuel is about 100.000 –120.000 tugrics / about 110$ US / per year and half of this expenduture is being wasted due to the low energy efficiency of existing stoves. Low energy efficiency of existing stoves is a major source of air pollution and increase of wastes. Therefore, the wide adoption of new stoves with improved combustion and low emission of gases, low fuel consumption will not only make a contribution to the protection of environment but furthermore, it will have valuable impact on social development. The prefeasibility studies carried out earlier have revealed that the most significant way to reduce air pollution is to improve existing heating stoves in ger districts. 3Improved household stoves in Mongolian urban centers3 Project will be implemented during 2001-2004 by technical assistance and funding from Global Environmental Facility and World Bank .

The plans to arrange transportation in Ulaanbaatar city are usually only practically oriented and hence the effects and consequences on environment are either not considered or are heavily held

in Ulaanbaatar. These cars are usually second hand vehicles which are in a poor condition. Pollution control devices are lacking also in this field.
Hitherto no one has had automatic analyzer to measure hydrocarbons, nitrogen oxides, sulfur compounds, carbon monoxide and dust.

- Create the law basis for air pollution
- Introduce filtration equipment for toxic emissions of cars and control the emissions
- Install smoke filters for power plants
- Produce and distribute low smoked full stoves for ger districts
- Establish mobile laboratory for controlling air pollution

Pollution and scarcity of water reserves

As researched, due to the fact of 20% of total inhabitants are drinking water, which is over mineralized, 68% of population is drinking water with low contents of iodine and fluorine are there is a tendency of increasing urinal, urological and teeth caries diseases

As researched, in a water sources around the Tuul river during the winter and spring season from January to April soil water level decreases and declines to 3.5-14 meters.
Water supplier authority of Ulaanbaatar is using water from unusable water reserves /static/ and that certifies there is danger of loss Eco-balance.

The Tuul river is of vital importance in Mongolia since it is the source of drinking water for a large part of the Mongolian people and a source of process water for industries. However, the river is strongly polluted, with BOD and ammonia concentrations exceeding the maximum permissible level 10 to 50 times.

In order to improve above issues the Netherland's government assisting industries to introduce clean technologies and waste water pretreatment systems and assisting the government to work out a polluter-pays-principle adapted to the Mongolian situation.
This project is implementing since 2000 to demonstrate the environmental and financial benefits of cleaner production and effluent pretreatment to the Mongolian industry by implementing them in one model factory, assissting the Mongolian government to desing feasible effluent standarts for industries and fee system for waste water discharge, to propose a viable system of industrial effluent monitoring by a self-supporting laboratory and indicate and demostrate how the Mongolian Environmental Trust Fund can be linked to the process of cleaning up the industry

The benefit of this project is reduction of Pollution Tuul river by implementing a clean technologies in undustry, development of effluent standards, fee system of industry, the set up of a self supporting wastewater monitoring laboratory .

In Mongolian cities wasteful utilization of water and unsatisfied counting and controlling system.
To take measure on water counting and improve the control on water utilization

- Improve the water management in central region of Mongolia and to introduce the water recycling system
- Establish subsoil water monitoring network
- Soften and freshened the drinking water in Gobi and steppe region
- Renovate and expand water purifying system

MAJOR ISSUES OF THE ENVIRONMENTAL POLICY IN THE RUSSIAN FEDERATION

The past year in many countries and also in the Russian Federation has been marked by the preparatory processes for the World Summit on Sustainable Development. Accordingly this year was characterized by a greater environmental activity on the national as well as on the international level.

The environmental trends in Russia in general have been characterized with a steady decline of pollutant emission and wastewater discharge. But since 2000 as the economic growth has started the environmental impact has increased. The economy is still retaining its resources and energy consuming type, and it represents a serious environmental threat.

In 2002, January a new Federal Law "On Environmental Protection" has been adopted. For the recent years there also have been adopted the a number of the other legislative acts (on environmental insurance, environmental certification, etc). There are under consideration the drafts of the new Federal Water Code, Federal Forest Code and Federal Subsurface Code. The National Report on the State of the Environment is being published annually.

In 2002 August by the Government the political document "Environmental Doctrine of Russia" has been approved which was purposed to enhance the environmental component of the national activity in support of the sustainable development.

In concordance with the document the national environmental policy is built up basing on the following principles:

- the conservation and rehabilitation of natural ecosystems, their biodiversity and self-regulating capacity as a major prerequisite of the human existence;
- the sustaining use and an equal access to natural resources;
- the provision of favorable environment for well-being and quality of life of the national population.

There has been developed the Plan of Actions of the Environmental Protection and Use of Natural Resources for the period 2003-2005. The previous one was developed for 1999-2001, the implementation of which has been hampered by the administrative reform of the environmental and nature use agencies in 2000.

In order to retain the former functions of the liquidated agencies there have been established within the framework of a single ministry the State Environmental Protection Service, the State Geological Service, the State Water Service, the State Forest Service complemented by the Service of

the Control of the Environmental Safety and Nature Use. All the services perform the administrative governance as relatively independent bodies. As a result of merging of the State Forest Service and the State Environmental Committee in May, 2000 the united system of management of the national parks and natural reserves has been formed.

In 2001 the territorial governance of Russia has been enhanced by the system of federal districts (okrugs). Accordingly there have been established the Department of the Environmental Control of the Siberian Federal District (Okrug) composed of 16 Subjects of Federation and the Department of the Environmental Control of the Far Eastern Federal District (Okrug) composed of 9 Subjects of Federation. They have been established to provide coordination of the environmental activity over huge territories. They will also accumulate the environmental information over the region of the North Eastern Asia. Besides in the Far East there has been established the Specialized Inspectorate on the Protection of the Rare and Endangered Species ("Inspectorate Tiger").

At present the staff number of the Ministry and its affiliation bodies in the districts amounts to 2,5 th. people.

The Ministry of Natural Resources has developed the Concept of improvement of management of water resources based on the basin approach and the National Plan of Actions addressed to development of the water industry of Russian Federation "Water Resources of Russia – 21". These documents have been issued in implementation of the Water Initiative of the European Union and former USSR countries for sustainable development which was presented at the World Summit.

In June, 2001 at the Public Forum there has been approved the National Strategy on the Biodiversity Conservation and accordingly the National Plan of Actions. The support for the regional biodiversity strategies has been rendered. The innovative economic and financial instruments of the Biodiversity Conservation have been approbated. The Environmental Program of the Baikal biodiversity protection has been developed.

In Russia there has been established a unique system of specially protected natural areas of national and international significance composed of state natural reserves, national parks, state natural reserves, natural monuments, natural parks. The total area amounts to 136,6 mln.ha - 8% of the national territory. For the 1991-2002 the number of reserves has been increased from 75 to 100, and their territory - from 20 to 33 mln.ha (by 65%). That of national parks has increased from 17 to 35 and the territory – by 90%.

The positive example of international cooperation with the North Eastern Asian countries is the establishment of transboundary reserves: "Lake Xingkai/ Khanka Lake", the "Daurskiy-Dalainor-Daguur".

The Russia part of Asia is remarkable for the two nature objects of international significance – the Baikal Lake and the Amur River.

The Baikal basin is governed by the Federal Law "On the Lake Baikal Protection", and its central zone is also under jurisdiction of the Convention on the World Heritage. In August, 2001 the Decree of the Russian Government on the List of prohibited activities in the Central Zone was approved.

In the Far East region there is a growing concern over the state of the water environment of the Amur River. These problems will be discussed at the International conference on the Water Protection in the North East Asia in Khabarovsk on 26-30th May, 2003.

The international cooperation is of primary importance for the Russian Federation.

The greenhouse gaseous emissions in our country have been reduced by the one third (amounts to 60% of the world reduction). Russian Federation has sighed the Kyoto Protocol and is pushing its ratification in near future.

On the initiative of the President of the Russian Federation in autumn, 2003 in Russia there will be held the International Conference on the Climate Change which will present a good chance to discuss some points of joint programs and also the issue of the global environmental services relevant to global climate problems.

In May, 2002 Russia has signed the International Convention on Persistent Organic Polluters (Stockholm Convention), and the national conference there was approved a decision to develop a Plan of Actions on implementation of the Convention.

Russian Federation has a commitment for further development of the bilateral cooperation with the North East Asian countries basing on intergovernmental agreements - Japan, Chinese Public Republic, Republic of Korea, under consideration the agreement with Mongolia.

In the Far East of Russia and also in Siberian region the bilateral cooperation in the environmental sphere between regional administrations has been on a progress especially with Chinese regional administration. A number of agreements on nature and water protection have been signed or just under approval process.

According to the recent federal legislation the regional governments are empowered with greater authority to perform international cooperation activity. They participate in governmental and non governmental organisations – Northern Forum and so on.

On 20-22th March, 2002 in Vladivostok there was arranged the 7th Intergovernmental Meeting on the NOWPAP program which has been implemented since 1991 under the supervision of the UNEP.

To summing up, Russia has a growing interest in the development of environmental cooperation in the North Eastern Asia, and recently confirmed its commitment to arrange in Russia next year the Conference of Senior Officials on Environmental Cooperation in the NEA within the framework of the ESCATO.

Ministry of Natural Resources of Russian Federation

STATEMENT BY REPRESENTATIVE OF UNEP

NEAC Meeting

5 December 2002, Hainan

Distinguished Delegates, Ladies and Gentlemen:

Since this is my first time to participate in the NEAC (Northeast Asian Conference for Environmental Cooperation) meeting as a UN official, it gives me great pleasure to be amongst you and to make an address, on behalf of Mr. Nirmal Andrews, Regional Director and Representative of UNEP, to this important meeting.

As far as I know, there are several environmental forums in this sub-region such as NEASPEC (Northeast Asian Sub-regional Programme for Environmental Cooperation), NOWPAP (North West Pacific Action Plan) and TEMM (Tripartite Environment Ministers Meeting). Among others, NEAC provide the unique forum for participating countries and international organizations.

The Northeast Asia is one of the most dynamic and diverse regions of the world. It contains one of the richest and most highly developed countries of the world as well as some of the poorer and underdeveloped countries and areas. It also contains the largest country in the world with one fourth of the world population. Because of the dynamism and diversity, the Northeast Asia is the most difficult sub-region in Asia and the Pacific in terms of sub-regional environmental cooperation. There is no legal framework and no institutional body for environmental cooperation in this sub-region unlike other sub-regions such as Southeast Asia, South Asia and South Pacific.

Therefore, NEAC provide us with the valuable platform for environmental cooperation in this sub-region. In this regard, our Office places special importance on this sub-region. Let me give you some examples of the UNEP's activities in this sub-region.

First of all, I am pleased to inform the meeting that "UNEP/SEPA First Northeast Asian Sub-regional Workshop towards the Effective Implementation of the Chemicals and Hazardous Waste Conventions" was held on 15-17 May 2002 in Beijing. The workshop recommended that more policy dialogue on chemical issues should be promoted through the existing forums such as NEAC. Chemical pollution, particularly pollution by POPs or Persistent Organic Pollutants, is surfacing as one of priority agenda in the world since the Stockholm Convention was adopted. As a matter of fact, I came here from Japan just after I attended the Workshop on Environmental Monitoring of POPs in the East Asian Countries that was held on 2-3 December in Tokyo.

Secondly, yellow sand issue is becoming one of the urgent environmental agenda in this sub-region as indicated in the Fourth TEMM's communique. UNEP is actively coping with this issue. In the end, an epoch-making ADB/TA & GEF/MSP project proposal on Prevention and Control of Dust and Sandstorms in Northeast Asia was formulated as a collaborative project of 4 international agencies (UNEP, ADB, ESCAP and UNCCD) and

4 countries (China, Mongolia, Korea and Japan). This project will start from next month after the official approvals of ADB and GEF are obtained.

Thirdly, EANET (Acid Deposition Monitoring Network in East Asia) is also actively promoted by UNEP since the secretarial role was transferred from the Interim Secretariat at MOE of Japan to UNEP/RRC.AP at Bangkok early this year. The three staff-members for the EANET Secretariat were already recruited and started its operation. The 4th Inter-governmental Meeting was just held last week in Bangkok.

Last but not least, let me remind you that the Plan of Implementation of WSSD puts a strong focus on initiatives, experiences and institutional set-up at the regional level. In this regard, I am pleased to inform you that UNEP is now considering the strategy for regional implementation of WSSD. Once the strategy is adopted, I can say with no doubt that the role of regional offices will become larger than ever with a special focus on the Asia and Pacific region, in particular this sub-region, that is, Northeast Asia.

Ladies and Gentlemen,

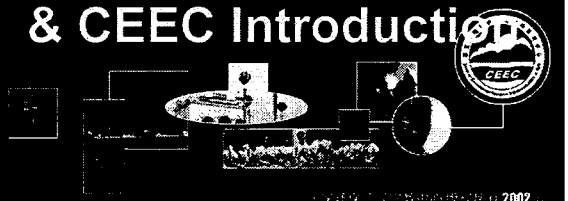
UNEP would like to be actively involved in environmental cooperation in this sub-region in association with NEAC and hope to make as much contribution as possible to effectively addressing the urgent and important environmental problems in the sub-region. I thank you for your kind attention and for giving me this valuable opportunity to share with you the UNEP activities as a committed partner in managing the Northeast Asian region's environment.

Thank you Mr. Chairman.

Open Symposium

CEEC

Environmental Education in China & CEEC Introduction



CEEC

Environmental Education in China

CEEC

Progress of EE in China

Developing with environmental protection in China

Experiments of EE in primary and middle schools since 1979

Environmental education system of different level, from primary school to university

Back

CEEC

Progress of EE in China

Environmental protection based on environmental education since 1983

Energy, environmental protection and eco-education should be integrated into related curriculums

CEEC

Progress of EE in China

Action Plan for Environmental Education and Communication in 1996, a limestone for environmental education in China

International cooperation promoted environmental education in China in late 1990

CEEC

Progress of EE in China

Environmental awareness obviously improved since mid of

Education section attaches more importance to EE

CEEC

EE System in China

Basic Education

Professional Education

Adult Education

Public Education

CEEC

EE Organizations and Activities

CEEC

EE Organizations

Department of Environmental Education and Communication of SEPA

China Environmental Education and Communication Network

Formal Education

Science Association

EE Organization of Other Governmental Departments

CEEC

EE Activities

Green School Projects

Development of Interactive EE Teaching Materials

The Earth Award

Green Action by Primary and Middle School Students

CEEC

Environmental NGOs

Friends of Nature. 1994
Beijing Globe Village. 1996
Green Beijing
Green Volunteer Association of Chongqing City. 1998
Environmental Volunteer Association of Yueyang City, 2001

CEEC

Introduction for CEEC

CEEC

CEEC

Established in May of 1996

Technical support for EEC

NPO with 40 staff

CEEC

Organization Chart of CEEC

CEEC

Communication | Education | A&V

CESDRRC | ISO14000 Training

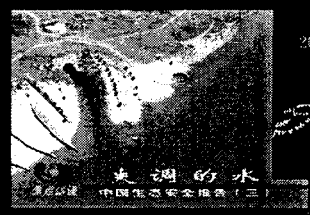
CEEC

Main Projects

- Environmental Precautionary Education
- The Regular National School Students' Environmental Protection Competition
- A Green Ribbon of the Earth----The GLOBE Program
- Bell Program
- On the Job Training for Director of Local EPBs
- Green Schools
- China-Japan Technological Cooperation
- Mobil China Environmental Education Fund

CEEC

Main Projects: Environmental Precautionary Education



CEEC

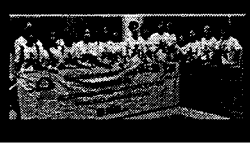
Main Project:The Regular National School Students' Environmental Protection Competition

1998: National School Students' Knowledge about Environmental Protection Competition

1999: "I Need the Earth, and It Needs Me" – A National School Students' Essay Competition Concerning Environmental Protection

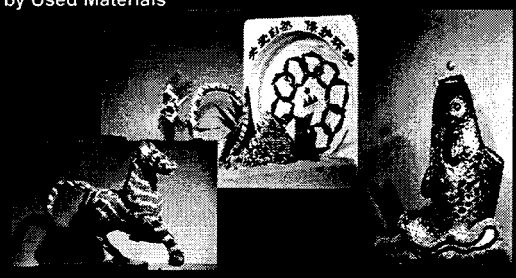
2000: "For Our Common Future" – A National School Students' Competition for Designing Environmental Protection Activity Plans

2001: "A Million Young People Take Action in Support of Beijing's Bid to Host the Olympic Games" – A National School Students' Competition for Designing Environmental Protection Advertisements



CEEC

Major Project: Sculptor Designing Competition by Used Materials



CEEC

Main Projects: Activities for The World Environment Day

News Release
International Youth Environment Forum
Brochures and Posters

CEEC

Main Project:The GLOBE Program

Since 1995
56 Schools although 36 provinces

GLOBE Annual Meeting and Workshop
50000 students participating in the observation
GLOBE Teachers Guide

CEEC

Main Project: BELL Program

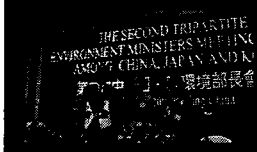
Business Environment Learning Leadership
Experimental Universities
MBA Summer Workshop
Teaching Material: Green Enterprises Management

Publish foreign case study
Develop domestic cases study
Develop Forums

CEEC

Main Project: TEEN Project

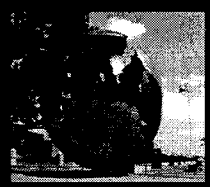
Created at the 'Chinese, Japanese and Korean Environmental Ministers' Meeting.



First Tripartite EE Workshop
EE Organization Database (40)

CEEC

Main Project: On-the-job Training for Local EPB Directors

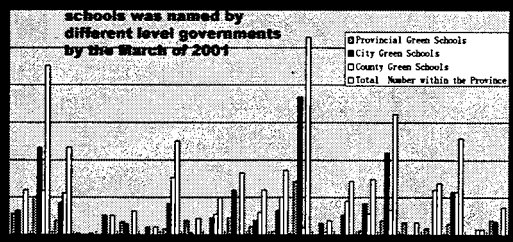


CEEC

Main Project — Green School

CEEC

Green Schools Numbers In China



CEEC

Main Project: Sino-Japan Cooperation in Technology

Cooperation with JICA since

During 1996-2000, JICA donated hundreds thousand RMB

Audio-tech Training Workshop

Training for Principles from Primary an

Training for ISO14000

International Workshop on EE

Teaching Materials Translation

Training on Acid Rain and SO2 Contro

CEEC

Major Project: Mobil China Environmental Education Fund

- Established in April of 1998
- 10,000,000 donation by Mobil China Company

More than 60 projects implemented by 2001 through out China

CEEC

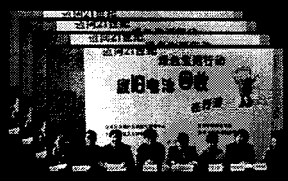
Major Project: Mobil China Environmental Education Fund

Environmental Star

CEEC

Major Project: Mobil China Environmental Education Fund

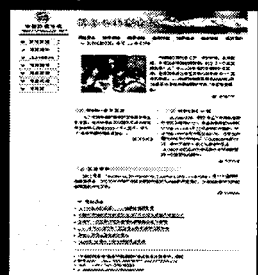
Used Battery Recycling



CEEC

Major Project: Mobil China Environmental Education Fund

Media Communication: Chinaeol Radio Program Newspaper and Outdoor Advertisement



CEEC

Major Project: Mobil China Environmental Education Fund

Forum on Environment and Development

CEEC

Major Project: Mobil China Environmental Education Fund

TV Series Window on American Environment

22 Episode, 15 minutes for each

CEEC

Other International Projects

China-U.S. Environmental Governance Training Program (Shenyang, Wuhan, Chifeng) in 2002

CEEC

Other International Projects

China-U.S. Children's Painting Competition in 2002

CEEC

The China Environment and Sustainable Development Reference and Research Center

- Environmental books and reference materials
- Audio and Video materials
- Environmental English Class
- Environmental Book Store

CEEC

Thank You

Welcome to visit

www.chinaeol.net

Environmental Education and Public Environmental Awareness from the Viewpoint of Original Experience in Nature and Environmental Ethics

Fumiaki TANIGUCHI
Secretary-General, The Japanese Society of Environmental Education
Professor, Konan University, Kobe, JAPAN

Ⅰ Introduction

The theme of Environmental Education and Public Environmental Awareness at this Conference is presumed to be derived from the International Conference on Environment and Society: Education and Public Awareness for Sustainability in Thessaloniki in Greece, 1997.

The objective of the Thessaloniki Conference was the sustainability of education and public awareness, the contribution of environmental education, the facilitation of UNSD's plan and the promotion of environmental activities on the international, national, and regional levels.

Realizing sustainability at all levels of government, realizing radical changes in consumption-production behavior, realizing lifestyle vision of education and public awareness should be further developed and strengthened.

The following is described in the Declaration of Thessaloniki Conference:

> In order to achieve sustainability. An enormous coordination and integration of efforts is required in a number of crucial sectors and rapid and radical change of behaviors and lifestyles, including changing consumption and production patterns. For this, appropriate education and public awareness should be recognized as one of the pillars of sustainability together with legislation, economy and technology.
>
> (Chapt. 6)

The purpose of this presentation is to explain and philosophically analyze Environmental Education and Public Environmental Awareness from the Viewpoint of Original Experience in Nature and Environmental Ethics apart from legislation, economics, science and technology.

Firstly, I would like to survey the aims, goals and objectives of environmental education in relation to various Education Acts or Declarations during the last 35 years.

Secondly, I would like to introduce an outline of the historical development of environmental education in Japan. Here I will illustrate the peculiarity of Japanese environmental education and also offer to other participating countries suggestions for avoiding serious environmental damage that can accompany rapid economic growth.

Thirdly, I would also like to touch on the original experience in the nature for environmental awareness in childhood, which can provide the roots to expand private environmental awareness into public environmental awareness when one grows up. This original experience fosters an ecological consciousness, an

absolute value, as the foundation for sustainability.

Fourthly, I would like to point out that public environmental awareness should be grounded in and guided by environmental ethics. In general, ethics primarily deals with relationships between the individual human mind and public society.

In conclusion, I will emphasize the importance of a sense of wonder and environmental ethics to help realize public environmental awareness for sustainability. Such public environmental awareness from the bottom up corresponds to the contents of the Declaration of Thessaloniki.

Ⅱ Objectives and goals of environmental education in general

According to the Thessaloniki Declaration, environmental education "may also be referred to as education for environment and sustainability."(Chapt.11) Therefore, we need to review the aims, goals, objectives and guiding principles of environmental education.

(1) Fundamental aims and goals of environmental education

The character of environmental education involves the process of understanding the relationship between population, pollution, distribution and depletion of resources, preservation of nature, transportation, technology and development (Environmental Education Act, 1970, USA).

According to the Tbilisi Declaration (1977), a basic aim of environmental education is:

> to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic, and cultural aspects, and acquire the knowledge, values, attitude, and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and in the management of the quality of the environment.

And the goals of environmental education are:

1. to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas;
2. to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;
3. to create new patterns of behavior of individuals, groups, and society as a whole towards the environment.

In this way we can understand that environmental education aims to foster the ability in a child to act step by step so as to manage and control his or her environment as far as the eyes can see.

But in my opinion the goals of environmental education are to educate a child to be warm-hearted towards all life on the earth and to be active against environmental pollution and destruction in the social and natural environment. As a result young people receiving environmental education at school or environmental learning in the field will be able to act for sustainability for the future. In other words, the final aim of activities to prevent environmental destruction is to improve the ecological relationship of humans with nature by mutual activities. The activities of people who

act with a warm heart towards all life will be in harmony with the environment.

(2) Objectives of environmental education

The categories of objectives for environmental education are contained in the Tbilisi Recommendations:

Awareness – to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

Knowledge – to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.

Attitude – to help social groups and individuals acquire a set of values and feelings of concern for the environmental and the motivation for actively participating in environmental improvement and protection.

Skills – to help social groups and individuals acquire the skills for identifying and solving environmental problems.

Participation – to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

It is notable that Awareness is accorded such an important role above.

This concept is the foundation for gaining knowledge, changing attitudes, acquiring skills and participating in order to act for sustainability.

In the Declaration of Tbilisi the central concepts of the objectives were transformed from the former declarations focusing on nature preservation towards values, conscience, environmental ethics and the way of life.

In this way, the character of environmental education comes to involve the integration of science, society and human life.

Accordingly, we could understand the aims and objectives of environmental education in general.

(3) Guiding principles, character and methods of environmental education

Guiding principles must be concerned with the environment in its totality, a continuous life-long process, being interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective, examining major environmental issue from local, national, regional and international points of view, focusing on the current and potential environmental situation, promoting the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems, and so on.

Here we examine points such as the consideration of the environment in its totality and its holistic and balanced perspective. These points suggest a kind of holism or organism. We have to know that everything on the earth is connected and, accordingly, we need eyes to see not only the human environment but also all life from a holistic and balanced perspective.

Therefore, environmental education needs to address interdisciplinary fields including the natural sciences, the social sciences and the human sciences. However, its approaches should retain the peculiarity of each field. So, with its interdisciplinary nature, environmental education has important consequences for both subjects and curricula in schools.

Environmental education is not just one subject but is concerned with every subject so that it deals with every concern, and it is implemented through field

experience.

On the other hand, as environmental education has to enter into every subject, its character may be expressed in the cross curriculum, and on the other hand it provides field activity as a method. So, every material can be used.

We need to provide young people with the skills, attitudes and values necessary for them to understand and address environmental issues as active, participating citizens.

Some the methods are provided by government policy, academic societies or NGOs, but I would like to focus on those methods within environmental ethics concerning environmental awareness, knowledge, attitudes, skills and participation arising spontaneously within the individual. We need to deal with environmental awareness expanding from the personal to the public.

Ⅲ Introduction of environmental education in Japan

(1) The History of Environmental Education in Japan

Environmental education in Japan started from pollution education in the 1960s. After experiencing serious cases such as mine pollution caused by the Ashio Copper Mining Industry in Tochigi Prefecture from 1891, Itai-itai (pain) disease caused by cadmium in the Jintsuu River in Toyama Prefecture in 1922, Minamata disease caused by mercury in Minamata, Kumamoto Prefecture in 1956, Second Minamata disease around the Agano River in Niigata Prefecture and Yokkaichi asthma in Mie Prefecture. These problems were all caused by industrial waste resulting from high economic growth.

Such pollution problems made us to realize that environmental destruction is the same issue as life.

However, pollution education was limited in that it was inclined towards a stereotyped education seeking only the cause of pollution and the prosecution of polluters. But it is too narrow to focus only on merely utilitarian approaches to nature preservation, the safety of human life and the creed of egoism. Through our miserable experience we learned the necessity of nature and life preservation.

As a result, Japanese environmental education is shifting from pollution education to nature preservation.

In any case, the beginning of environmental education was implemented on the basis of the natural sciences, only recently has this shifted to the social and human sciences. But even this is too narrow when we consider the totality of the human environment.

(2) Transition of nature preservation to comprehensive environmental education

As we saw above, we came to realize a transition from nature preservation to human environment in accordance with The Belgrade Charter: A Global Framework for Environmental Education and also with the Declaration of the Tbilisi Intergovernmental Conference on Environmental Education. These both include human themes in the contents of environmental education.

The Tbilisi Recommendation asserts that environmental education should contribute to a new ethics, which is founded upon nature, humans, human dignity, regard for future, being open to all people, and the necessity of the mutual quality of life.

What then is the essence of the contents of the human environment? The essence must reflect the way of human living, which is based on variety of values, human conscience, and environmental ethics. In other words, the problem of environment in the natural sciences and social sciences may be resolved by techniques and skills, but we must not forget that the fundamental cause of environmental destruction stems from the polluted mind environment.

Therefore, we have to purify the polluted mind environment so as to heighten public environmental awareness and to urge people to act for the restoration and the creative capacity of the environment.

In Japanese elementary schools 'life environmental education' is taught in the first and second year grades as comprehensive learning including the natural and social environment since 1988.

Additionally the Japanese Ministry of Education has provided instructive materials for junior and senior high schools, which have facilitated every school implementing environmental education.

An educational council of the Ministry decided to promote comprehensive learning of four themes such as education for international understanding, information education, environmental education and health-welfare education.

Comprehensive learning depends upon, as it were, a potential curriculum which teachers should reveal through the class. The Ministry of Education does not rigidly control the contents and methods, but they are needed for the educational process of creative development and should be facilitated by schools, teachers, local organizations (NGO) and children. Therefore, the importance of such education has been guaranteed in public at last.

However, the problems of implementation of environmental education are that the specialty and instructive ability of teachers are required nowadays. Because teachers get accustomed to textbooks, which provide common materials within a common curriculum, so they cannot make original classes without textbooks. This is a problem.

Ironically, before teaching pupils we have to enlighten the environmental awareness of teachers.

Ⅳ Original experience in the nature for environmental awareness

Even if the system of environmental education is offered in the school curriculum and field learning manuals, children should grow up surrounded by nature. Original experience in the field is most essential for environmental education, so that "a sense of wonder" should be fostered in childhood to perceive the wonder of nature and the brilliance of life.

Let's consider the case of 'The Sense of Wonder' written by Rachel Carson. Needless to say, she is very famous as the author of "Silent Spring" which is already a classic book concerning environmental pollution by chemicals. She says that a sense of wonder is the sense of wondering at natural beauty and the awe inspired in anyone who touches nature. A child's world is always so fresh and new and beautiful, so full of wonder and excitement, that the child can feel the whole of nature through the senses and sentiments, even without a teacher. Once a child naturally receives the wisdom of nature in the sense of wonder this faculty remains throughout life.

For instance, Rachel did not teach her nephew Roger the knowledge of living things such as animals or plants at the shore, but he could point out those living things, where they live or what they are, without being taught.

> When Roger has visited me in Maine and we have walked in these woods I have made no conscious effort to name plants or animals nor to explain to him, but have just expressed my own pleasure in what we see, calling his attention to this or that but only as I would share discoveries with an older person. Later I have been amazed at the way names stick in his mind, for when I show color slides of my woods plants it is Roger who can identify them. "Oh, that's what Rachel like – that's bunchberry!" or, "That's Jumer (juniper) but you can't eat those green berries – they are for the squirrels." I am sure no amount of drill would have implanted the names so firmly as just going through the woods in the spirit of two friends on an expedition of exciting discovery.
>
> (The Sense of Wonder, p.23)

Also, the most important insight into the essence of life is showed in another passage. Rachel herself had experienced looking through the essence of life when she was walking along the shore.

> There was no other visible life –just one small crab near the sea. I have seen hundreds of ghost crabs in other settings, but suddenly I was filled with the odd sensation that for the first time I knew the creature in its own world – that I understand, as never before, the essence of its being. In that moment time was suspended; the world to which I belonged did not exist and I might have been an onlooker from outer space.
>
> (The EDGE of SEA, p.5)

This is a fundamentally original experience in nature in which Rachel looked through 'the essence of its being' in a timeless and spaceless world. This experience gives her and also other people an absolute value for environmental awareness throughout life.

In this way she put a stress on the feeling rather than knowledge. If the child had the original experience in the nature, he could acquire the sense of wonder to perceive the beauty as it is, and to perceive the wonders of newness, unknown things, consideration, admiration or love for all things.

Such sense of wonder fosters the curiosity for learning about the variety of living things and drives him to want to know more. In that case his wisdom becomes a steady knowledge grounded in original experience in nature.

As the starting point for environmental education, we need to cultivate original experience in nature in young people.

Ⅴ Environmental ethics for public environmental awareness

The starting point of environmental education should be original experience in nature to awaken a sense of wonder. But this sense is confined within personal experience. We have to broaden personal environmental awareness to encompass public environmental awareness.

How should we do this? Personal awareness should be expanded to the social, or

public. Here, we do not want to discuss policy or legislation, which is the public domain, but to examine environmental ethics, which instructs us on both the social relationship between individuals and on the personal norms as to how to live in society.

Environmental ethics based on a sense of wonder stimulates the public awareness, which could provide the norms for behaviour when growing up. Environmental ethics provides an inner guide for public activity and could change both the way of life and the human sense of values.

The principle of environmental ethics is founded on three rules, that is, preservations of ecological identity, individual identity and genetic identity.
These identities are the elements of the framework for areas of environmental ethics such as intergenerational ethics, rights of all lives, and fair distribution of resources. It is easy to understand the reason why we have to maintain ecological identity, which is related to both individual and genetic identity.

Also the principle of environmental ethics instructs us on how to act in nature and society so as to conserve, preserve and restore environmental destruction. Furthermore, such a principle contributes to the creation of environment. Without original experience in nature, we cannot construct such a sound environmental ethics.

This instructive principle of environmental ethics gives us, on the one hand, in theory, normative rules for a framework for action, and on the other hand, in practice, concrete guidelines on how we live in daily life for the preservation and creation of the environment.

If we established the principle of environmental ethics within ourselves, we come to realize public environmental awareness.

VI Conclusion

In AGENDA 21, Chapter 36 and the Declaration of Thessaloniki, we can understand the guiding principles of environmental education, which only provide policies and curricula, for example. But in a sense this is only the hardware. We have to consider the software, the human mind environment, for environmental awareness.

We have taken a general view of environmental education both in the world and in Japan to confirm the essence of environmental education looking back on outlines, goals, objectives and so on. From this, we can find the true aim of environmental education, which is the human environment connected with all other living things.

However, in order to enlighten environmental awareness, firstly, humans should have original experience in nature to perceive the beauty, awe, mystery or curiosity inspired by nature with a sense of wonder to look through the essence of being or life. Such sentiments give us judgments of beauty and morals to enlighten environmental awareness in young people.

And secondly, this original experience in nature gives rise to the necessity of environmental ethics, which is concerned with human activity in society and nature.

If we established the instructive principle of environmental ethics, we could change our awareness, knowledge, attitudes, skills and participation, and act positively in order to realize and heighten public environmental awareness in a bottom-up manner for a sustainable future.

Environmental Education by NGOs in Korea

December 4, 2002
Joo, Sun-hee
Director, Environmental Education Centre
Korean Federation for Environmental Movement(KFEM)
Republic of Korea

1. Opening

(1) My name is Joo, Sun-hee. I'm the Director of a Korean non-governmental organization whose name is Environmental Education Centre (EEC). Originally, EEC was a division of Korean Federation for Environmental Movement (KFEM) who has about 80,000 (eighty thousand) members in Korea. ECC separated form KFEM and became an independent corporation in 2000, in order to concentrate on education works. I am here to report you on environmental education by non-governmental organizations (NGOs) in Korea.

(2) You would know well the importance of education in preserving environment. It's because individual practice is as much important as government policies or deep theories in preserving environment, and individual practice comes from education. In Korea, environmental education by NGOs and by public schools has sharply increased together since the late 1990s (nineteen nineties) in its quantity and quality.

(3) Among these, I would present you with environmental education by NGOs in Korea. Firstly, I will present 3 representative organizations among many NGOs who are working for environmental education in Korea. And then, I will present you with educating programs by EEC.

2. Three Representative NGOs working for environmental education in Korea.

(1) KFEM and EEC (www.kfem.or.kr)

1) KFEM was established in 1993, and now it has the largest number of members among many civic groups in Korea. In the early days, KFEM taught environment usually in classroom, because this education was for only for small number of activists who would make use of what they learn promptly at the spot. Afterwards, since the number of members has increased to make KFEM a popular civic group in 1990's, KFEM began to strengthen educating ordinary citizens. These enlarged educations included more field trips compared to lecture in class, and programs were diversified.

2) In 2000, EEC separated from KFEM and became an independent corporation in order to concentrate on education works. Now general manager, 3 staffs, and lots of volunteers are working for EEC. EEC develops educational methods, applies the methods, and improves the methods by feedback. And we share these education methods with 50 regional divisions of KFEM and many other environmental organizations. The details of the programs are in the following.

(2) Buddhist Academy for Ecological Awakening (BAEA, www.jungto.org/baea/)

1) BAEA was established in 1991 in order to awaken ecological interests in citizens. While most NGOs has decreased lecture in class and has increased field trips for education, BAEA has maintained lecture in class. Now their lectures are composed of Ecology School for Citizen, Life Academy for the Advanced, and Small College for Environmental Activists.

2) In Korea, BAEA is regarded as the bridgehead of ecological fundamentalism, as BAEA has maintained its principle and has deepened its understanding in ecological fundamentalism.

(3) Korean Young Men's Christian Association (Korean YMCA, www.ymcakorea.org)

1) Korean YMCA has a long history and a strong organization. Though it is a Christian association, it also has functioned as a social movement group in Korea. Especially, environmental education is one of its major works.

2) Korean YMCA has an importance in environmental education in the senses that it has a good database for environmental education and that it has educated so many people through its regional divisions.

3. Education Programs of EEC.

(1) Programs for Preschool Children

For individual teachers, it is really hard to develop methods for environmental education, while they feel keenly the need of such methods. Therefore, EEC has developed educating methods and distributed it among them.

1) Model Kindergartens for Environmental Education

A score of kindergartens are designated as 'Model Kindergartens for Environmental Education'. These kindergartens educate environment with methods provided by EEC. As for kindergartens, they can be provided with good methods, and as for EEC, it can obtain places for environmental education.

2) A Forum for Preschool Children Environmental Eduction

EEC opened a forum for preschool children environmental education. It aimed at developing and suggesting better government policies to systematize preschool children environmental education and connect it with environmental education in elementary school.

3) A Club to Study Preschool Children Environmental Education

This club, composed of environmental activists and teachers of kindergartens, has developed methods for environmental education and improved it by monitoring them.

4) News Providing

EEC has issued 'Monthly News for Preschool Children Environmental Education' and delivered it to parents who have children in the model kindergartens mentioned above.

(2) Programs for teachers in kindergartens, elementary schools, and middle schools.

1) 2002 Kindergarten Teachers Workshop for Environment.

EEC opened 3 sessions of workshop composed of 40 kindergarten heads and teachers. It aimed at strengthening ecological way of thinking and providing them with educational materials.

2) Environmental Lectures for Teachers in Elementary and Middle Schools.

This series of lectures, provided by high-level lecturers, aimed at making participant teachers experts in environment. Delivered to 73 participants, this series included not only lectures in class, but also field trips.

(3) Programs for students in elementary, middle, and high school.

1) Environment Class

(a) Environmental education in public school is not enough to make students pay attention to environment, not to speak of making them practice way of preserving environment in their lives. So, to make up for the insufficiency, EEC has provided this program composed of environmental theorem, practical methods, and field trips.

(b) Until now (December 2002), EEC has provided 16 sessions of classes participated by 400 students with subjects such as woods, energy, wild animals, recycling, foods safety, the earth, and plants.

2) Environmental education in Ecology Education Centre.

EEC has a hall named 'Ecology Education Centre', with an area of 400 square metres on the 1st floor of KFEM building. This hall is filled with models of nature such as plants, animals and woods that are very useful in learning ecology of nature. And also EEC has lots of materials to be used in practice of handicrafts in this hall. EEC has provided opportunities to experience ecology to everybody in anytime yearly.

3) Frontier Expedition

(a) Since 1997, EEC (KFEM) has held Frontier Expedition every year. It provided students with opportunities to feel the nature of motherland with their whole body. We believe these expeditions have opened ecological view in the participating students.

(b) Programs: Han River (97), Some-jin River (98), Dong River (99), Western Seaside (00), Southern Provinces (01), and Je-ju Island (02).

(4) Programs for Citizens

1) Lectures on Trees in Old Palaces

(a) Seoul has 5 old palaces. They make good places for environmental education in the senses that they have a lot of trees, flowers, and cultural heritages, and that it's easy to get there as they are in Seoul city. The lecturers are experts in Korean trees and Korean wood culture. They teach how woods are used in many sects in human life, like building, musical instruments, farming implements, weapons and the others. And also they provide so many legends and old stories related with trees. With their lectures, participants can obtain not only natural scientific knowledge, but also humanitarian culture.

(b) 68 people have taken these lectures that have been delivered every Saturday in each sessions in the spring and the fall of 2002.

2) Advanced Environmental Lectures

(a) From September to November 2002, EEC provided advanced environmental lectures to 30 participants composed of Students in University, Activists, and Citizens who wanted to obtain advanced knowledge on environmental problem. Additionally, it provided methods of democratic citizen movement under the subject of 'Today's fields of environmental movement'. This series of lectures included lectures in class every Wednesday and field trips every Saturday.

(b) Programs

	Date	Subject
1	Sept 18, Wed	Orientation, viewpoint, democratic citizen movement
2	Sept 25, Wed	Movement to nullify Dong River Dam Project
3	Sept 28, Sat	Visiting Dong River
4	Oct 2, Wed	Movement against Se-man-guem reclamation project
5	Oct 5, Sat	Visiting Se-man-guem wetlands and works
6	Oct 16, Wed	Nuclear energy and environmental inequality
7	Oct 19, Sat	Visiting nuclear power plant and talk with residents
8	Oct 23, Wed	Renewable energy
9	Oct 26, Sat	Visiting wind power generating plant
10	Oct 30, Wed	Green Autonomy

11	Nov 1, Fri ~	Environmental hormone and safety of foods
12	Nov 2, Sat.	Ecological community
	(Workshop)	Evaluation and graduation

4. Closing: For the development of environmental education by NGOs in Korea.

(1) For the Korean NGOs' point of view, Korean NGOs have had lots of experience on environmental education. I am sure that NGOs in the other 4 countries have had too like us. We should try to share all of experience on environmental education including educational materials among NGOs. There is good example on wetlands education for school children in Korea. This should be trans bounded to the other 4 countries. I heard there are very good environmental educational programs on wildlife conservation done by Russian NGOs. These good programs should be learned by NGOs in the other countries and trans bounded to another countries. I 'd like to establish environmental education network among 5 countries' NGOs to share skills and ideas. It will lead our enhancement of quality on environmental education and mutual understanding among us.

(1) Curitiba, a Brazilian city called the world model of environmental city, has an environmental open university. This university is operated by NGOs with financial support from government. Moreover, the government supports the university by sending officers, students, and teachers in schools as students of the university. We hope that Korea can have a university like this in near future. Korean NGOs have ability to manage such a university, because they have learned theories and practices of environmental problem from their long struggle to preserve environment. We hope that Korean government will pay more attention to NGOs' environmental education and they will support us at the practical level. If the governments come to know that NGOs' environmental education has public value, they will not hesitate to support us, we believe. An ecological city such as Curitiba can be made by mutual support from governments and citizens.

Arousal and Appeal for the Environmental Protection

--Speech on the Forum of Folk Environmental Policy Programming for North-east Asia

Mr. LI Ruinong, Chinese Environment Newspaper

Bo'ao, Hainan, China

2002 Dec. 5-6th

Chinese Environment Newspaper is a professional press media governed by State Environmental Protection Administration, which specializes in publicizing the knowledge of environmental protection to the public society. Since its formal publication commencement in 1984, to propagandize the basic national policies of environmental protection, to promulgate concerned knowledge, to strengthen the public consciousness of EP, to achieve the harmonious development between the economy society and environment have all been regarding as our non-shirking responsibilities. Therefore, keep on taking the environmental education and enhancing the mass consciousness of environment is turning to be an important work for us to deal, which is also the principal contents for our newspaper. Concerning of the content, form and method of propagandizing education of the environmental protection, I probably desire to put forward the following items, which are going to be discussed together.

For the Content

First of all, situation, policy and practice relating to environment are looked on as a key part for our press propaganda.

By means of this, we aim to tell the people how are going with our planet, our homes and the environment around us, what measures we should take to improve the environment, how and who will undertake such an progress. That is why, in our newspaper, we will not only display the global resource environmental condition, weather warming, ozonosphere destroy and rapid decrease of life form

variety, but the international cooperation about environmental protection. We will not only tell the flood disaster in Europe, rain forest destroy in Brazil, sinking ship pollution of sea line in Spain, but wild animal protection in Kenya, cycling economy model in Japan and city environment management in Singapore, etc.

But above all, our focus emphasizes on the general description of environment, relating guidelines & policies and protection deeds in China. We will publish a national environmental situation communiqué and environmental statistic communiqué every year, issuing communiqués about the water quality of such key drainages as Huai He River and Tai Hu Lake every week, daily report of the air quality in the principal cities nationwide, etc. Various environmental problems as sand storm destroy, obsession of drinking water, pilferage hunter of wild animals are also always shown on our newspaper. And state policies of environmental protection, laws and stipulations, meaningful events and great projects and important measures taken by various areas and walks are our key materials in the daily press, for instance, in recent year, we have been reporting the renowned project of Three-Three-Two-One-One, the first Three means three rivers: Huai He, Liang He and Hai He. The second Three stands for three lakes: Tai Hu, Dian Chi and Chao Hu. Two is on behalf of two controlling areas, which are sulfur dioxide and acid rain. One symbolizes a city that is Beijing. The last One refers to a sea, which is Bo Hai. In addition, we carried out the report of One Control with Two Qualification Achieved, which can be explained as to control the general amount of pollution discharge and make the pollutions from industrial enterprises can be discharged qualifiedly, city environmental quality can be satisfied in line with its ruled functional areas. Apart from the above, our daily reports also cover the protection of Tibet takin, actions taken by EP volunteers and efforts of Environmental NGO.

By delivering tremendous reports on the issues of environmental situation, condition, policies and actions continuously, we hope to upgrade the environmental consciousness of the mass constantly and help them to build a new concept that earth is the only home for human beings to live under the present condition, we should take common efforts to save the broken parts of her to

guarantee the existence, multiply and development of us. Although China is a country with vast areas and rich resources, while largest population and limit average resource and environmental endurance cannot match with that during the industrialization process of western developed countries. We should take the sustainable development strategy and realize the co-existence of human and Nature so that our Xiaokang and modernization can be fulfilled.

For the second, reports in our newspaper will be on the basis of environment science knowledge, environment and life information

Environment science knowledge is the base for us to recognize the environmental problems and have them solved, therefore, it should be the source of our reports. So, not only our report plan and topic selection will be based on the environment science, but we indulge it through the whole report and propaganda. Besides these, we invent special columns and page series to introduce this kind of knowledge systematically. E.g. what is the marsh, ozonosphere, and life-form variety? Why should we reject the overlapped packaging? What does water and energy saving stand for? What is the relation between the green consumption and environment protection, and so on? These reports extend from the basis of environment science to all walks of our life and work concerning of environmental protection. With such kind of propaganda reports, we try to publicize the environment science knowledge, cultivate and enhance the environment science attainment of the people and promote a theory that the entironment we are living now is an organic integration and complete system, any environmental or pollution obstacles are caused by our overuse or unreasonable usage of the resources and environment. With continuous efforts, therefore, environmental problems can be solved by adjusting the modes of economy development and our life. Eventually, we can fulfill the sustainable development of the economy society and environment, the harmonious co-existence of the Human and the Nature can also be achieved.

For the form and method of the propaganda education

First, to keep on combining the actions and knowledge in the environmental press release.

Our reports cover both vivid, detailed environmental protection measures, actions and practice, and systematic, comprehensive knowledge of environment science, green consumption and green life.

Second, to keep on rolling development and dynamic management in the environmental press release.

In the 80-90's of last century, we emphasized in the direct and specific introduction of environment science knowledge while undertaking the propaganda education. For example, we operated various science propaganda pages and columns as Intelligent Spring, which specialized in answering such questions as What and Why relating to the environment. With the enhancement of the people's environment consciousness and constant advancement of environmental protection practice for the past over ten years, we add more news about How to Do in the coverage, which shows the settlement of how to take an action and participation.

Third, to keep on combining the news coverage and organizing social activities in the environmental press release.

Apart from the newspaper media to propagandize the environment protection, we take an active part in organizing various environmental promotion social activities which encouraging the public to participate. Such as we called on entrepreneurs to issue Green Announcement, selecting Ten Excellency Small Green Guarder from the national primary and middle schools, hosting Chinese EP Director-General Forum. Also, we are going to various Knowledge Competitions as Green Consumption, Ozonosphere Protection and A Century for Environmental Protection, etc.

The direction of the project in the area of Environmental Education among Asian region

Executive Director, Japan Environmental Education Forum(JEEF)
Shigeyuki Okajima

1. Introduction

—The current situation of our planet : serious environmental threats beyond political boundaries

—EE is a basic tool for capacity building while raising the public awareness and mobilizing local people toward building sustainable communities

—We should talk about developing EE utilizing the distinctive features of Asia

2. Case study of the international cooperation related to NGO EE : JEEF

—JEEF's EE projects in the Asian region

2-1 Establishing the regional network in the Northeast Asia : TEEN project

China, Korea and Japan are located within a same environmental community. We've started the project: Tripartite Environmental Education Network (TEEN) in 2000. In the 1st phase of the TEEN project, since we did not exactly know the situation each other, we've created a database of EE organizations and held workshop/symposium gatherings, in order to strengthen our network and to share information.

This September, the 3rd TEEN Workshop& Symposium was held in Seoul. About 30 participants took part in the workshop, including administrative officials, practitioners from NGOs, students, and academic professionals from the three countries. The participants held informative presentations and discussions on the present situations and enforcement of EE – with a particular focus on rivers and local EE – in the three countries. The participants discussed the modality of the TEEN and its significance, and also plans for the future development of TEEN.

2-2 Supporting developing countries : EE project in Indonesia

JEEF has been assisting developing countries utilizing our skill of EE management.

JEEF has been conducting the Indonesia project , partnership with the government as well as the business sector, such as Keidanren Nature Conservation Fund.

2-2-1 First period (1998-2000): Leaders camp

Building a network and exchanging information with NGOs working on Indonesia's EE.

—Cooperation with Japanese and Indonesia NGOs

—Sponsored by Japanese government and Japanese business sector

— Invite young environmental leaders from the islands → 80 leaders from 50 organizations gathered

—One week camp → Indonesian young leaders set up their new organization

2-2-2 Second period (2001 ~) : Mini-hydropower station and environmental education

JEEF has been working to influence development assistance for infrastructure projects to support education and social processes. JEEF set up an NGO network in Indonesia and works with rural communities to develop mini-hydro plants.

—Education for Sustainable Future by constructing mini-hydro power station

—Design, construction, maintainance by the local people

—promote environmental education (in broad meaning) through these works

→34 KW mini-hydro power station

Elementary school ／Sanitary system ／Their own management system

3 the problem which now confront us

3-1 the lack of the comprehensive policy

Though NGO's activities has become very active recently, we cannot say they have enough power to raise the citizens' awareness toward the environmental issues.

The problem stems from the shortage of skilled personnel and the funds among NGOs.

Since EE includes various factors, Government has to implement the comprehensive policy.

EE should be taken up more as important part of the environmental policies in each country.

3-2 international cooperation , ESD

Now EE would be re-constructed to " Education for Sustainable Development".

As you know, "Education for Sustainable Development" becomes well-known conception through the WSSD .

* Para. 117-d of "Plan of Implementation" adopted on Sep.4th, reads: "Recommend to the United Nations General Assembly that it consider adopting a decade of education for sustainable development, starting in 2005".

To ensure the formal adoption of this recommendation by the General Assembly, Government and NGOs of Japan has already started its preparations.

Now we all should consider several concrete plans how to embody the ESD.

For example, I suggest to promote the implementation of the Clean Development Mechanism(CDM) as a new type of ODA. It has great potential to accomplish sustainable society. In return for financing sustainable development through technology transfers and capacity-building in the developing world, industrialized nations will be able to earn "credits".

The Government, NGOs and business sector should work together toward sustainable society.

Environmental Education in Asia

Shigeyuki Okajima
Japan Environmental Education Forum

1. Establishing the regional network in the Northeast Asia :TEEN
2. Supporting developing countries :Indonesia
3. Tasks

Japan Environmental Education Forum

Tokyo

- Staff 15 people
- Budget 3 million dollars / year

1. Environmental Education in Nature
2. Environmental Education in schools and towns
3. Supporting developing countries

Japan China Korea Project TEEN

Tripartite Environmental Education Network (China, Korea and Japan)

since 2000

supported by 3 Governments

URL

Activities

- Facilitating EE network among the 3 countries
- Raise awareness based upon a sense of environmental community
- Discussion through Workshop & Symposium

- Enhancing mutual understanding among Environmental NGOs
- Database project
- URL http://www.jeef.or.jp/ASIA

Ideas for TEEN

- Expanding the database
- Developing materials for EE
- Developing training programs for educator
- Developing curriculum on EE in schools

Indonesia Project

- Leaders camp
- Mini-hydropower station and environmental education

Leaders Camp

- Co-operation with Japanese and Indonesian NGOs
- Sponsored by Japanese government and Japanese economical organization
- Invite young environmental leaders from the islands
- One week camp

Result

- 80 leaders from 50 organizations gathered
- Each person received transportation accommodation and working fees
- Whole budget was 400,000 dollars
- Indonesian young leaders set up their new organization

Mini-hydro and Education for Sustainable Future

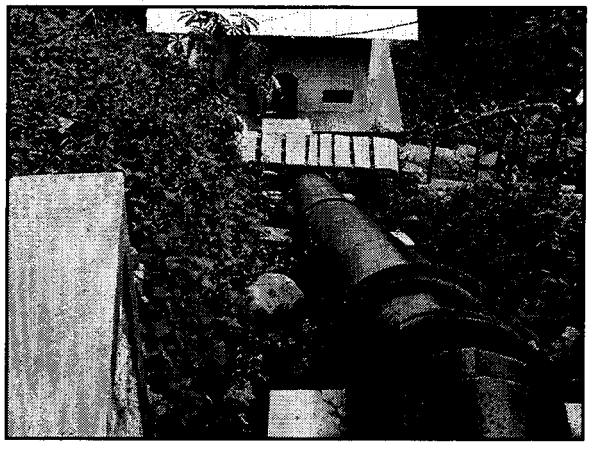
- Education for Sustainable Future by constructing mini-hydro power station
- Design, construction, maintenance and management by Local people
- To promote environ-mental education (in broad meaning) by these works
- Total budget is 150,000 dollars

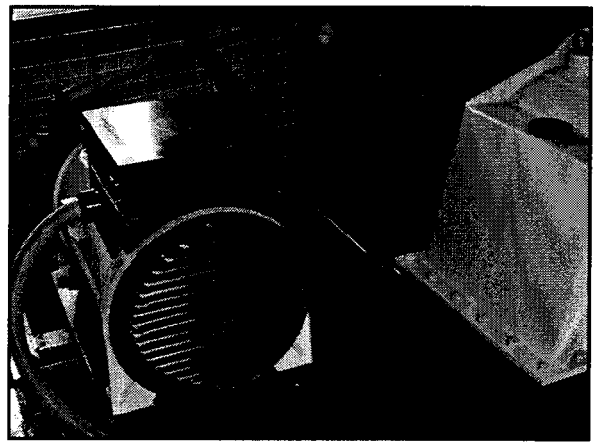
Result

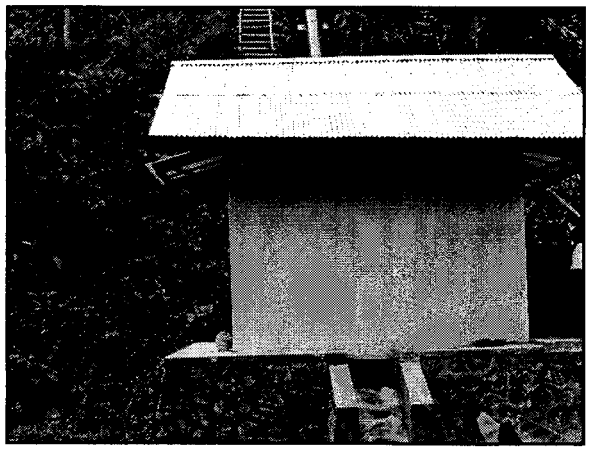
- Total budget was $150,000
  - Mini-hydro ...$75,000
  - Environmental education...$75,000
- 34kw mini-hydro power station
- Elementary school
- Sanitary system
- Their own management system

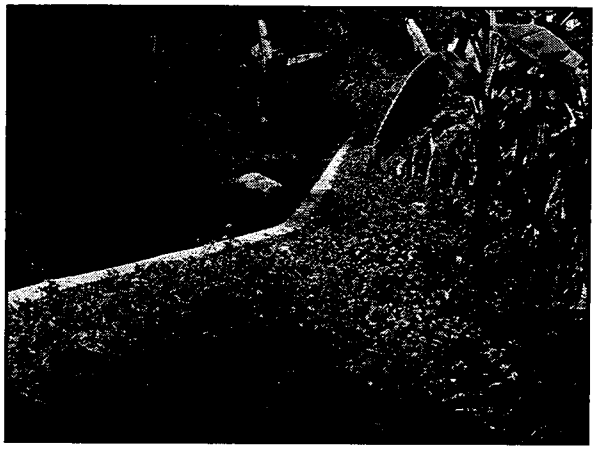
Role

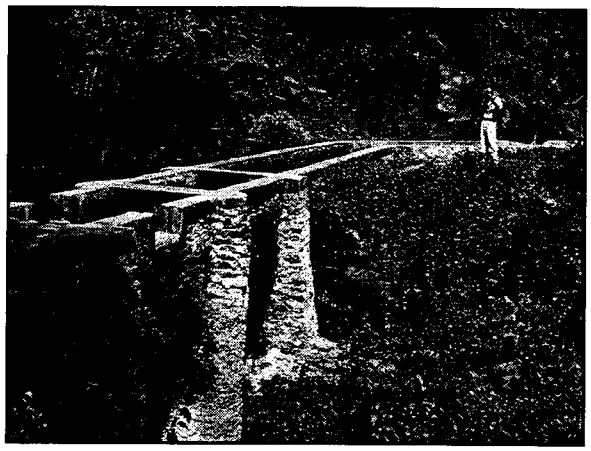
- Advising .....Japan JEEF
- Developing education system
  .....Indonesia RMI
- Constructing Power station
  .....Indonesia IBEKA











TASKS

Lack of the comprehensive policy

International cooperation

Comprehensive policy

Government
School
Media
NGO
Community
Business Society

Cooperation is the most important issue

International Cooperation

EE to ESD
(Education for Sustainable Development)

WSSD suggested
"Recommended to the United Nations General Assembly that it consider adopting of education for sustainable development, starting in 2005"

Idea from Japan

- Cooperate for **Decade of ESD**
- Set up NGO Network **--- Database**
- Use **ODA** and **CDM** system

Environmental Policies of the Incheon City and the NGOs' Roles in Improvement of the Public Awareness on the Environment

Kyu-Heung Lee
Incheon Metropolitan City
Republic of Korea

1. The need to improve public awareness

In Korea, a strong demand for a full-scale environmental management system emerged as a result of many harmful accidents caused by the environmental contamination during the 1970's and 80's. Many people were provoked by the urban environmental pollution resulting from the increase in population, integration of industries, and increase in use of the fossil energy, but also realized that they could not efficiently cope with urban pollution just by regulating the industrial emissions, as they did in the past. Also, one research revealed that the amount of pollution generated from the daily living outweighs the amount generated from the industries, and accordingly, it became necessary to enhance the people's awareness on the environment in order to minimize the amount of their daily wastes.

The following are three big outcomes generated from enhancing the people's awareness on the environment, which also play a significant role in resolving modern environmental issues.

First outcome is the reduced pollutant emissions by individuals. Secondly, many people would be encouraged to participate in the NGO programs, and through that, they will become leaders in guiding others to produce less wastes, and promoting a sustainable development by dealing with anti-environmental measures taken by the local governments. Thirdly, as a long term effect, people will always be aware of environmental issues whenever they're engaged in any kind of actions.

Many people say that the society we're living in today is an era of preventative and comprehensive environmental policies. This means that environmental issues should not only be resolved in terms of environmental perspective, but should be considered in relation to many other factors. For such preventative and comprehensive

environmental policies to be implemented successfully, maintaining a high public environmental awareness is necessary, in line with enforcing the NGO activities and pursuing an effective environmental education.

2. Environmental policies and the current status of the environmental management system in the Incheon Metropolitan City

Compared to the past, drastic improvements have been made in many areas of the environmental management in the Incheon City. Now the focus is on making Incheon a hub of the Northeast Asian region, as the most environmentally advanced and a clean city.

Ever since the past, the state of the environmental pollution in Incheon was very poor compared to other cities due to its unique geographical location. Since the city has been at the forefront at the time of the national drive toward economic growth, it still features housing zones within the industrial plants, with many outdated factories still operating. Also the port deals predominantly with bulk shipments, and most of the goods are transported through the trucks, creating a high risk of air pollution. Incheon is now in urgent need for restructuring through a industrial relocation programs citywide.

However, the reasons for improvements in the environmental status in Incheon even through the worst conditions can be contributed to the following factors.

First reason can be contributed to the improvements in the environmental policies and enhancement of the people's environmental awareness. Most of all, preventative environmental policies have been implemented and by providing an incentive in the environmental areas and by announcing the local government's firm measures on the environmental preservation, the awareness of the industries on the environmental protection has increased and the investments have also drastically expanded. Also, people's awareness and desire for clean environment have been enhanced through the active NGO campaigns and activities.

The second reason can be contributed to the increased investments in basic environmental facilities and pollution prevention areas, which brought about the enhancement of the environmental quality. Also, the local government measure, which

took in the distinctive regional characteristics into consideration, was another big contributing factor.

The third reason can be contributed to the computerization and information technology in the environmental sector, in preparation for the technological era. This led to the establishment of an environment-monitoring centers and the introduction of telemetric measuring systems(TMS). Also the database for emission-intensive industries were created, which enabled the authorities to closely monitor the potential polluters. Increased research, monitoring and logging of possible pollutants through the Internet and exclusive telephone lines called 'environmental telephone numbers' have considerably improved the effectiveness of the policies aimed at environmental preservation.

The most important factor to consider is that all these policies and management systems were executed for the wider participation of public. As the environmental issues became more broad and complex, a concept of the integrated environmental policy has been introduced and efforts have been made in every field and all levels of society. Part of these efforts have been performed by the NGOs, and the "Local Agenda 21" have been progressed at a steady level. Also, more and more people are joining various NGO activities, and their actions are becoming more active.

3. The era of participation

As a potential hub-city in the age of globalization, Incheon occupies the threshold of all the international business activities in the Northeast Asia. At this critical time, the creation of a clean and sustainable city is our challenge for the 21st century.

To create an effective environmental policy, NGOs participation in increasing the overall awareness for the environment is essential. At the same time, the introduction of the concepts embracing "harmony between development and tradition" and "sustainable development" is indispensable in the efforts for making a practical improvement in the environment.

Projects that invite joint participation of the public, the private sectors and local autonomous bodies should be developed and expanded. These policies will enable Incheon to succeed in implementing a successful environmental management system

with the active participation of th NGOs and efforts from the local industries and citizens.

Comments in the NEAC Meeting

Open Symposium: Environmental education and public environmental awareness

On this occasion, I would like to share with you the UNEP's activities on environmental education.

Environmental Education Action Plans (EEAPs) have been formulated for all sub-regions: SPREP for South Pacific, ASEAN for South Asia and SACEP for South Asia with the exception of Northeast Asia. The Ministerial Conference on Environment and Development's Regional action Programme (2000-2005) clearly identifies EEAP as one the effective tools for implementing the eight agreed regional priority areas of action. There is already substantial amount of EE related work on-going in Northeast Asia as present in this session.

Looking to all these ongoing initiatives, it would be ideal to consolidate and harmonize efforts in Northeast Asia, while also drawing upon similar exercises of the other sub-regions, in formulating a practical and achievable plan with clear target areas for formal education and non-formal education, capacity building, and information, networking and communication.

This is just for your information. Recently, a Letter of Agreement has been drawn up between SEPA of China and our Office to initiate this exercise. ROAP is also implementing the EEATAP project, which looks at documenting and disseminating best practices on environmental education, starting off initially with 6 pilot activities, which includes participation of Northeast Asian countries.

Under EEATAP, ROAP will organize a regional environmental education conference, possibly in late 2003 or early 2004, which will bring the different sub-regional EE action plans and best practices together. I hope the Northeast Asian EE Action Plan will be ready before then.

Session 2: Air quality improvement in urban area

Let me introduce UNEP's activities related to air pollution in the Asia and Pacific region for your information and reference.

The first is APMA (Air Pollution in the Megacities of Asia). This project was initiated in Nov. 2000 by UNEP and WHO in collaboration with KEI (Korea Environment Institute) and SEI (Stockholm Environment Institute). 21 large urban conurbations and megacities in Asia are selected. 8 cities are from this sub-region. Recently, **APMA** and **Clean Air Initiative-Asia** (joint project of WB and ADB) agreed to hold a *Regional Workshop on Better Air Quality in Asia (BAQ 2002),* Hongkong, 16-18 December 2002. Possible merger of the two initiatives could take place in July 2003.

The second is UNEP GEF PDF-A proposal. Our Office is in the process of finalizing PDF-A project leading to Medium Sized project on *"Energy and Environmental Efficiency Improvement of Urban Transport System in Selected Asian Countries"*. 6 cities: Dhaka, Shanghai, Calcutta, Kathmandu, Colombo and Chiang Mai

will be targeted in cooperation with 6 institutes from the region including the Energy Research Institute in Beijing.

I hope the outcomes of these projects would be beneficial to you in enhancing urban air pollution improvement in this sub-region.

Session 3: WSSD summit and environmental cooperation in Northeast Asia

Unfortunately, I was not able to attend WSSD because I am supposed to be in the office as Deputy when the Regional Director is out on mission. However, some materials on the evaluation of WSSD are available, so that I would like to cite from one of them as UNEP's official views on this matter.

The material I am looking at is the manuscript of Dr. Toepfer's speaking points on the outcomes of WSSD in the UNEP/CPR (Committee of Permanent Representatives) Meeting held on 10 September 2002. It says about the overall assessment of the outcomes like this: *"The WSSD, in many respects, was successful. Target-setting and timeframes were central to the negotiations. Many delegates and observers outlined successes in shifting the focus to the social and development agenda, and more particularly poverty eradication, sanitation and health. Action on chemicals and a potential benefit-sharing regime under the Convention on Biological Diversity also meet the UNGA challenge to identify areas where more effort is needed."* As regards the challenges ahead & implementation for UNEP, it says, *"The outcomes of the WSSD have generated concrete challenges to be addressed by UNEP. The implementation plan contains a number of recommendations which need to be integrated in UNEP's programme of work"* So, we work hard on this now.

By the way, I was impressed by DED (Deputy Executive Director of UNEP, Mr. Kakakhel)'s metaphor on the evaluation of WSSD. Last October DED made an official visit to Japan and I accompanied him. When he made a media briefing, he mentioned about the following things: Rio Summit was a kind of newly married couple. They were fresh in mind and made a lot of commitments. On the other hand, Johannesburg Summit is a kind of old couple 10 years after marriage. What is important for them is not to make another new commitments, but to implement the previous commitments. Probably, this metaphor occurs to your mind.

< Session 1> Improvement of water environment

Joint Water Quality Study to Determine the Cause of Pollution on the Upstream Portion of China's Liaohe River

Northwest Pacific Region Environmental Cooperation Center
Hajime Shirayama (shirayama@npec.or.jp)

The Liaohe River is one of China's three most polluted rivers, and a great amount of money is being spent on its remediation. Our study involved four years of grassroots technical cooperation between two local governments: Toyama Prefecture in Japan, and Liaoning Province in China. We found that the main cause of pollution is soil runoff along the West Liaohe River, which is the upstream portion, and we proposed six ways to clean up the river, including afforestation projects, and improvement of revetments that prevent soil runoff and are sensitive to riparian vegetation and natural scenery. We believe that these proposals are important for the restoration of not only the Liaohe River, but also other rivers.

1. Project Description: Participants, Achievement, and Effects

The purpose of our project, which ran about for four years from July 1998 to March 2002, was to scientifically determine the cause of pollution in the upstream portion of the Liaohe River, have our findings incorporated into Liaoning Province's environmental administration, and offer some concrete proposals to remediate the river. Over this period both sides worked steadily and in good faith using three main elements: (1) Sending experts from Toyama Prefecture to Liaoning Province, (2) attendance by representatives from Liaoning Province at meetings held in Toyama Prefecture to discuss the study results, and (3) acceptance of technical trainees from Liaoning Province into the Toyama Prefectural Environmental Science Research Center.

(1) Number of participants: 47

- Toyama Prefecture: 21 participants (eight from the Northwest Pacific Region Environmental Cooperation Center, six from the Toyama Prefectural Environmental Science Research Center, six from the Toyama Prefecture Civic Affairs and Environment Department, and one from Toyama University)
- Liaoning Province: 19 participants (11 from the Liaoning Provincial Environmental Monitoring Center, five from the Liaoning Provinceial Environmental Protection Bureau, three from the Tieling City Environmental Monitoring Center and other agencies)
- Others: seven participants (two from the Japan International Cooperation Agency (JICA), five interpreters)

(2) Achievement

(a) Researchers built close friendship and a relationship of firm trust through their many frank and sincere discussions.
(b) Personnel from both countries cooperated in preparing a report ("Report on the Results of a Joint Study on the Investigation of Water Quality on the Upstream Portion of the Liaohe River," in Japanese and Chinese versions) describing the results of the four years of research.
(c) We proposed six specific ways to clean up the river to have our findings incorporated into Liaoning Province's Environmental Bureau .

(d) We made a major contribution to the development of personnel skill by accepting six technical trainees over three years.
(e) Fifteen experts were sent to China to provide suitable technical guidance, and we provided the needed equipment.

(3) Effects

(a) It was seen that our proposed clean up solutions could also be used to clean up other polluted rivers in China.
(b) Thanks to the achievements of our four years of activity, it was also possible to begin a new study at the mouth of the Liaohe River in 2002.
(c) Our study induced authorities to enhance the facilities of the Liaoning Provincial Environmental Monitoring Center. This included major restoration work on buildings, equipping of laboratories, and the improvement of analytical instruments.
(d) Researchers gained substantial motivation for work and research.
(e) The study results were released mainly in Liaoning Province, where they significantly benefited the provincial citizens' environmental education concerning the Liaohe River.

2. The Start, Unfolding, and Future Direction of Our Activities

(1) Start of Activities

Mitigating pollution and conserving the environment are urgent tasks in China, whose Liaohe River is one of the country's three worst polluted (the other two are the Haihe and Huaihe). Liaoning Province was faced with the task of determining the characteristics of the river's water quality, which worsens year by year, and the reasons for that decline. Geographically, Toyama Prefecture has a long history of trade and interchange with the Russian coastal area, the Korean Peninsula, and China. Even in modern times there has been a variety of interchange and cooperation, with cooperation in the environmental issues considered especially important. Because Liaoning Province has a friendship arrangement with Toyama Prefecture, since 1985 the prefecture has pursued its own program of cooperation by accepting and training technical trainees in this field. Since 1998, the Northwest Pacific Region Environmental Cooperation Center has performed such studies and research under a commission from the prefectural government.

(2) How Our Activities Proceeded

Toyama Prefecture and Liaoning Province, which had announced they would cooperate in solving the problem of Liaohe River pollution, proceeded with a joint Japan–China project for environmental protection that involved working together to study water pollution on the upper reaches of the river and to determine its causes. Consultations were held while working. The Toyama Prefectural Environmental Science Research Center and the Liaoning Provincial Environmental Monitoring Center assumed responsibility for conducting the research. During the four-year period we studied the basic state of the natural and social environments in the upstream area of the Liaohe River; regularly sampled the river's bottom sediments and water, the bottom sediments and water of urban effluent channels in the river's upstream area, and soil along the river's upstream portion; and performed analyses that included COD, BOD, TOC, TN, TP, heavy metals, organic matter, and ignition loss. Results yielded by scientifically analyzing the many valuable data obtained allowed us to determine the characteristics

of water pollution on the upper portion of the Liaohe River. Through this study and research, the many researchers from both countries who were involved in the project carried on vigorous and candid discussions in the "study result discussion meetings." Thanks to these discussions, participants from both countries were able to arrive at the same basic perception of the results gained from research on water pollution on the upstream portion of the Liaohe River.

(3) Future Direction

The Northwest Pacific Region Environmental Cooperation Center is working on preparations to implement UNEP's North-West Pacific Action Plan. Its main purpose is to develop new monitoring technologies (remote sensing and biological effect) for marine conservation in areas such as the Sea of Japan and the Yellow Sea. To accomplish this, in 2002 we started Phase II, which involves testing water quality at the mouths of the Liaohe River and other rivers for the purpose of ascertaining the pollution load from land, and estimating the impact on Liaodong Bay, the Bohai Sea, and other marine areas. This will determine the state of pollution at river mouths, and also provide a foothold for the next step, which is studying marine pollution in Liaodong Bay, the Bohai Sea, and other areas.

3. Other Matters (Funding Amount, Procurement Methods, and Television Appearance)

(1) Funding Amount and Procurement Methods

Funds for our activities were obtained from Toyama Prefecture and JICA. Thirty percent of our approximately ¥10 million annual funding is project commissioning fees from Toyama Prefecture, and 70% comes from JICA (Project Funding for Citizen-participatory Technical Trainee Acceptance, and Project Funding for Short-term Dispatching of Experts).

(2) Television Appearance

On Saturday, September 28, 2002 from 7:30 to 9:50 pm, the Japan Broadcasting System (NHK) broadcast a News Special on the NHK Sogo Television Channel called "China Changes in the 21st Century: How Should We Get Along with China? —Three Decades Since Japan's Normalization of Relations with China." The program's second part, "From Friendship to True Partnership," described our study and research as an example of environmental cooperation between local governments. The program observed that Japan and China have arrived at a new stage, moving from "government-level exchanges" to "broad-based, pluralistic exchanges at the grassroots level," and also said that our efforts suggested a concrete way to address this problem.

中国遼河上流部の汚濁原因解明に関する水質共同調査研究

財団法人　環日本海環境協力センター
Northwest Pacific Region Environmental Cooperation Center
白山　肇
Hajime Shirayama (shirayama@npec.or.jp)

遼河は中国における三大汚濁河川の一つであり、現在その浄化対策に巨額が投じられている。本調査研究は、両国の自治体である富山県と遼寧省との間の４年間にわたる草の根技術協力である。研究の結果、汚濁の主要因を上流部の西遼河からの土砂流出であることを解明し、浄化対策として、「植林事業の推進」、「川辺の植生・自然景観に配慮した土砂流出防止のための護岸工事の推進」等六つを提案した。この提案は、遼河のみならず他の河川の修復に対しても重要であると認識している。

１．具体的な活動状況 (参加者数、成果と影響)

このプロジェクトは、遼河上流部の汚濁原因を科学的に解明し、遼寧省の環境行政に反映させ、具体的な汚濁浄化対策を提言することを目的に1998年7月から2002年3月までの約４年間実施された。この期間に、①富山県から遼寧省への専門家派遣、②遼寧省から富山県で開催する調査結果検討会への出席、③富山県環境科学センターにおける技術研修員の受入れを三本柱として、相互に誠実に、そして地道に実行してきた。

(1). 参加者数：47 名

・富山県；21 名（(財)環日本海環境協力センター:8 名、富山県環境科学センター:6 名、富山県生活環境部:6 名、富山大学:1 名）、

・遼寧省；19 名（遼寧省環境監測センター:11 名、遼寧省環境保護局:5 名、鉄嶺市環境監測センター等:3 名）

・その他；7 名 (国際協力事業団 2 名、通訳 5 名)

(2). 成果

(a) 研究者間の率直で誠実な討議の積み重ねを通して、日中両国の親愛な友情を形成し、強固な信頼関係を構築した。

(b) 4 年間の研究結果を報告書(遼河上流域の水質調査に関する共同調査研究結果報告書)として日中協力(日本語版、中国語版)して作成した。

(c) 遼寧省の環境行政に反映させるため、6 つの具体的な河川浄化対策を提言した。

(d) 3 年間にわたり、6 人の技術研修員を受入れ、人材育成に大いに寄与した。

(e) 15 人の専門家を派遣し、適切な技術指導を実施するとともに、必要な機材を提供した。

(3). 影響

(a) 浄化対策提言は、他の中国の汚濁河川の浄化に対しても有効であることが認識された。

(b) 4 年間の活動の成果を受けて、2002 年度から新たに遼河河口調査として開始できた。

(c) この調査研究が引き金となり、遼寧省環境監測センターの施設の機能が強化された。具体的には、建物の大幅な修復、実験室の整備、各種分析機器の強化等である。

(d) 研究者の勤労・研究意欲が大幅に向上した。

(e) この調査研究が省内を中心に紹介され、省民の遼河に関する環境教育に大きく寄与した。

２．活動の発端、経過、今後の展開

(1) 活動の発端

公害防止・環境保全が急務となっている中国で、遼河は三大汚濁河川（他に海河、淮河）の１つであり、年々悪化する水質の特性とその原因解明が懸案となっていた。富山県は地理的にロシア沿岸地区、朝鮮半島、中国と長い交易・交流の歴史を持っている。現代においても多様な交流・協力を進めており、特に環境分野の協力を重視してきた。遼寧省は県の友好提携先であることから、1985 年から県独自にこの分野で技術研修員を受入れて人材育成に協力してきた。1998 年からは、(財)環日本海環境協力センターが県の委託を受けてこの調査・研究に取り組んだ。

(2) 経過

遼河の水質汚染問題の解決に協力を表明した富山県と遼寧省は、協議しながら共同で遼河上流水質汚染の調査と原因の解明を行うことにより、両国の環境保護に関する共同プロジェクトを推進した。実施する研究実施機関として、富山県環境科学センター及び遼寧省環境監測センターが担当した。この 4 年間に、遼河上流地域の自然環境や社会環境の基本的な状況を調査し、定期的に遼河の水質と底質、遼河上流地域の都市排水路の水質と底質、及び遼河上流地域周辺の土壌を採取し、ＣＯＤ、ＢＯＤ、ＴＯＣ、ＴＮ、ＴＰ及び重金属、有機質、強熱減量などを分析した。得られた貴重な多くの測定データを科学的に解析した結果、遼河上流域の水質汚染の特徴を明らかにすることができた。また、この調査・研究を通して、毎年実施した「調査結果に関する技術検討会」において、両国で係わった多くの研究者が活発で率直な議論を交換した。その結果、遼河上流域の水質汚染に関する研究結果について、両国は基本的な認識を一致させることができた。

(3) 今後の展開

(財)環日本海環境協力センターは、国連環境計画の北西太平洋地域海行動計画を実施するための準備作業を進めている。主目的は、日本海や黄海等の海洋保全のための新しいモニタリング技術（リモートセンシングを利用した赤潮や海洋生物によるモニタリング）を開発することである。こうした課題を実現するため、陸域からの汚濁負荷量を把握し遼東湾・渤海等への海域影響を推測することを目標に、遼河及びその他河川河口の水質調査を 2002 年度から PhaseⅡとして開始した。これは、河口での水質汚濁の実態を明らかにするとともに、次のステップである遼東湾・渤海といった海洋汚染調査への足がかりとする。

３．その他 (活動資金の規模と調達方法等)

(1) 活動資金の規模と調達方法

富山県と国際協力事業団（JICA）から活動資金を調達した。年間の活動資金約 1,000 万円のうち、3 割が富山県からの事業委託費、7 割が JICA（国民参加型技術研修員受入れ事業費及び短期専門家派遣事業費）からである。

(2) その他

2002 年 9 月 28 日(土) 19:30～21:50 まで、NHK の総合テレビで NHK 報道スペシャル「21 世紀・変貌する中国－中国とどう向き合うか～日中国交正常化 30 年」の第 2 部「友好から真のパートナーへ」で自治体間の環境協力事例に、本調査・研究が紹介された。その中で、これまでの「国どうしの交流」から「草の根レベルの巾広い多元的な交流」へと新たな段階に入っていることが指摘された。そして、この課題の具体的な進め方（日中間の新しい交流）のヒントになる事例として紹介された。

Joint Water Quality Study to Determine the Cause of Pollution on the Upstream Portion of China's Liaohe River

Northwest Pacific Region Environmental Cooperation Center
Hajime Shirayama (shirayama@npec.or.jp)

NPEC

(Northwest Pacific Region Environmental Cooperation Center)

The Objective of Establishment

NPEC was established to promote the preservation of marine environment of the Sea of Japan and the Yellow Sea through regional cooperation (Japan, People's Republic of China, Republic of Korea and Russian Federation) as a non-profit organization on April 30, 1997.

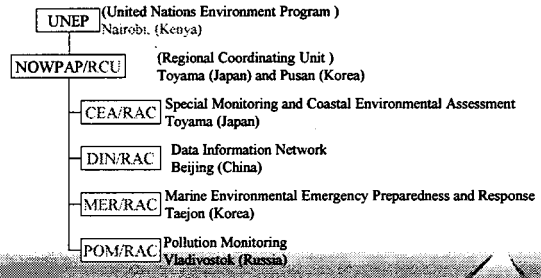
Projects

(a) NOWPAP activities

NPEC was designated in 1999 as the Special Monitoring and Coastal Environmental Assessment Regional Activity Center (CEA／RAC) of the Northwest Pacific Action Plan (NOWPAP).

NPEC as CEA/RAC is responsible for the development of new monitoring techniques such as remote sensing and bioassay.

Organization of NOWPAP



(b) Other activities

- Projects to promote Researches relevant to Environmental Protection
- Projects to promote Environmental Interaction
- Projects to support measures for Environmental Preservation

Introduction

The Liaohe River is one of China's three most polluted rivers, and a great amount of money is being spent on its remediation. Our study involved four years of grassroots technical cooperation between two local governments: Toyama Prefecture in Japan, and Liaoning Province in China. We found that the main cause of pollution is soil runoff along the West Liaohe River, which is the upstream portion, and we proposed six ways to clean up the river. We believe that these proposals are important for the restoration of not only the Liaohe River, but also other rivers.

Over this period both sides worked steadily and in good faith using three main elements: (1) Sending experts from Toyama Prefecture to Liaoning Province, (2) attendance by representatives from Liaoning Province at meetings held in Toyama Prefecture to discuss the study results, and (3) acceptance of technical trainees from Liaoning Province into the Toyama Prefectural Environmental Science Research Center.

2. The Start, Unfolding, and Future Direction of Our Activities

(1) Start of Activities

Liaohe River is one of the country's three worst polluted (the other two are the Haihe and Huaihe). Liaoning Province was faced with the task of determining the characteristics of the river's water quality, which worsens year by year, and the reasons for that decline. Geographically, Toyama Prefecture has a long history of trade and interchange with the Russian coastal area, the Korean Peninsula, and China.

Even in modern times there has been a variety of interchange and cooperation, with cooperation in the environmental issues considered especially important. Because Liaoning Province has a friendship arrangement with Toyama Prefecture, since 1985 the prefecture has pursued its own program of cooperation by accepting and training technical trainees in this field. Since 1998, the Northwest Pacific Region Environmental Cooperation Center has performed such studies and research under a commission from the prefectural government.

(2) How Our Activities Proceeded

Toyama Prefecture and Liaoning Province, which had announced they would cooperate in solving the problem of Liaohe River pollution, proceeded with a joint Japan–China project for environmental protection that involved working together to study water pollution on the upper reaches of the river and to determine its causes. The Toyama Prefectural Environmental Science Research Center and the Liaoning Provincial Environmental Monitoring Center assumed responsibility for conducting the research.

During the four-year period we studied the basic state of the natural and social environments in the upstream area of the Liaohe River; regularly sampled the river's bottom sediments and water, the bottom sediments and water of urban effluent channels in the river's upstream area, and soil along the river's upstream portion; and performed analyses that included COD, BOD, TOC, TN, TP, heavy metals, organic matter, and ignition loss. Results yielded by scientifically analyzing the many valuable data obtained allowed us to determine the characteristics of water pollution on the upper portion of the Liaohe River.

Through this study and research, the many researchers from both countries who were involved in the project carried on vigorous and candid discussions in the "study result discussion meetings." Thanks to these discussions, participants from both countries were able to arrive at the same basic perception of the results gained from research on water pollution on the upstream portion of the Liaohe River.

Proposal for river purifying measure

1 Prevention measure toward soil outflow

A mass soil outflows from the river upstream due to flood cause the rise of a riverbed and exert a big influence on SS and COD which are water pollution items. Especially, at the result of this survey, an outflow quantity from West Liaohe river showed a high value of it, nearly 80 percents

(1) Promotion of an afforestation project

The afforestation to prevent from soil outflow has already been carried out in Liaohe river basin. However, it should be carried out immediately with a more effective planning.

(2) Bank protection works

Because now it is pointed out as a reconsideration subject that it has not paid any attention to environmental view and ecological system around rivers, the bank protection work should be implemented to maintain the beauty of Chinese view and care creatures/vegetations which lives on natural stones or rocks, without using concrete.

2 Household wastewater

At present, urban sewage water treatment facilities are being built in the cities like Shenyang. But it is still not enough. A financing for construction and running costs is important and it is also important to take beneficiary-payment principle into a policy in order to maintain/manage the facilities. Besides, it is necessary to plan from both sides of a technical subject and cost to make treatment technologies be high level (denitrification/dephosphorization). Also, it is an urgent work to train many engineers who are able to do routine managements of facilities properly.

3 Factory effluent

It is an urgent task to find and carry out the business which suits in Chinese system. For example, a quantitative and qualitative grasp of factory effluent arising from the differences of each industrial structure, a selection/size of appropriate treatment methods, a technology for maintaining/managing the facilities, a permanent stationing of person who collects and analyzes effluent daily, an establishment of the environmental management division that organizes them entirely.

4 Survey on wastewater of agriculture/stock farming

This time, it was not able to carry out the survey on agriculture/stock farming due to its size and costs.

In order to grasp the water quality environment in Liaohe river comprehensively, it is necessary to research wastewater from agricultural and stock farming industry that use water a lot.

5 Strengthening of surveillance

(1) Reinforcement of Environmental Monitoring Survey

The data by the monitoring is collected and analyzed, and then it is ideal to use it effectively and inductively for reflecting to the Administration.

(2) Reinforcement of Factory on-the-spot inspection

In Japan, the state examination system of a "prevention-of-pollution administrator" was provided in 1973. And it is obligated that each factory must have person who has passed the exam based on the law. Moreover, it is recommended that each local government's staff that actually perform a factory inspection have this qualification and they can offer an appropriate technical guidance to factories.

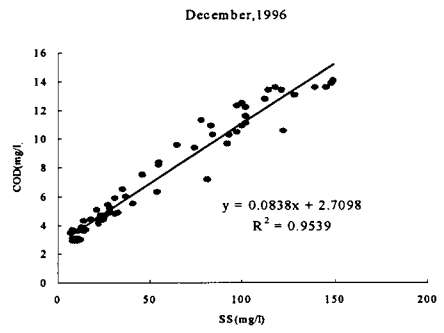
6 Spread of environmental education

The environmental education including "Volunteer works" has already been implemented through elementary school to University in China. As for Liaohe river, in accordance with World Environment Day, one million signature activity of "Save Liaohe river by our love" was carried out in 8 cities and 3 prefectures along the river.

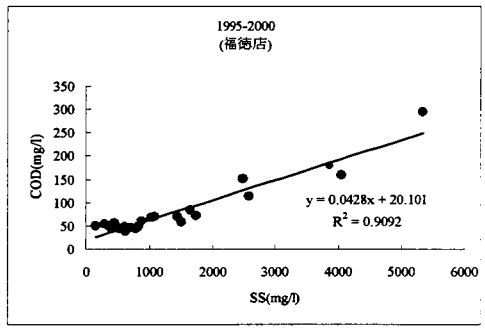
It is expected for the people living there to perform activities for preventing from throwing garbage into the river.

(3) Future Direction

The Northwest Pacific Region Environmental Cooperation Center is working on preparations to implement UNEP's North-West Pacific Action Plan. Its main purpose is to develop new monitoring technologies (remote sensing and biological effect) for marine conservation in areas such as the Sea of Japan and the Yellow Sea. To accomplish this, in 2002 we started Phase II, which involves testing water quality at the mouths of the Liaohe River and other rivers for the purpose of ascertaining the pollution load from land, and estimating the impact on Liaodong Bay, the Bohai Sea, and other marine areas. This will determine the state of pollution at river mouths, and also provide a foothold for the next step, which is studying marine pollution in Liaodong Bay, the Bohai Sea, and other areas.



Correlation between SS and COD (Oyabe River in Toyama)



Correlation between SS and COD (Liaohe River in China)

WATER QUALITY MANAGEMENT AND WATER SUPPLY POLICY IN KOREA

Yong-Sung Park
Deputy Director
Water Quality Policy Division
Ministry of Environment, Republic of Korea

Part I. Water Management Policy in Korea Based on Watershed Management

Introduction

For the past three decades, Korea government has focused on increasing the capacity of water resources in order to keep up with the household, industrial, and agricultural water demand. However, the consumption level has overwhelmed the expansion of public water supply, mainly achieved by constructing dams and reservoirs. Moreover, the expansion has almost reached the limit due to the difficulties of finding dam sites and the concerns over the negative effects of ecosystem.

Korea sustained the development priority policy rather than preservation from 60s to 80s. For the several decades, lots of regions have urbanized and industrialized rapidly, while investment for water preservation has not sufficient. As a result, water quality has been deteriorated in many areas. In Korea, two thirds of annual precipitation occurs during summer, and spring has usually severe draught. As flow is small during dry season, rivers and reservoirs are easily affected by pollution.

In the 1990s, several water pollution accidents happened, for example, the phenol spill from an electronic plant in the Nakdong River basin. Under the situation, an effective strategy has been needed for the preservation of water quality. Unfortunately, the federal government and local governments do not always agree on the goals; local government is generally focused on the community's economic development rather

than the preservation and sound management of the water environment. Hence, it is difficult to propose an integrated approach to water management. Particularly, the disputes on the cause and responsibility of the water pollution between the upstream and downstream residents have made the situation more complicated.

The Current Water Management Status

For the convenient management of all the water bodies, 4 major watersheds and subsequent 11 small catchments has been set up since 1991, as shown in Table 1 and Figure 1. The 4 major watersheds are as follows: the Han River watershed, the Nakdong River watershed, the Geum River watershed, and the Youngsan River watershed.

General Status

The Han River watershed includes the Han River, the South Han River, the North Han River, the Kongan River, and other streams. Total basin area is 26,018km^2, and the annual precipitation is 1,286mm. Total amount of the river's water resource is about 33.5 billion tons per year. Two large dams, Soyang and Chungjoo Multi-purpose Dams, are located at the upper stream of Han River for the purpose of proper control of water flow. The population of the Han River watershed is estimated 23.5 million, which is about 50% of the total population in Korea.

Table 1 General status of 4 major watersheds in Korea

Category	Han river	Nakdong river	Geum river	Youngsan river
Main stream length(km)	481.7	521.5	395.9	136.0
Basin area(km^2)	26,018	23,817	9,810	3,371
Annual precipitation(mm)	1,286	1,137	1,268	1,400
Population (x10,000)	2,349	1,316	579	426
Live stock(x10,000)	197	360	427	282
Emission site	17,999	12,058	6,089	3,793

Sewage treatment ratio(%)	87.5	60.6	62.1	75.2
Major water supply source	Paldang reservoir, Chamsil water Supply system	Mulgum, Maeri intake	Daechung reservoir	Juam reservoir

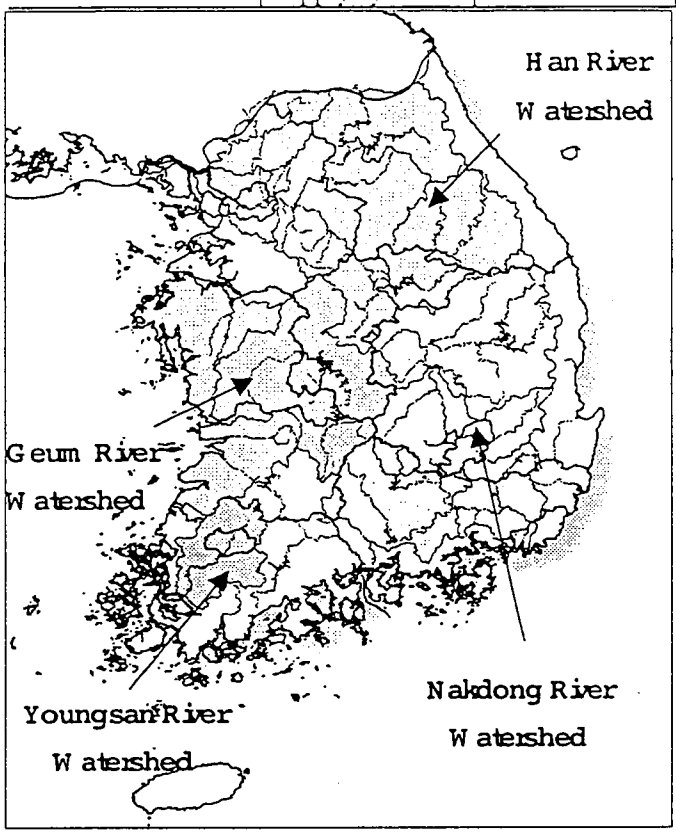


Figure 1- Location of 4 major watersheds in Korea

The majority of people lives in Seoul and Kyunggi province, the lower stream of Paldang Dam, and only 9.1% of people in the Han River watershed live at the upper stream which are mainly used as source waters for water supply. At the upper stream of Han River, 1.5 million tons of wastewater are generated daily as of 1997. The percentage of households, industrial and livestock wastewater is 81.3, 17.1, and 1.6%, respectively.

Two main sources of water supply for the region are Paldang Reservoir and Chamsil Underwater Dam. The capacities of water supply for these two sources have 7.7 and 6.3 million tons per day, respectively. 31% of the water supply is used for households, 12% for industries, 26% for agriculture, and the remaining is used for maintaining water quality preservation and other uses.

The Nakdong River originates from the Taeback mountains. The Geumho River joins at midstream, and Hwang River and Nam River at the lower stream. The total river

basin area is 23,817km^2, and the population in this watershed is estimated 13.2 million. Since lots of people live in the midstream of the Nakdong River, the water quality at mid- and lower stream had not been properly controlled. Even though wastewater generation, 3,364 thousand tons per day in the Nakdong River wastewater, is less than the half in the Han River watershed, the degree of pollution in this watershed is relatively high due to the pollution concentrated at the midstream. The wastewater is comprised of 80%, 19%, and 1% for households, industrial and livestock wastewater, respectively. There are five multi-purpose dams in the Nakdong River watershed, including Andong Dam and Ymha Dam, the total capacity is less than that of Soyang Dam in the Han River. In addition, due to less precipitation at the upper stream than the lower stream region of the river, it is often not sufficient to meet the water supply demand, especially during a dry season.

The Geum River originates from Jangsu County in Cholla-buk-do, runs through Taejeon, Gongju, and Buyeo, and finally flows into the Yellow Sea. The total river basin area is 9,810Km^2. The population in this watershed is about 5.8 million, one fourth of the population in the Han River watershed. Daechung dam is the major source of drinking water source for Daejon and Chungchung province, supplying 0.98 million tons per day. Water quality of this watershed is considered to be adequate for drinking water. The wastewater is generated 1,345 thousand tons per day as of 1998, which is only 18% of the wastewater of Han River watershed. However, due to the distributive characteristics of polluting sources, water quality at the mid stream gets deteriorated. 88% of wastewater is from households, 10.5% from industries, and 1.5% from livestocks. The water supply system in this watershed provides enough amount of water (6.4 billion tons per year) for the use (5.8 billion tons per year) - 10.3% is utilized for households, 8.8% for industries, 52.1% for agriculture, and 17.9% for maintaining the water quality and other uses.

The Youngsan River originates from Damyang County in Cholla-nam-do, and runs

through Gwangju and Naju. The total basin area covers 3,371km^2. The population in this watershed is estimated 4.3 million, and most of them live in upper and mid stream region. Thus, the water quality for the lower stream has been adversely affected. 86% of the wastewater in this watershed (764 thousand tons per day) is generated from households, 12.7% from industry, and 1.3% from livestock. This watershed is characterized to be agricultural regions, thus, there are a number of agricultural dams instead of water supply or multipurpose dams. The total water demand is 4.8 billion tons per year; 8.3% is for the use of households, 5.2% for industries, 76% for agriculture, and 10.5% for irrigation or the river maintenance.

Status of Water Source and Water Pollution

Even though the mean annual precipitation in Korea (1,274mm) is 1.3 times higher than that of the world, our mean annual precipitation per capita is only 2,900 tons due to the higher population density, compared with 26,800 tons for the world. From one year to another the annual rainfall fluctuates from 770 mm to 1,640 mm. Moreover, two thirds of annual precipitation intensively occurs intensively in a runoff season (from June to September), thus flood frequently bring on lots of damages. On the other hand, insufficient amount of precipitation during a dry season has resulted in a rapid decrease in the water level of river and lack of water supply. In addition, the coefficients of river regime, which represents the ratio of the maximum flow to the minimum flow, varies from 300 to 700, while it ranges normally from 10 to 30 in Europe.

Total amount of annual water consumption is estimated 30.1 billion tons which accounts for 24 % of Korea's total rainfall. Agricultural use represents 49.5% of the total, households 20.6 %, river maintenance 21.3%, and industries 8.6 %. Surface water from river, reservoir and dam are main sources of water supplies, accounts for 91% of all water sources.

In the case of groundwater, which is estimated 1.54 trillion tons, the maximum available groundwater is about 13.5 billion tons, but only 2.6 billion tons(20% of available amounts) have been developed and utilized.

At present, no area is encountered with lack of water supply except for the driest season. However, considering the current trend of water use, it is obvious that all demands will not be met after 2006 for the present facilities. In order to meet the increasing water demand, Korea government plans to develop new water resources along with constructing seven new dams until 2011.

As shown in Table 2, the reserved ratio of water use for four large watersheds in 2011 is expected to be 14.3% for the Han River, 3.6% for the Nakdong River, 5.9% for the Geum River, and 7.8% for the Youngsan River.

Table 2 Status of water demand / supply in 4 major watersheds

(unit: million ton/yr)

Category		Goal year			
		1994	2001	2006	2011
Nation	-Water demand	30,144	33,662	35,014	36,673
	-Water supply	32,463	34,364	34,607	34,662
	(Dam under construction)[1]	(-)	(1,891)	(2,131)	(2,131)
	-Δ Deficit	2,319	702	Δ 407	Δ 2,011
	-Plan of dam construction[2]		700	4,140	5,140
Han River	-Water demand	10,889	12,266	12,574	13,177
	-Water supply	11,815	12,009	12,053	12,057
	(Dam under construction)	(-)	(112)	(112)	(112)
	-Δ Deficit	926	Δ 257	Δ 521	Δ 1,120
	-Plan of dam construction		430	2,620	3,000
Nakdong River	-Water demand	8,569	9,496	9,974	10,562
	-Water supply	8,969	9,500	9,520	9,535
	(Dam under construction)	(-)	(575)	(575)	(575)
	-Δ Deficit	400	4	Δ 454	Δ 1,027
	-Plan of dam construction			810	1,410
Geum River	-Water demand	5,831	6,552	6,988	7,361
	-Water supply	6,448	7,162	7,328	7,355
	(Dam under construction)	(-)	(757)	(997)	(997)
	-Δ Deficit	617	610	340	Δ 6
	-Plan of dam construction			440	440

Youngsan River	-Water demand	4,855	5,348	5,478	5,573
	-Water supply	5,231	5,693	5,706	5,715
	(Dam under construction)	(-)	(447)	(447)	(447)
	-Δ Deficit	376	345	228	142
	-Plan of dam construction		270	270	290

Note) [1] Water provided by dam under construction

[2] Water supply from plan for dam construction in the future

Figure 2 illustrates the amount of wastewater generated from households, industries, livestocks, and non-point sources, and the biochemical oxygen demand (BOD) loads ratios in the four watersheds as of 1997. The total amount of wastewater is estimated 12,826 thousand tons per day, equivalent to 3,563 tons per day of BOD loads, and 83% is from households. Households and industries represent 52% and 35% of the total BOD loads, respectively. It is noted that more than half of the total wastewater is generated in the Han River watershed. The Nakdong River watershed represents 26% of total wastewater generated and 30% of the total BOD loading rate. The major pollutant source is found to be wastewater from households in the former watershed, and from industries in the latter [Fig. 2 (b) and (c)]. In case of the Youngsan River watershed, the percentage of livestock wastewater in terms of BOD loading rate (22%) is relatively high, compared to other watersheds [Fig. 2 (e)].

The quality of surface waters is periodicaly monitored at more than 1800 stations. Mean annual levels of BOD in the four major rivers suggest reasonably good water quality, but there are significant seasonal fluctuations. In upper stream, mean BOD levels are generally less than 1.5 mg/L. In lower stream, mean BOD levels range 2.0 to 4.0mg/L, but it reaches more than 6.0 mg/L in a dry season. However, toxic substances and heavy metals are not detected yet in most of water quality monitoring stations.

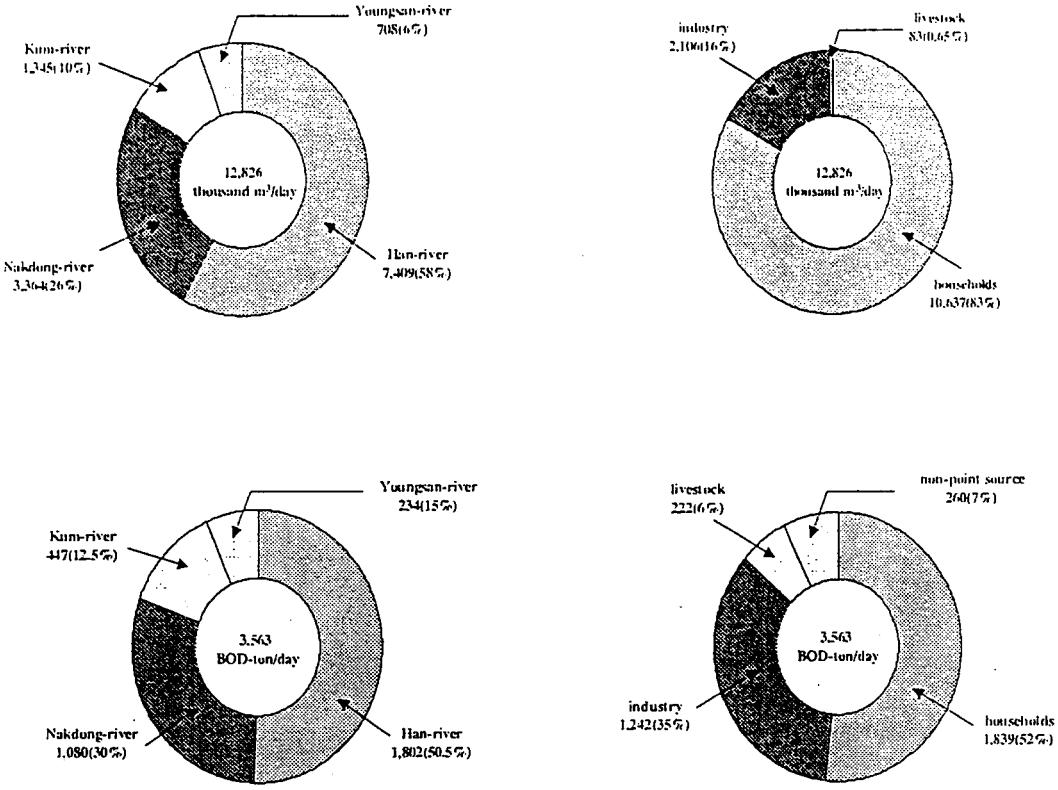
Figure 3 shows the change of mean annual BOD concentrations in four rivers. Since 1990, the water quality in the Paldang Reservoir, supplying drinking water to 20 million people, has been grade II or better. In recent years, the BOD concentration

has increased to 1.5 mg/L, which demonstrates that the old strategy for water management is less effective than it was expected.

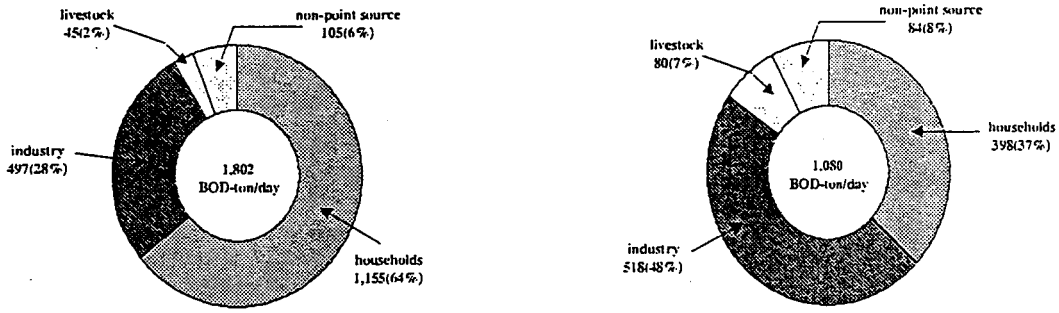
On the other hand, the water quality of the Nakdong River has apparently been improved. The reason is that all the wastewater from Daegu city are adequately treated by the four wastewater treatment facilities. However, for all these efforts, the Nakdong River has shown the worst water quality among drinking water resources.

The water quality in the Geum River is better than that of the Nakdong River. Since 1998, the water quality of Daechung Reservoir has been in Grade I level because water pollution sources such as households and industries have not been placed nearby. Furthermore, it is expected that the total pollution loads to the Daechung Reservoir will not excessively increase in the future.

The Youngsan River is no longer used as the drinking water source of Mokpo city. The pollution level is the highest among the four rivers. It has the shortest length by 136km and the smallest watershed area by 3,371 . In addition, the lack of wastewater treatment facilities and the abundance of pollutant sources such as livestock's excretions and chemicals from agricultural lands exacerbate water quality in this watershed.

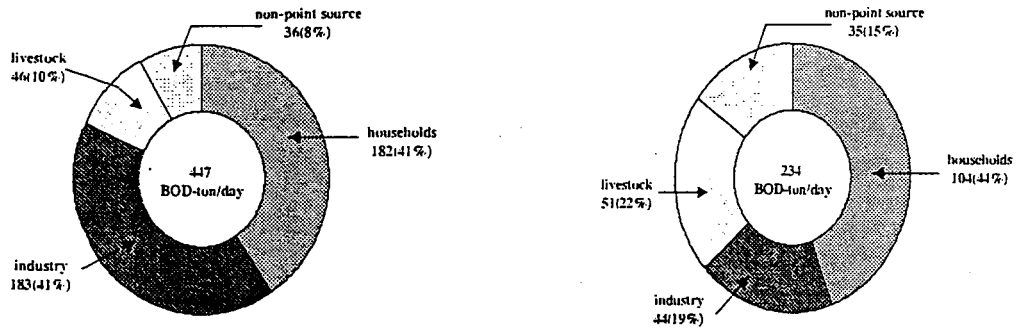


(a) Wastewater generation and BOD loads in 4 major watersheds



(b) Han river BOD loads

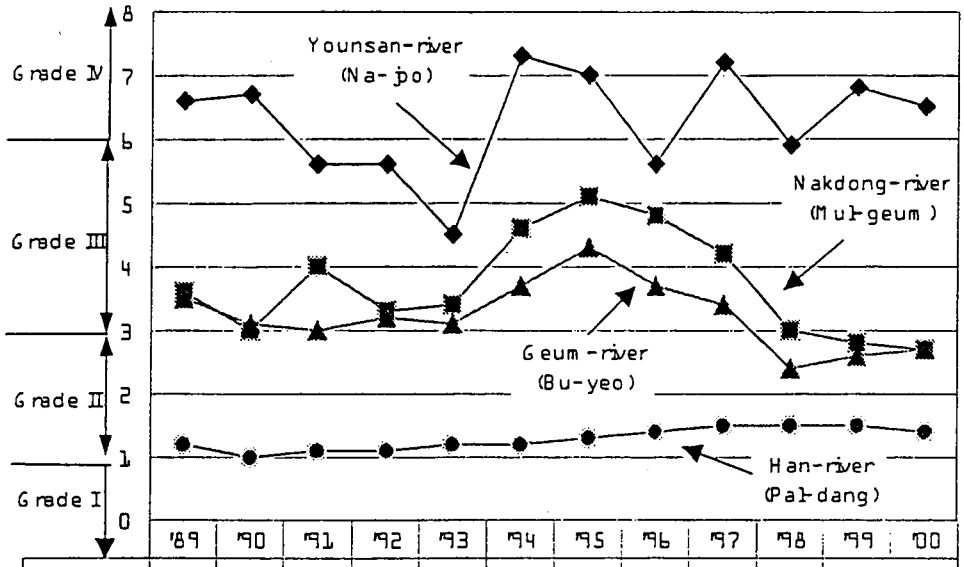
(c) Nakdong river BOD loads



(d) Geum river BOD loads

(e) Youngsan river BOD loads

Figure 2- Wastewater generation and BOD loads in 4 major watersheds in Korea ('97)



	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00
Youngsan	6.6	6.7	5.6	5.6	4.5	7.3	7	5.6	7.2	5.9	6.8	6.5
Nakdong	3.6	3	4	3.3	3.4	4.6	5.1	4.8	4.2	3	2.8	2.7
Keum	3.5	3.1	3	3.2	3.1	3.7	4.3	3.7	3.4	2.4	2.6	2.7
Han	1.2	1	1.1	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.4

Note) Grade I : drinking water source I, Grade II : drinking water source II

Grade III : drinking water source III, Grade IV : agricultural water use

Figure 3- Changes in water quality in 4 major rivers

The Korea Ministry of Environment has arranged all the streams into 194 small regions depending on the purpose of water use, and has established the stream standards since 1991. As shown in Table 3, however, only 30% of the overall goals were achieved as of 1998.

Table 3 Achievement status toward the river standard goals in Korea ('98)

Category	Total	I	II	III	IV	V	Percent goal(%)
Total	194(58)	120(32)	49(14)	9(3)	8(6)	8(3)	30
Han-river	52(20)	30(12)	11(4)	3(2)	2(1)	6(1)	38
Nakdong-river	40(12)	32(9)	6(1)	1(1)	-	-	30
Geum-river	38(14)	20(3)	12(6)	1(0)	5(5)	-	37
Youngsan-river	12(1)	5(0)	5(1)	1(0)	1(0)	-	8
Seomjin-river	6(0)	6(0)	-	-	-	-	0
Other	46(11)	27(8)	15(2)	3(0)	-	1(1)	24

Note) ( ): Number of achievement

Since 1990s, Government has invested in environmental facilities intensively. However, it would be impossible to provide a complete solution to the environmental problems in a short period until a great number of treatment facilities are provided so that waste discharges can be treated to the extent necessary to prevent the stream from being contaminated above the established level. As of 1999, 150 sewage treatment plants were in operation. Total capacity amounted to almost 18 million cubic meters per day and a sewage service supply rate was approximately 70%. 128 thousand tons of livestock wastewater were produced daily. About 87%of that were recycled to compost. For the last 4-5 years, lots of restaurants and motels have been built in the upper stream areas, especially around Paldang reservoir, and this has been accelerating water pollution. Additionally, thousands of livestocks broadly distributed in all rural areas have become one of major pollutant sources for the public water supply. Eutrophication is more serious problem in many artificial reservoirs, which requires the reduction of nutrients.

There are two types of regulation tools for emission control; standards for effluents apply to the discharge point at final wastewater treatment plants treating sewage, industrial wastewater, and night soil. Standards for effluent wastewater are set for biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solid (SS), total nitrogen (T-N), and total phosphorous (T-P). T-N and T-P were newly applied from 1996. Different levels of standards are applied according to the regional classification such as Clean Region, A Region, B Region, and Special Region. Table 4 shows standards for wastewater of T-N, T-P, BOD, COD and SS. Standards have been stringent and extended continually to keep up with people's elevated expectation for the environment quality.

Table 4 Allowable Standards for Wastewater

Classification of Region		T-N (mg/L)	T-P (mg/L)	Daily Waste Water Discharge (more than 2,000□) BOD (mg/L)	COD (mg/L)	SS (mg/L)	(less than 2,000□) BOD (mg/L)	COD (mg/L)	SS (mg/L)
Clean Region	Maintains water quality standard I designated by the Minister	□ 30	□ 4	□ 30	□ 40	□ 30	□ 40	□ 40	□ 40
Region A	Maintains water quality standard II designated by the Minister	□ 60	□ 8	□ 60	□ 70	□ 60	□ 80	□ 80	□ 80
Region B	Maintains water quality standard □□or□ designated by the Minister	□ 60	□ 8	□ 80	□ 90	□ 80	□ 120	□ 130	□ 120
Special Region	High concentration of industrial complexes, designated by the Minister or Mayor. Alternately, agro-industrial development is planned, designated by the Regional Head.	□ 60	□ 8	□ 30	□ 40	□ 30	□ 30	□ 40	□ 30

Comprehensive Measures for Water Quality Management

The Comprehensive Measures for Water Quality Management of 4 major watersheds comprise subsequent categories of policy measures; pollution prevention measures, pollution reduction measures, water-use charge system, financial subsidies, watershed management system, development of water resources, and water demand control.

A. Pollution Prevention Measures

- The Han River Watershed

In 1990, Korea government fixed the boundaries of the special zone for water quality preservation in 7 cities and counties in Kyunggi Province near Paldang Reservoir, the zones are called "the Paldang Special Measures Zone". In 1999, the area within 1km from the boundaries of the Han River and Kyungan stream within 'Paldang Special Measures Zone' are set the limits for 'Riparian Buffer Zone'. In this area, any new livestock sheds, restaurants, motels, public bath, and factories are prohibited. In addition, the current effluent levels for wastewater (e.g., 20 mg/L for BOD) from the existing restaurants and motels are strengthened (e.g., 10mg/L for BOD). Beyond the Paldang Special Measures Zone, Riparian Buffer Zone is set for the area within 500m from the Han River boundaries, extending to Euiam Dam in the North Han River and

Chungju Dam in the South Han River. In this area, only the facilities satisfying the stringent regulation (e.g., BOD 10mg/L) are allowed for the new building permit. All national and public forest within 5km from the Han River, the Kyungan stream and the origin of stream are designated as 'Reserved Forest'. 'Reserved Forest' can strengthen the function of green dams to retain clean and sufficient water resources.

Korea government has decided to introduce the Total Maximum Daily Loads (TMDL) control system, which controls the total amount of pollution load discharge into the river. Since the water quality of Paldang Reservoir is concerned about deterioration under the current regulations, the allocation of the waste discharge load within the capacity of nature is needed to control overall pollution. In the future, only environmentally sound developments would be allowed under the total load allocation policy.

- The Nakdong River Watershed

The characteristics of the Nakdong River watershed are highly concentrated population and industrial complexes centered at the mid- and upper stream, and lower river flow compared to the other watersheds. Korea government intends to apply the regulation system based on TMDL, gradually from 2003.

Several attempts will be tried for the control of non-point source pollution. Only environment friendly farming, which restricts the use of pesticide and chemical fertilizer, will be allowed in riverside. Installing storage tanks will be installed for the control of run-off pollution from initial rainfalls, which settle down suspended pollutants from non-point sources.

- The Geum and Youngsan River Watersheds

In the Geum River watershed, Riparian Buffer Zone will be specified in the area of 1km from the river boundary in the Daechung Special Measures Zone and 500m in the upper regions. In the Youngsan River watershed, area within 500m from the

boundaries of Juam Reservoir, Dongbok Reservoir, Sangsa Reservoir, Sueo Reservoir, the Bosung, Dongbok, and Yisa streams will be specified as Riparian Buffer Zone. In these areas, standards for effluent wastewater will be strengthened from 20mg/L to 10mg/L for BOD and suspended solids (SS). The TMDL regulation will be applied gradually from city areas to rural areas.

B. Pollution Reduction Measures

- The Han River Watershed

By 2005, a total of 2,639 billion won (2 billion U.S. dollar : the exchange rate is about 1300won per 1 U.S. dollar) will be invested to construct 188 municipal wastewater treatment plants (WWTPs), 12 industrial and livestock WWTPs, and 3,341km sewer pipes. It is expected that wastewater treatment can serve 81.6% of population in this area by 2005. Not only construction of new wastewater facilities but the rehabilitation of current sewer systems will be focused, since the water quality is not improved when the improper sewer system exists.

Composting of livestock waste will be strengthened for the prevention of water pollution from livestock waste, comprising 24% of the total pollution load in this watershed. Small-scale livestock farms will be obligated for installing pollution control facilities such as a separation and storage tank, and Korea government will partially support the expenses for the facilities in order to encourage the participation.

- The Nakdong River Watershed

Korea government plans to invest 4,247 billion won (3.3 billion U.S. dollars) for the construction of 266 municipal WWTPs, 6 industrial WWTPs, and 16 livestock WWTPs by 2005. The wastewater treatment ratio, indicating the percentage of population served by wastewater treatment facilities, will increase from 49.8% in 1997 to 84.4% in 2005. The advanced wastewater treatment technologies capable of

removing nutrients (nitrogen and phosphorus) will be applied to the several WWTPs, which contribute to the prevention of eutrophication of reservoirs and rivers. The standards for the effluent wastewater will be stringent from 20 mg/L for BOD and SS to 10 mg/L. During this period, 4,388km of sewer pipes will also be rehabilitated.

Livestock waste and wastewater accounts for 17% of the total pollution load generated in this watershed. To maximize the waste composting and to minimize its inflow into the river, livestock farms will be obligated to install screens over the waste as well as separation and storage tanks, and government will partially support the expenses.

-The Geum and Youngsan Watersheds

4,226 billion won (3.3 billion U.S. dollar) will be invested for these two watersheds to construct 300 municipal WWTPs, 6 industrial WWTPs, and 8 livestock WWTPs. As a result, it is expected that the treatment ratio will be increased from 62.5% as of 1998 to 74.5%. The existing WWTPs located at the upper stream will be supplemented with the advanced wastewater treatment technologies with the stringent effluent discharge limits (the same as for the Nakdong River). Plans for swage pipe rehabilitation and livestock wastes will be carried out like the other watersheds.

C. Water-Use Charge System

Water-use Charge System is based on a WIN-WIN strategy, which brings mutual benefits to the upper and lower reaches of the river. Applying the "User Pays Principle" instead of the "Beneficiary Pays Principle", all users are charged for their use of water in proportion to the amount used. Citizens of the lower streams will be advantaged from pollution prevention measures, such as strict land use regulations and the TMDL regulation, while residents and local governments of the upper streams will be supported by the fund raised by water-use charge.

- The Han River Watershed

Residents of the metropolitan area receiving water from the water supply sources in the Han River pay water-use charge in addition to the regular charges for tap water. The fund is used in supporting projects for the residents who are disadvantaged by the land use restrictions in the water protection area and around the dams, such as income augmentation, living improvement, education, etc. It also supports the construction and operation of wastewater treatment facilities, and is used to purchase the land within the Riparian Buffer Zone. When first introduced at August 9, 1999, the charge rate was determined to 80 won (6.2 cents) per ton and it has been raised to 110 won (8.5 cents) since January 1, 2001.

- The Nakdong River Watershed

All the residents living in the Nakdong River watershed are to pay for the charge. However, those who are subject to regulations for water resources development and those who damaged by weather changes from dam constructions will be exempted. Considering the water consumption in 1998, if the charge rate is set to 100 won per ton, approximately 100 billion won (77 million dollars) will be funded every year. The Nakdong River Watershed Management Committee, composed of the Minister of Environment, the Vice-minister of Construction and Transportation, three metropolitan city mayors, three provincial governors, and the President of the Korea Water Resources Corporation, will decide on the executive rate later.

D. Financial Subsidies and Watershed Management System

- The Han River Watershed

A total of 2,639 billion won (2 billion dollars) will be invested in the wastewater management of this watershed. Both the federal and local governments will support financially. The Han River Watershed Management Committee was organized and

have all the authorities and responsibilities for the water management. The committee is composed of the Minister of Environment, the Vice-minister of Construction and Transportation, two metropolitan city mayors, three provincial governors, the president of Korea Water Resources Corporation, and the president of Korea Electric Power Corporation. It decides the rate of the water-use charge, and sets up water quality improvement project.

- The Nakdong River Watershed

Approximately 8,457 billion won (6.5 billion dollars) will be invested in the water management of this watershed. In the investment, 4,247 billion won (3.3 billion dollars) will be used for the water pollution reduction and prevention project, and the rest (3.2 billion dollars) for developing water resources. The former project is scheduled to be completed by 2005, and the latter project by 2008. Federal government, local governments and private sectors will finance 77% (6,507.4 billion won), 19% (1,569.4 billion won), and 4% (380.5 billion won) of the total budget, respectively. Some portion on the local governments will be supported by the water-use charge. The Nakdong River Watershed Management Committee will have the authority of consulting and managing.

-The Geum and Youngsan River Watersheds

By 2005, 2,724 billion won (2.1 billion dollars) and 1,502 billion won (1.2 billion dollars) are to be invested in the water quality improvements of the Geum River watershed and the Youngsan River watershed respectively. The Geum River Watershed Management Committee and the Youngsan River Watershed Management Committee will be organized like the Han and Nakdong River watersheds.

E. Development of Water Resources and Control of Water Demand

, The water flow in the Nakdong River is as low as one fourth of the Han River during a dry season despite of the similar basin area for these two watersheds. It indicates that water quality in the Nakdong River is easily affected than in the Han River. In order to enlarge the flow capacity in a dry season, a task force team worked on the measures for enlarging water inflows into the river. These measures include optimization of water resource management of existing dams, control of water demand, development of groundwater, etc.

Many cities near the lower stream of the Nakdong River depend on the surface water for their drinking water resources. Thus, if water pollution accidents occur and water quality is worse during a dry season, this area could have difficulties in supplying safe drinking water. A group of local experts has been organized to develop alternative drinking water resources such as developing bank filtration process, and improve the water treatment facilities applying advanced treatment technologies such as biological pretreatment system.

Federal and local governments is reinforcing the progressive water rate system and stimulate installation of water saving devices, thereby reducing wasteful water use. New large buildings is obligated to install water recycling facilities, and industries is forced to increase the reuse of wastewater. Also, federal government evaluates the administration of water management of local governments annually, and provides incentives to induce better water management and safer drinking water supply.

F. Miscellaneous Strategies

Environmental monitoring systems will be extended, especially for the Han River and the Nakdong River basins. Field education programs will provide valuable opportunities for elementary, junior and senior school students to realize the importance of the environment, and educational institutions for the environmental

protection will be supported.

CONCLUSIONS

The need for innovative approaches to the conservation and proper management of the water environment has been widely recognized. Higher quality water definitely improves the quality of our lives. Therefore, with the blueprint of improving water quality by the year 2005, Korea government has established and propelled the Comprehensive Measures for Water Management. Our final goal of this project is to make 62% of the total streams have Grade I level and 25% Grade II level, and the rest suitable for agricultural use at least.

In the past, the strategy for the water management focused on the sufficient supply of inexpensive water resource. At present, however, we start a new strategy aiming at supplying high quality water at a price including the full production cost. For this goal, we will drive a strong and stringent Water Demand Management Policy.

One of the most important keys to our final goal is the participation and cooperation of the public for the new strategy. It is evident that the discharge of wastewater from one community has an adverse impact upon the degree of water treatment required at lower stream communities. The solution is to compromise with each other, especially relating to the vital issue, 'Clean Water'.

PART II. Water Supply Management Policy in Korea

Background

The average annual precipitation in Korea (1,274mm) is 1.3 times that of the world (974mm). Because of high population density, however, average precipitation per capita of 2,755m3 is only 12.5% of the world average of 22,096m^3. Thus, Korea has not abundant water resources; per capita usable water in Korea is merely 1,470m^3. In 1993, the Population Action Institute (PAI) of the United Nations classified Korea as a water-stressed nation along with South Africa and Libya. The Ministry of Construction and Transportation also expects that Korea will face annual water shortage of 400 million tons starting from 2006 and 2 billion tons from 2011 when no counter-plan is applied.

The amount of water supply per person in Korea reaches 395 liters per day (as of 1998), which is much greater than that of advanced nations. Dam constructions are experiencing difficulties because of increased cost, insufficient number of sites for dam development, and strong opposition from local residents, all of which would result in more serious water shortage.

Under the situation, Korea government decided to change its water resource management policy from the previous supply-oriented approach into demand-management. Comprehensive water saving plan including the installation of water-saving devices and water reuse system, application of a water-saving pricing system, replacement of old pipes, and other water conservation tools are being promoted. It is expected that 2006 can save 790 million tons, which are 13.5% of the total water production (5.8 billion tons in 1998). When these water-saving goals are met, it is estimated that a roughly 400 billion won (308 million dollars) in water production cost and 80 billion won (62 million dollars) reduction in sewage treatment costs can be saved.

Basic Objectives for National Water Conservation

The government will drive 15 policy tasks as part of the comprehensive water conservation measures. When the objectives are met, it will bring greater benefits than building dams, which is equivalent to supply 350 million tons of water annually. The goals and scope of the project are listed in the Table 5.

In order to achieve these goals, Korea government will compare and evaluate monthly the results of water-saving efforts, such as water production of each water supplier, water usage by industry, and per capita water usage. Government also strengthen the monitoring of the progress and providing with consulting services.

Table 5 Water Conservation Goals by Policy Task

Category		Scale of Projects	Conservation Goals (1,000tons/year)
Total		-	790,000
Installation of Water-saving Devices	Subtotal	-	290,000
	Residences	11,63 million households	250,000
	Businesses and Others	11,500 businesses	40,000
Improvement of Water Pricing System		Due for improvement by 2001	200,000
Replacement of Old Water Pipes		27,000 km	240,000
Installation of Water Reuse System		300 units	30,000
Reuse of Water by Industries		Conserving 10% of industrial water	30,000

Introduction of Demand Management Goal System by Water Suppliers and Public Institutions

The government forces public water works to lead the water-conservation efforts so that all residents can become more aware of the need to save water. The Water Service Law was amended this year to allow mayors and governors to set up five-year comprehensive plans on demand management; these will include water demand management, reduction of yearly leakage, and water-saving device distribution. These plans will be carried out with approval from the Minister of Environment.

Mayors and county headman is in charge of detailed action plans. In addition, central administrative offices, autonomous local government offices, local public institutions,

educational organizations, and other public organizations will participate in the project to cut 15% in water usage by following Water Conservation Guidelines for Public Organizations.

Installation of Water-Saving Devices in Houses and Buildings

To save water demand, new buildings have been required to install water-saving toilets since March 1998, and water-saving faucets and showers from January 2000. While existing buildings are exempt from this requirement, water-saving devices are provided free of charge. Up until 2004, 76.7 billion won (59 million dollars) will be invested in the installation of water-saving devices in 11.63 million Korean households. Businesses with high water use, such as hotels, public baths, and golf courses, are required to install water-saving toilets, faucets, and shower heads in compliance with the Water Service Law. Certification is given to high-performance water-saving devices to encourage their adoption.

Table 6 Yearly Investment Plan

(in ten thousand households, hundred million won)

Category		Total	1999	2000	2001	2002-2004
Total	Number of Households	1,163	55	242	223	643
	Budget	767	25	153	148	441
Water-Saving Devices for Toilets	Number of Households	470	39	128	85	218
	Budget	282	17	74	51	140
Water-Saving Devices for Water Foucets	Number of Households	693	16	114	138	425
	Budget	485	8	79	97	301

A New Water Pricing System

Water charges in Korea are set at a very low level, representing only 70% of the production cost. Such a lower water charge rate induces waste of water, hinders the spread of water-saving devices, and exacerbates the financial difficulties of local governments.

Moreover, it delays improvements of pipes and treatment plants, which results in the inefficiencies of water supply and deterioration of water quality. Therefore, government considers the charge rate system so that people who use more water will have to pay more. In addition, a seasonal pricing system will be introduced which will impose additional charges during the summer months when water use is at its peak. A water rate calculation model will be developed which will include all costs related to water supply at the time of cost calculation for water production.

Water services will either be privatized or consigned to private businesses so that water works will voluntarily pursue water conservation, downsizing, and reasonable water charge rates.

Increased Installation of Water Reuse System

Since 1991, government recommended large buildings install water reuse system for water saving. However, higher cost of installation and operation inhibit full implementation of the policy. The government is thus planning to mandate all new buildings using large amount of water to install water reuse system.

In addition to the mandatory requirement of installing water reuse system for large new buildings, several economic incentives are being introduced, such as installation financing, tax benefits, and discount on water charge in order to encourage adoption of water reuse systems.

Table 7 Mandated Buildings for Installing Water Reuse System

Category	Scale Specification
Large hotels and department stores	Building area of more than 60,000 m^2 (400-500 rooms)
Factories	Waste water discharge rate of more than 1,500 tons a day (all type 1 Businesses, some type ^{2} businesses)
Other buildings	Buidling area of more than 60,000 m^2 to 70,000 m^2

Table 8 Incentives to Water Reuse System

Category	Current	Improved Plan
Tax Deduction on Installation Cost	5%	Maintain current rate
Installation financing	None	2 billion won per unit
Water Rate Discount	10-65%	50-70%
Discount on Sewage Producer Surcharge	None	50% of faculty capacity
Environment Improvement Discount	None	25% discount

Replacement of Deteriorated Water Pipes and Improving Water Provision

Due to inefficiencies in water pipe networks and management, the water leakage as of 1998 reached a national average of 18.1%, indicating around 20% of treated water is wasted. In 1998, about 1 billion tons of water was wasted, causing approximately 500 billion won (0.4 billion dollars) in financial losses. Insensitive water meters that fall short of measurement standards or that have an incorrect diameter have failed to detect 540 million tons of water in 1998, resulting in about 270 billion won (0.2 billion dollars) in losses for water suppliers.

Thus, government initiated the inspection of old pipes and has begun to replace those pipes. About 3.1 trillion won (2.4 billion dollars) will be invested in replacing 36,000 kilometers of old pipes from 2000 to 2011. It is expected that the project would improve the leakage rate from 18% (1998) to 12% (2011). Federal government is financing 50% of the total cost to local governments with lower interest.

For better prevention and detection of water leakage, the block system will be introduced. This system divides the drainage area into blocks, each of which includes a local meter system. The map of the distribution system will be updated, and geological information system (GIS) will be implemented for efficient management of distribution system. Pumps and valves will be installed to maintain proper water pressure and tonnage, taking a more scientific approach to installation and management of water pipes and steadily reducing leakage. Up until now, users paid for the leakage but from now on water works will pay a certain portion of the cost, which will encourage the water providers in leakage reduction.

All water meters in Korea are scheduled for inspection and inadequate meters will be either repaired or replaced gradually, and the percentage of inaccurate meters will be reduced gradually.

Table 9 Yearly Investment Plan

Category	Total	1997-1999	2000	2001-2011
Project Cost (in hundred million won)	38,319	6,866	2,374	29,079
Old pipes (km)	42,757	6,942	2,585	33,230
Number of Water Collection and Purification Facility	2,124	368	74	1,681

Sewage and Wastewater Reuse

Sewage and wastewater are reliable sources of water in times of shortage because it has steady effluent discharge even at a dry season. Government will intensify the obligation and incentives to reuse wastewater; inducing more widespread reuse of sewage and wastewater. If only 5% of the sewage treatment water can be used, about 320 million tons of water could be supplied to the entire nation, surpassing the comparable water supply of one large-scale dam.

According to the amendment of the Sewage Service Act, new wastewater treatment plants will be required to adopt proper tools for using wastewater effluents. If the plant fails to follow the requirements, forceful means such as the discontinuation of subsidy on local grants-in-aid will be imposed. Moreover, local grants-in-aid on sewage treatment water reuse plants, including highly-advanced treatment facilities, discharge pipes, and treated water pipes, and buffer tanks, will be subsidized to ease the burden to establish the reuse system for wastewater.

Utilization of Rainwater and Subway Pumping Wells

Korea government also plans to use rainwater and subway pumping wells in order to use water more efficiently. Stadiums with capacity over 5,000 seats, baseball parks,

and gymnasiums are appropriate for rainwater use because the facilities are not used very often and have large surface areas for collecting rainwater. The Water Service Law mandates these facilities to install rainwater use system. Rain water use systems are installing in six World Cup stadiums (Seoul, Incheon, Daejeon, Suwon, Jeonju, Seogwipo).

In addition, separate pipes for the use of subway pumping wells will be established with consultation of the subway management agencies in Seoul, Busan, Daegu, and Incheon. Water collected in the subway stations can be used for cleaning the stations, flushing the toilets, and maintaining the water level of small streams around subway stations.

Water Conservation and Supply Measures for Drought Areas

Even though cities are fully served by water supply, water supply are limited to the rural area and islands; only 25% and 15% of population for rural areas and islands are served. Government will invest 315 billion won (240 million dollars) through 2003 to complete the 24 projects providing alternative water supply system in the drought areas. Furthermore, drought areas has a priority in budget subsidies when implementing water demand management projects, such as installation of water-saving devices and replacement of old water pipes.

Table 10 Status of Water Supply Projects in Drought Areas

Category	Total	Completed in 2000	Completion in 2001	2002-2003
Total	24	9	9	6
Water Supply System in Rural and Fishing Villages	11	4	5	2
Water Supply System in Small and Medium Cities	6	1	2	3
Development of Drinking Water Sources on Islands	7	4	2	1

Promotion of Water-Saving Technology Development

Water saving technology is not yet highly developed since there is no incentive to save water due to lower water charge rate. More frequent meter checks, mandated installation of water-saving devices, and extension of water reuse systems are expected to increase the demand for water saving technology.

Development of a Water-Saving Education Program

Water saving is directly related to the concern and ethics of people across society. It is necessary for people to provide continuous educational programs. Water shortage, its causes, and water-saving activities need to be included in school curriculum. The development and widespread adoption of such programs will promote people to participate in the water-saving movement. Furthermore, with cooperation of local environment offices, the National Water Resources Corporation, and other related organizations, regional water tours can be developed. Regional celebrities, civil groups, teachers, and students can be invited to join the tour. Meanwhile, social education program is further expanded to encourage the participation of citizens in the on-site environmental education program.

At the same time, a public campaign is steadily held through the media (TV, newspaper), billboards and posters, and brochures. It is helpful that a variety of educational and publishing materials are offered to producers, writers of media programs.

Operation of a Water-Saving Campaign Web Site

Korea government opened a water conservation website (www.water21.me.go.kr) through internet. Many internet users have already visited the site and responded very positively.

Evaluation of Water Management and Provision of Incentives by Local Governments

Local communities tend to place priority on investing in visible projects, such as construction of roads, sports centers, or community centers. A number of local governments would not pay enough attention to environment improvement projects such as replacing old water and sewage pipes, or the operation of wastewater management systems. There was a gap between policies and actual implementation, increasing people's distrust of water management policy. Evaluation and announcement for local governments are one of the effective tools to encourage the participation of local governments to the environmental issues. Organizations with outstanding records will receive incentives and rewards, such as preferential support for water and sewage project costs. Evaluations are conducted on several items in four areas of water management, including management of water demand, management of water and sewage operation, water quality improvement, and regulation of businesses that discharge waste water. The evaluation committee is comprised of members from both private and public groups to secure fairness and objectivity.

Launching a Nationwide Water Conservation Campaign

Since water conservation is directly related to the changes in people's behavior, government efforts alone are limited. Private environmental and religious groups, professional organizations, schools, and both central and local governments need to be involved in establishing the nationwide water conservation campaign and educating the public. On February 16, 2000, fifty-two organizations, including private environmental and religious groups, professional organizations, and an association of businesses with high water use, formed the nationwide water conservation campaign headquarters, and started to produce and distribute publication booklets and posters on water conservation. In addition, the headquarters held a contest for children's cartoon

with a water conservation theme, and advertised water conservation campaign in newspapers. Other activities include operating of a water conservation web site, holding related seminars and conferences, and conferring environmental marks to outstanding water-saving devices.

МИНИСТЕРСТВО ПРИРОДНЫХ РЕСУРСОВ РОССИЙСКОЙ ФЕДЕРАЦИИ

Water Environment Management in Russian Federation

Sergey Bednaruk
Ministry of Natural Resources of Russian Federation

Water Quality Management

2

Water Quality Problem

- antropogeneous loading on many river basins in Russian Federation comes nearer to critical value
- rehabilitation and preservation of water quality in a condition adequate sanitary and ecological requirements, is one of the basic purposes of the water legislation of Russian Federation

3

Water Quality Standards: Maximum Allowable Harmful Impacts (MAHI)

established proceeding from:

- maximum allowable level of antropogeneous loading, longtime influence of which will not result in degradation of water ecosystems
- maximum allowable mass of harmful substances, which water body and its watershed can assimilate

4

Factors of the Maximum Allowable Antropogeneous Influences

- **sources of influence**
- **area of influence**
- **magnitude of influence**
- **duration and periodicity of influence**

5

Maximum Allowable Dumps (MAD) of harmful substances

established proceeding from Maximum Allowable Concentration (MAC) considering:

- **background concentration**
- **assimilating capacity of water body**
- **purposes of this water body usage**

on the basis of strict satisfaction to established MAHI standards for the water basin

6

Maximum Allowable Concentration of harmful substances

- national standards
- regional standards
- depends on target use of water body (for potable water, for fishery etc.)
- water quality standards, based on a "MAC-MAD principle", is not sufficiently effective

7

General Water Resources Management Problems

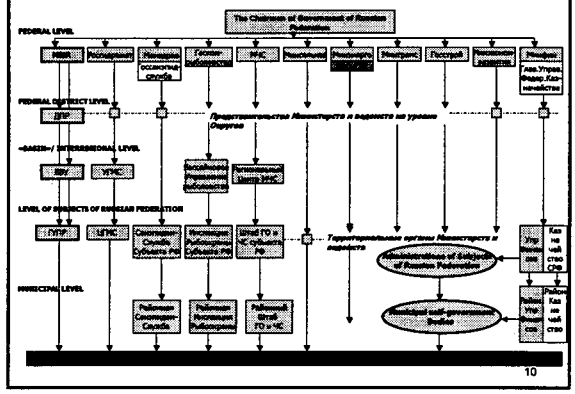
8

Problems of state water resources management

- Distribution of water resources management rights between economy sectors and government departments without consideration of the contradictions and interrelations between the public, economic purposes and tasks of protection of an environment;
- The issues of quantity and quality of waters, and of a condition of an environment are considered separately;
- The administrative regions have jurisdiction above water resources in their territories – the same water source is used without consideration of influence on other regions;
- The ongoing practice of water resources management does not take into account connections between quality of water and health of the population, environment and economic development;
- Water frequently is not considered as economic value.

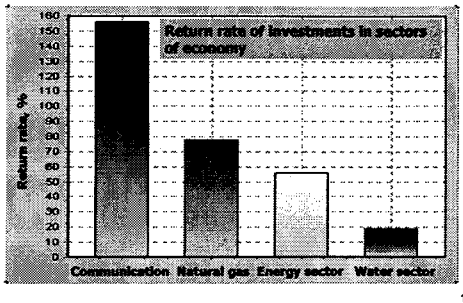
9

Structure of water resources management in Russian Federation



10

Problems of state water resources management



11

Legal bases of water resources management

12

According to clause 72 of the Constitution of Russian Federation, issues of possession, usage and management of water resources are in joint conducting of Russian Federation and subjects of Russian Federation.

The usage and protection of water resources are regulated by the:

- **Water code (1995)**
- **Other Federal laws**
- **Decisions of Government of Russian Federation**
- **Laws and decisions of bodies of state authority of the subjects of Russian Federation.**

13

The property on water bodies

State ownership on water bodies (item 34, Water Code)

Division of a state ownership into the federal property and property of the subjects of Russian Federation (items 33, 36, 37, Water Code)

DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy: Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such.

14

Payments for water use

- Payments for water use in Russian Federation is established by an item 122 of Water Code. In item 123 it is specified, that the system of payments connected to usage of water bodies includes:
  - Payment for usage by water bodies (water tax);
  - Payment allocated on restoration and protection of water bodies.
- Projects on water restoration and protection were financed in 1999-2001 less than on 15 % from a minimally required level.
- The tendency of complete refusal from a principle « water should pay water ».

15

Conclusions from the analysis water legislation and the practice of water resources management

16

Inexpediency of division of state property on water bodies on federal and subjects of Russian Federation.

Necessity of introduction of joint water resources management on the basis of the principles:

- **Satisfaction of the public requirements;**
- **The consent of the consumers;**
- **Solidarity of the partners.**

The distribution of powers, rights and duties between bodies of state authority, municipal self-government and consumers in the field of management, use and protection of water resources requires essential legislative and normative completion.

Establishing of a system of joint water resources management through a number of consecutive measures:
- **organizational;**
- **legislative;**
- **normative.**

The targets:

- **decentralization of management;**
- **formation of public institutes for water resources management on a basin level;**
- **involving in decision making on use and protection of water bodies municipal formations, water users and public.**

18

Principles of the state water resources management :

Consideration of the geographical characteristics of large river basins, as " water does not know administrative borders ";

System approaches meeting all requirements of water users and preserving water ecosystems;

Partnership and co-ordination of actions among state bodies and organizations and persons engaged in development of water projects. This role should be allocated to basin water councils;

Mobilization of financial resources received from a payment for use of water and its pollution to protection of water bodies according to a principle " water should pay water ";

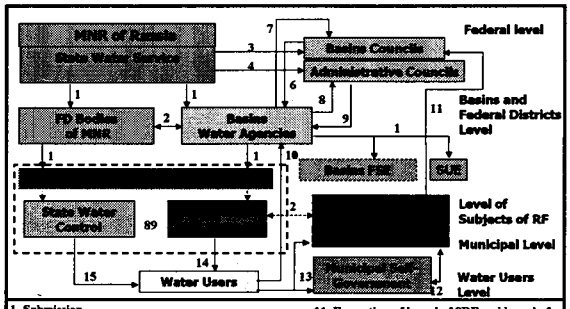
Long-term planning.

19

Directions of legislation development

- The amendments in WC – refusal of division of a state ownership into water bodies on federal property and property of the subjects of Federation (item 33, 36, 37); the appropriate updating of other clauses (item 87);
- The amendments to an item 120 WC - giving to Water Basins councils some functions of state management;
- Updating of unit 12 WC « Economic regulation of use, restoration and protection of water resources » (items 121-128);
- Development and adoption of Federal Laws « On Basin management of a water resources », « On Basin Water councils », « On financial bases of basin management of a water resources ».

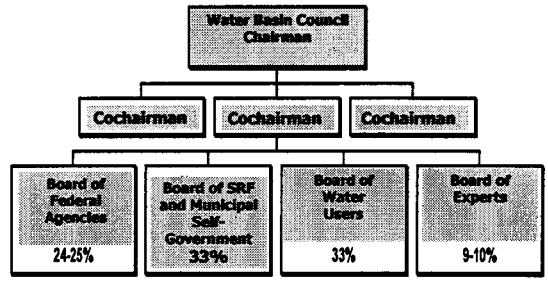
20



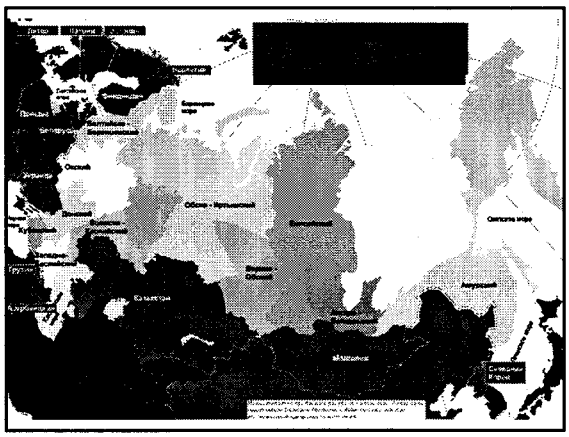
1. Submission
2. Information interaction
3. Formation of board of the state and participation in formation of board of the experts
4. Assignment of the Head of Administrative council
5. Formation of administrative council
6. Adoption of the plans, programs, of the tariffs on water
7. Proposals of plans, programs, water tariffs
8. Proposals on projects
9. Adoption of projects
10. Payments for water use and pollution
11. Formation of board of SRF and board of water users, participation in formation of board of experts
12. Participation in formation of board of SRF
13. Participation in formation of board of water users
14. The licenses (limits, target parameters)
15. State Water Control

21

Proposed structure of Water Basin Council



22



The first step is not made yet, and you already at the purpose.
The mouth is not open yet, and all is told.
And brighter then the lightning there should be a flare of mind,
That it would be possible to see, whence to leave for a way.

Eckay on a nickname Mumon.
« A Door without a door »
1228.

24

МИНИСТЕРСТВО ПРИРОДНЫХ РЕСУРСОВ РОССИЙСКОЙ ФЕДЕРАЦИИ

MAJOR ISSUES OF THE ENVIRONMENTAL POLICY IN THE RUSSIAN FEDERATION

The 11th Northeast Conference on Environmental Cooperation
December 5-6, 2002
Bo'ao City, Qionghai, Hainan Province
CHINA

Bednaruk Sergey
Head of Water Management Department
Ministry of Natural Resources of Russia

1

Environmental trends in Russia

- steady decline of pollutant emission and wastewater discharge in 1990's
- since 2000 as the economic growth has started the environmental impact has increased
- still natural resources and energy consuming economy type

2

Environmental legislation

- new Federal Law "On Environmental Protection" (January, 2002)
- legislative acts on environmental insurance, environmental certification, etc.
- drafts of new Federal Laws: Water Code, Forest Code and Mineral Resources Code

3

Environmental Doctrine of Russia

- Conservation and rehabilitation of natural ecosystems
- Sustainable use and an equal access to natural resources
- Provision of favourable environment for well-being and high standards of living for the Nation

4

State System of Environmental Management

United Ministry of Natural Resources:

- State Environmental Protection Service
- State Water Service
- State Forestry Service
- State Geological Service
- State Service of the Natural Resources Usage and Environment Protection Control

5

State System of Environmental Management

Regional Bodies of the Ministry of Natural Resources:

- District Departments of State Control of the Natural Resources Usage and Environment Protection (7)
- Water Basins Agencies (16)
- Departments of Natural Resources for Subjects of Russian Federation (89)

6

Recent Activities of MNR of Russia

- Concept of the National Plan of Actions "Water of Russia – XXI Centaury"
- National Strategy and National Plan of Actions on Biodiversity Conservation
- Environmental Program for the Baikal Lake Region
- System of specially protected natural areas

7

Specially Protected Natural Areas

- state natural reserves, national parks, state natural monuments, natural parks - total area 136,6 mln.ha - 8% of the national territory
- 1991-2002 - number of reserves increased from 75 to 100, their territory from 20 to 33 mln.ha (by 65%)
- 1991-2002 - number of national parks increased from 17 to 35, their territory – by 90%

8

Cooperation in North Eastern Asia

- Transboundary reserves: "Lake Xingkai-Khanka Lake"; "Daurskiy-Dalainuur-Daguur"
- Baikal Lake problem
- Amur River problem – International Conference on water protection in NEA (Khabarovsk, May 26-30, 2003)
- Kyoto Protocol – Russia reduced greenhouse gas emissions by 1/3

9

Commitment for Development of Cooperation in North Eastern Asia

- Bilateral cooperation
- International Conference on the Climate Change (autumn, 2003) – initiative of the President of Russian Federation
- 7th Intergovernmental Meeting on the NOWPAP program (Vladivostok, March 20-22, 2002)
- Conference of Senior Officials on Environmental Cooperation in NEA

10

THANK YOU!

11

< Session 2> Air quality improvement in urban area

Environmental Quality Outline Of China in 2000

Zhang Yutian, China Environment Science Acadamy

11th Northeast Asia Environment Cooperation Conference

Dec. 5-6, Bo'ao, China

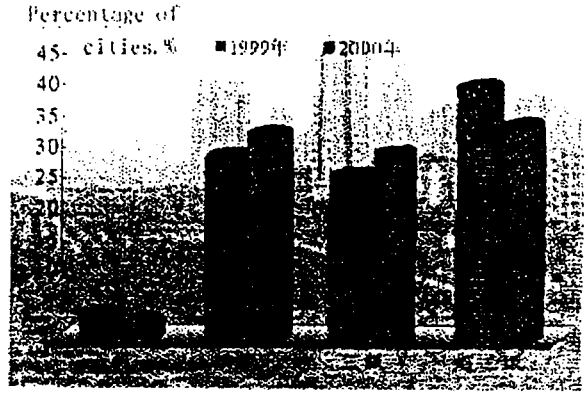
In 2000, the mainly characteristic of environmental pollution in China as following:The Urban air pollution is predominantly resulted from coal-burned, few big cities NOx had contaminated serious. The main regions of acid rain have no changed.

Urban Air quality

The status and trends of urban air quality

In 2000, in 36.4 percent (123 cities) of the 338data-collected cities, urban air quality had achieved the National Ambient Air Quality Standard (NAAQS) of grade Two (The annual concentrations of the main pollutants, SO2, NOx and TSP, were all incompliance with the NAAQS). Among of them, Haikou, San Ya and other seven cities had good air quality in compliance with the NAAQS of grade One. 63.8 percent of the cities (215 cities) exceeded the NAAQS of grade Two and 137 cities among them had one or more pollutant concentration exceeding the limit of NAAQS grade Three, occupying 34.0 percent of all data-collected cities.

In comparison with last year, the quality of urban air had been improved all over the country. The air quality of 36.4 percent cities had achieved the National Ambient Air Quality Standard (NAAQS) of grade Two more than last year (33.1 percent), and the air quality exceeding the limit of NAAQS grade Three from 40.6 percent descended to 34.0 percent. In recently years, the concentration of TSP and SO2 in ambient air is seeing stable decrease. But some cities in North China and Northwest China are still with high TSP concentration and a few cities SO2 polluted serious. The average of NOx concentration is almost the same with previous year. The deterioration trend of urban air pollution as a whole in China has been controlled, and the air qualities in some cities have been improved. However, the pollution in some cities is still very serious.



In 2000, in 36.9 percent (124 cities) of the 338 cities annual average of TSP concentrations had achieved the National Ambient Air Quality Standard (NAAQS) of grade two. In 63.1 percent (210 cities) exceeded

The air quality of 21.3 percent cities had exceeded the National Ambient Air Quality Standard (NAAQS) of grade Two less than last year 7 percent, among them, 11.7 percent of all data-collected cities exceeded grade than.

NAAQS of grade Two, and 101 cities exceeded grade three, occupying 30.3 percent of all data-collected cities.

The top cities of the highest TSP concentration value are accumulated in Gansu province, Shanxi province, Shanxi province, Inner Mongolia Autonomous Region, NingXia Hui Autonomous Region and XinJiang Autonomous Region etc.

Table 1-1 The Grade percentage of TSP concentration

Percentage of cities, % / Grade of TSP Concentration	In 1999	In 2000
Achieved the NAAQS of Grade Two	39.3	36.9
Exceeded the NAAQS of Grade Two	60.7	63.1
Including: Grade Three	35.7	30.3
Average of TSP concentrations in China (mg/m^3)	0.275	0.270
Annual concentration limit of Grade Two of NAAQS (Standard for Residential area)	0.20 mg/m^3	
Annual concentration limit of Grade Three of NAAQS (Standard for Industrial zone)	0.30 mg/m^3	

Cities, which are seriously polluted by SO2, are distributed in Shanxi, Guizhou, Hebei, Chongqing Inner Mongolia Autonomous Region, Ningxia Hui Autonomous Region, Shanxi, Gansu, Sichuan, Hunan, Guangxi provinces.

Table 1-2 The Grade Percentage of SO_2 Concentration

Grade of SO_2 Concentration \ Percentage of cities, %	In 1999	In 2000
Achieved the NAAQS of Grade Two	71.6	78.7
Exceeded the NAAQS of Grade Two	28.4	21.3
Including: Grade Three	11.9	11.7
Average of TSP concentrations in China (mg/m^3)	0.052	0.049
Annual concentration limit of Grade Two of NAAQS (Standard for Residential area)	0.06 mg/m^3	
Annual concentration limit of Grade Three of NAAQS (Standard for Industrial zone)	0.10 mg/m^3	

Sixty-five cities among data-collected are located in the SO2 Controlling Zone, annual Concentration of 47.74 percent or 31 cities met the standard of grade two, more than last year 15 percent. 34 cities cxceeded the standard of grade two, Serious NOx pollution mainly occurred in big cities which populations are over one million and too much automobiles. The consecutive NOx pollution in Beijing, Shanghai, Guangzhou etc. cities had been controlled, the concentration value of among them 18 cities exceeded the standard of grade three. By now, 112 cities are within Acid Rain Controlling Zone, 21 cities of SO2 annual concentration exceeded the standard of grade two, and 14cities exceeded grade three.

Table 1-3 The Grade Percentage of SO_2 Concentration of "Two Controlling Zones" Cities in 2000

Grade of SO_2 Concentration	SO_2 Controlling Zone	Acid Rain Controlling Zone
In compliance with Grade II of NAAQS	47.7%	81.25%
Grade III	52.3%	18.75%
Exceeded Grade III	27.7%	12.5%

NOx is also experiencing decline in last two years. All data-collected cities annual average of NO2 concentrations had achieved the National Ambient Air Quality Standard (NAAQS) of grade two (0.08mg/m3).

Air qualities in mainly concerned cities

In 2000, air quality in 27 cities of 47 selected cities of China reached the NAAQS of grade two, 7 cities reached grade three, 13 cities beyond the limit of NAAQS grade three.

According to the integrated pollution index, the top ten most severely polluted cities were selected as follows: Taiyuan, Urumuqi, Shijiazhuang, Lanzhou, Beijing, Chongqing, Guiyang, Changsha, Hohehot, and Tianjin.

Table 1-4 The grade Percentage of Urban Air Quality in mainly concerned cities, 1999 and 2000

Percentage of cities% / Grade of Air Quality	In 1999	In 2000
Grade II	34.0	57.4
Grade III	66.0	42.6
Exceeded Grade III	38.3	27.7

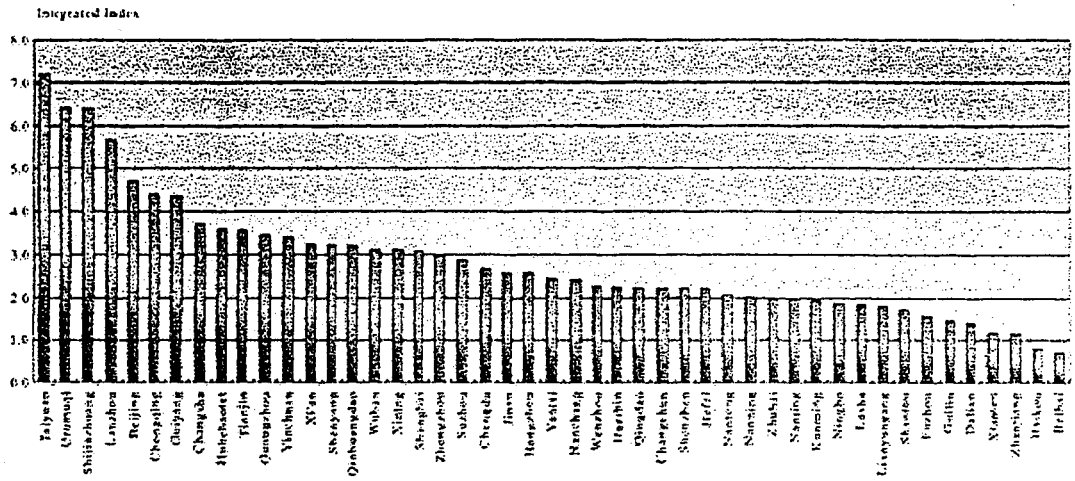


Fig. 1-2 Comparison of Integrated Index of Air Pollution in mainly concerned cities. 2000

Acid Rain

Status of acid rain

In 2000, annual average pH in 254 cities is between 4.1 (in Zhunyi) and 7.7 (in JiaoZuo). Cities whose annual average of pH are les than 5.6 reached 92, or 36.2 percent. 157 cities have acid rain sometimes, reaching the 61.8 percent of 254 cities.

Annual average pH of the precipitation in National Acid Rain Monitoring Network's 99 cities are between 4.1 (in Zhunyi) and 7.67 (in Yuncheng). Cities whose annual average of pH are less than 5.6 reached 40, or 40.4 percent. The annual average of pH in Zhunyi and Huaihua are less than 4.5, and the frequency of acid rain is 80 percent. 70 cities had acid rain occupied 70.7 percent, among them, 44 cities located in the Acid Rain Controlling Zone, 9 cities located in SO2 Controlling Zone, and 17 cities outside of "The two Controlling Zones".

Table 2-1 The pH of cities in National Acid Rain Monitoring Network

pH	4.0-4.5	4.5-5.0	5.0-5.6	5.6-7	>7
Cities	2	21	17	48	11
Percentage(%)	2.0	21.2	17.2	48.5	11.1

Table 2-2 The Frequency of acid rain of cities in National Acid Rain Monitoring Network

Frequency(%)	0	≤20	20-40	40-60	≥80
Cities	29	30	10	14	7
Percentage(%)	29.3	30.3	10.1	14.1	7.1

Annual average pH of the precipitation in the Acid Rain Controlling Zone 102 cities is Between 4.1 (in Zhunyi) and 6.90 (in Qujing). Cities whose annual average of pH are less than 5.6 reached 72, or 70.6 percent; 95 cities has acid rain sometimes, reaching the 93.1 percent of 102 cities. Among them, the frequency of acid rain in Fuzhou is 100 percent. Shanwei, Chaohu, Qujing, Ma'anshan, Chibi, Qianjiangand Deyang have no acid rain in 2000.

Table 2-3 The pH of cities in the Acid Rain Controlling Zone

pH	≤4.0	4.5-5.0	5.0-5.6	5.6-7	>7
Cities	0	4	36	30	0
Percentage(%)	0	3.92	35.29	29.41	0

Table 2-4 The frequency of acid rain of cities in the Acid Rain Controlling Zone

Frequency(%)	0	≤20	20-40	40-60	60-80	≥80
Cities	7	20	22	27	14	12
Percentage(%)	6.86	19.6	21.57	26.47	13.72	11.76

The distribution of acid rain area

Compared with the last years, there are no obvious changes in the term of acid rain allocations. The annual average of pH less than 5.6 areas are mainly located to the south of YangZe River, eastern parts of YingHai-Tibet Plateau and Sichuan Basin. Central China, South China, Southwest China and East China coastal areas all have their serious acid rain areas. Some region in North China could also see acid rain sometimes. Actidity and frequency of acid rain change fast in different acid rain areas.

The East China acid rain area covers broad regions, and the acidity in the rainfall change fast. Hangzhou, ningbo, wenzhou and Xiaomen are still seriously acid rain polluted regions. The deterioration trend of acid rain in this area will more serious, among of 7 cities whose frequency of acid rain more than 50 percent, 5 cities annual average of pH less than 5 and the frequency of acid rain more than 50 percent.

The acid rain in the south China is still very seriously, expect Haikou, Sanya and Liuzhou, the annual average of pH in the other 12 cities are all less than 5.6, among them, 50% percent cities' frequency of acid rain more than 50 percent. The mainly located to Zhujiang Delta and east of Guangxi province.

Based on Huaihu, Changsha and Zhuzhou, the central China acid rain area have some good change but the overall pollution there are still fairly serious.

The central China acid rain region, which based in Zhunyi, Yibin, Nancong and Chongqing, kept it's the most severe acid rain polluted region in China. But the cities located in center of acid rain region had been improved.

In north of China, only TuMen's annual average of pH less than 5.6 (is 5.32), and the frequency of acid rain is 48.9 percent, it has improved.

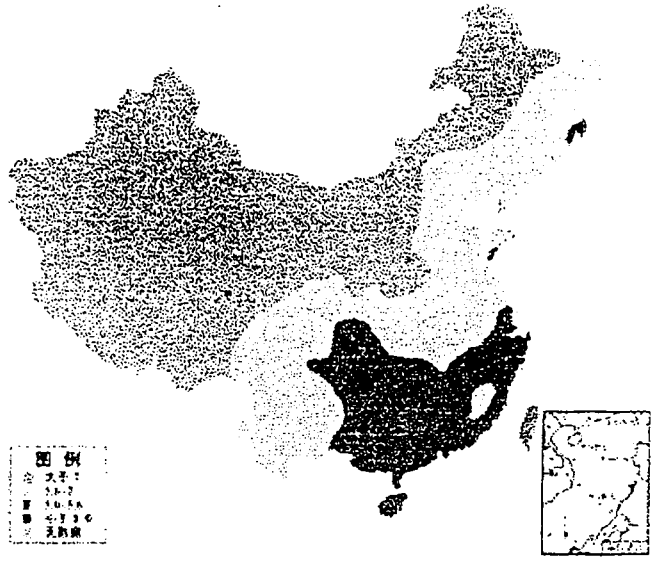


Fig. 2-1 The distribution of pH of rainfall in China, 2000

Measures for the Preservation of the Atmospheric Environment in Hyogo Prefecture

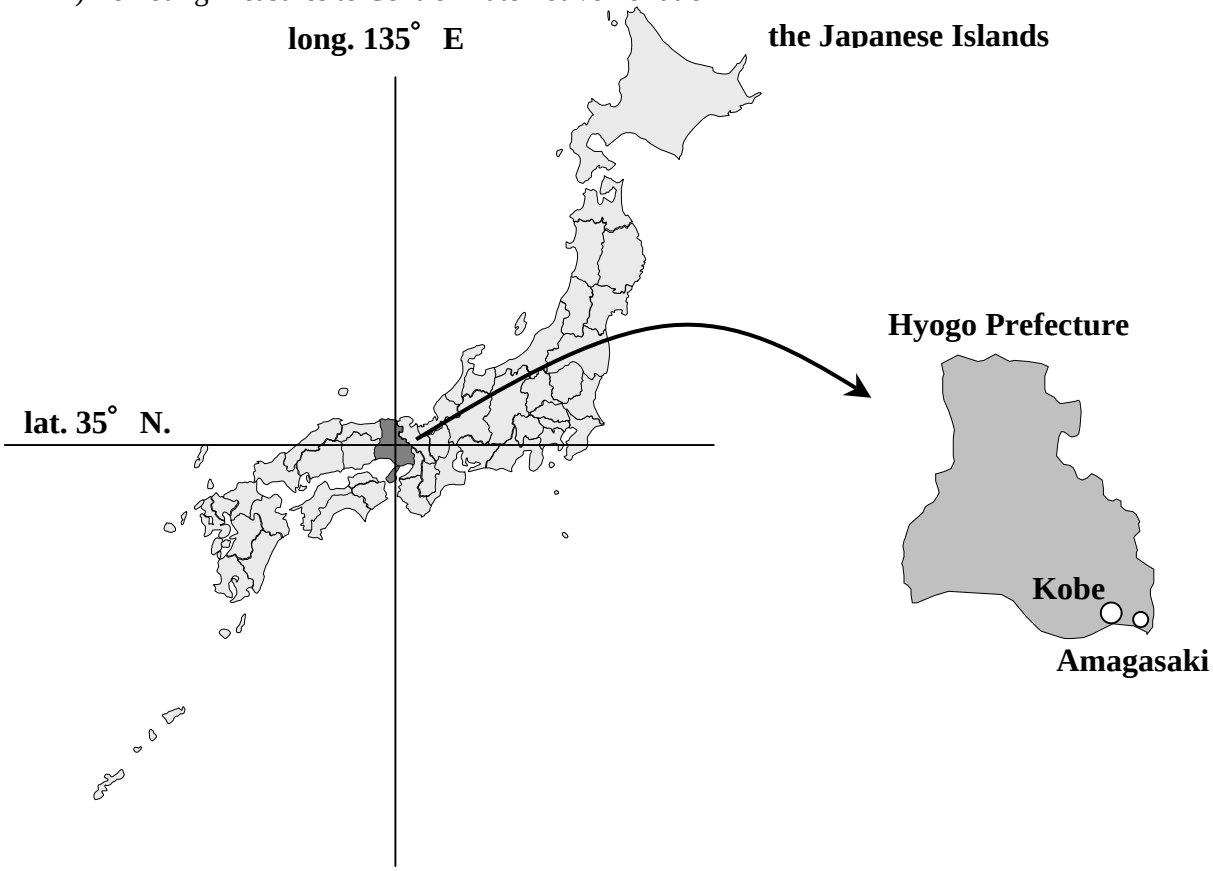
Akira YOSHIMURA (The Hyogo Prefectural Institute of Public Health and Environmental Sciences , KOBE JAPAN)

1. Introduction

Hyogo Prefecture is located roughly in the center of Japan, with the 135° East meridians that determines Japan Standard Time. The area is of approximately 8,400 square kilometers and its 5.57 million inhabitants make it the eighth most populous prefecture. The problem of pollution was recognized in Amagasaki and other cities in Hyogo's industrial belt as early as the latter half of the 1940's, following World War II. Pollution increased in the mid 60's to late 70's with the rapid popularization of automobiles and also because of the huge amounts of nitrogen oxide emissions, and health problems resulting from photochemical smog began to appear in the early 70's. In response to these problems, the prefecture began to devise measures intended to check pollution, enacting the "Pollution Control Ordinance" in 1965 and setting up governmental agencies responsible for implementing measures to reduce pollution in 1971. At the beginning of the 80's, the effect of the two oil crises popularly known as "oil shocks," one in 1973 and the other in 1978–9, caused the country to shift from an age of high growth to a low-growth. However, increasing urbanization changes in lifestyle, and other factors also brought changes in the nature of pollution problems, resulting in the need for new ways of dealing with these issues.

The prefecture is tackling mainly following 3 issues concerning atmospheric environment at present.

1)Promoting Measures to Control Automotive Pollution



2)Promoting Measures to Reduce Hazardous Air Pollutants

3)Measures to Reduce Suspended Particulate Matter

The outline of these promotions is described below.

2. Measures for the Preservation of the Atmospheric Environment in Hyogo Prefecture

(Except for Acid rain and Green effect gasses)

(1) Promoting Measures to Control Automotive Pollution

a. Measures to Reduce Pollution from Automobile Traffic

Based on the Automobile Pollution Control Plan established in January 1998, the prefecture has been working together with related organizations to promote comprehensive pollution control measures against sources, distribution of goods, human flows, and vehicular traffic. Furthermore, trial adoption of a "road pricing" system was instituted in November 2001 with the aim of improving the environmental quality along the roadways in the urban area by leading automobile traffic away from urban areas and out to coastal roads.

Measures to Reduce Pollution from Automobile Traffic

(A) Measures Focusing on Automobiles
- Regulations governing automobile exhaust emissions and classifications
- Measures to reduce black smoke from diesel-powered automobiles etc.

(B) Adjustment and Reduction of Traffic Congestion
- Promotion of New Universal Traffic Management Systems (UTMS)
- Implementation of Traffic Demand Management (TDM)

(C) Measures Targeting Traffic Flow
- Environmental Road Pricing etc.

(D) Measures Targeting Roadway Structures
- Installation of low-noise pavements and sound barriers
- Provision of emergency areas in case of environmental disaster etc.

(E) Surveys and Measurements
- Monitoring of air quality at the Automobile Exhaust Gas Monitoring Stations

b. Promotion of Plans to Reduce the Total Amount of Nitrogen Oxides

Based on the "Automobile Nitrogen Oxides Plan" enacted in November 1993, the prefecture has promoted reduction of automobile NOx emissions by supporting companies' own pollution management programs, accelerated wider use of low-pollution and low-emissions vehicles through projects to introduce and support cars for public use, and developed measures such as "Idling-Stop" and "Eco-Driving" movements.

Now, following amendment of the "Law Concerning Special Measures to Reduce Total Automobile Nitrogen Oxides Emissions in Specified Areas" (Automobile NOx Law) in June 2001 and the "Law Concerning Special Measures to Reduce Total Automobile Nitrogen Oxides Emissions and Particulate Matter in Specified Areas" (Automobile NOx–PM Law), the prefecture is developing a new "Plan to Reduce Total Amount of Automobile Nitrogen Oxides and Particulate Matter Emissions" in 2002.

c. Efforts to Reduce the Number of Diesel Powered Vehicles

Due to the effects on health recently tied to particulate emissions from diesel-powered vehicles, the prefecture is promoting counteractive measures such as provision of subsidies to help private businesses purchase natural-gas-powered garbage trucks and install diesel particulate filters (DPF).

(2) Promoting Measures to Reduce Hazardous Air Pollutants

In order to prevent damage to public health from exposure to benzene, dichloromethane, and other hazardous air pollutants, the prefecture has been monitoring air quality, implementing surveys to track the state of emissions from factories and providing guidance in ways to reduce factory emissions.

234 substances are listed as hazardous air pollutants by Ministry of the Environment and the Hyogo prefecture is monitoring the 21 substances listed in the right table.

Hazardous air pollutants

1	Tetrachloroethylene	11	Acetaldehyde
2	Trichloroethylene	12	Formaldehyde
3	Vinyl chloride monomer	13	Nickel compounds
4	Chloroform	14	Arsenic and its compounds
5	Ethylene oxide	15	Manganese and its compounds
6	1,2-dichloroethane	16	Beryllium and its compounds
7	Dichloromethane	17	Hexavalent chromium compounds
8	Acrylonitrile	18	Mercury and its compounds
9	1,3-butadiene	19	Benzo[a]pyrene
10	Benzene	20	Talc (including asbestos fiber)
		21	PCDFs and PCDDs and co-PCBs

(3) Measures to Reduce Suspended Particulate Matter

The Air Pollution Control Law determines discharge standards for soot- and dust-type suspended particulate matter (aerosols) discharged from fixed sources according to the type and scale of factories or facilities generating soot and smoke. Working to ensure rigorous adherence to the discharge standards, the prefecture has given guidance in ways to reduce the amount of particulate matter being discharged, including guidance provided through environmental preservation (pollution prevention) agreements, and promoted the use of clean fuels and installation of particulate filters.

The prefecture is also gaining a better idea of the amount of "condensation dust," particulate matter in fumes formed when factory smoke mixes and condenses with the surrounding air immediately after the high-temperature gases are discharged. The prefecture continues to monitor discharge conditions even more intently, with urban incinerators the center of attention.

Recent studies, including epidemiological studies conducted in the United States investigating the health impacts of fine aerosol particles with diameters of 2.5 μm or less (PM2.5). In order to gain a better grasp of conditions regarding PM2.5, the Hyogo Prefectural Institute of Public Health and Environmental Sciences is running trials of low-cost samplers that employ filtering methods with high precision. Measurement results obtained in monitoring by the institute, which is located in Kobe, indicate that 60%–80% of what was previously classed under earlier environmental standards as PM10 can now be classed as PM2.5.

3 Conclusions

As it is mentioned above, the measures against air pollution have been conducting by the prefecture. The outline of these promotions is as follows;

(1) Against the Automotive Pollution: The prefecture is promoting, Reducing black smoke, Reduction of traffic congestion, Road pricing. etc. And also recommending Idling-stop, Eco-driving. Making efforts to reducing the number of diesel powered vehicles.

(2) Against the Hazardous Air Pollutants: The 21 hazardous substances are listed and the monitoring has been conducted.

(3) Against the Suspended Particulate Matter: Providing the guidance about use of clean fuels and installation of particulate filters. And, the investigation of PM2.5 is started by the prefecture because of the measurement results obtained by the institute, 60%–80% of PM10 can now be classed as PM2.5.

References

Ministry of the Environment (Japan): 2002 Environmental White Paper (2002)
Hyogo Prefecture: 2001 Environmental White Paper in Hyogo Prefecture (2001)

兵庫県における大気環境保全政策

1.はじめに

兵庫県は日本のほぼ中央に位置しており､日本の標準時を決める東経 135 度の子午線が、南の東浦町から北の但東町まで５市８町を通っている。兵庫県の面積は約 8400㎢2 で 47 都道府県中第 12 位、人口は約 557 万人で同じく第 8 位である。瀬戸内海沿岸部を中心として工場地帯が形成され、それに伴い様々な環境問題が生じ、その解決への対策も講じられてきた。兵庫県では、尼崎など第２次世界大戦前からの工業地帯において 1940 年代後半から公害の発生が見られるようになった。1950 年代後半からの高度経済成長期には、エネルギー消費が急速に増大するとともに、石炭から石油へとエネルギー源の転換により、大気汚染が当初は粉塵を中心としたものから硫黄酸化物を中心とした汚染に形態を変化させつつ広域化、深刻化させていった。1960 年代後半に入ると急速な自動車の普及ともあいまって窒素酸化物による汚染が進み、1970 年代初めには光化学スモッグが発生するようになり、健康被害が生じるようになった。県では、これに対応するために、1965 年には、「公害防止条例」を制定するとともに、公害対策を実施していくための行政機構を整備し、国に先駆けて公害対策の展開を始めた。1960 年代後半は、この公害防止条例に基づき、指定施設や排出基準の設定などにより、公害の抑制に努めた。国においては、1967 年に環境行政の枠組みを規定する「公害対策基本法」が制定され、以後、同法を受けて、1968 年には「大気汚染防止法」及び「騒音規制法」が、1970 年には「公害紛争処理法」､「公害防止事業費事業者負担法」「水質汚濁防止法」及び「廃棄物の処理及び清掃に関する法律」が制定され、今日の環境行政に係る法体系の基礎が整備された。1980 年代に入ると、1973 年及び 1978 年～79 年の２度の石油危機等の影響を受け、高度成長の時代から低成長、安定成長期へと転換し、省エネルギーやこれまでの公害対策の進展とあいまって、環境の状況は総体的に改善された。しかし、都市化の進展や生活様式の変化等により、公害問題は様相を変え、新たな対応が求められるようになった。

大気環境に目を向けると、硫黄酸化物による汚染は、総量規制や脱硫装置の導入、燃料の低硫黄化により、着実に改善された。一方、窒素酸化物については、1973 年に環境基準や工場に対する排出基準が定められ、1970 年代後半には改善の傾向が見られるようになったが、自動車交通量の増加等により、1985 年を境に再び濃度の上昇の傾向が見られるようになった。

2.兵庫県における大気環境の保全の施策

(1) 自動車公害防止対策の推進（別紙資料参照）

a.総合的な自動車公害対策の推進

1998 年 1 月に策定した「自動車公害防止計画」に基づき、発生源・物流・人流・交通流等の各種対策を、関係機関と連携を図りながら、総合的に推進している。なお、阪神間における沿道環境の改善を図るため、2001 年 11 月から、都市部の交通を臨海部に誘導する環境ロードプライシングが試行されている。

b.自動車排出窒素酸化物総量削減計画（自動車 NOx 計画）の推進

1993 年 11 月に策定した「自動車 NOx 計画」に基づき、事業者の自主管理による自動車 NOx 排出量の削減、県公用車への導入や補 助事業等による低公害車・低排出ガス車の普及促進、アイドリング・ストップ等のエコドライビング運動などの施策を推進している。

なお、「自動車から排出される窒素酸化物の特定地域における総量の削減等に関する特別措置法」（自動車 NOx 法）が、2001 年 6 月に改正され、「自動車から排出される窒素酸化物及び粒子状物質の特定地域における総量の削減等に関する特別措置法」（自動車 NOx・PM 法）に改正されたことに伴い、県においても 2002 年度に新たに「自動車 NOx・PM 総量削減計画」を策定する。

c.ディーゼル車対策

近年、ディーゼル車から排出される粒子状物質による健康影響が指摘されていることから、民間事業者に対する天然ガス塵芥車の購入費補助や DPF 導入補助などの施策を推進している。

(2) 有害大気汚染物質対策の推進

ベンゼンやジクロロメタン等の有害大気汚染物質による健康被害を未然に防止するため、大気環境モニタリングを実施するとともに、工場等における排出状況の実態調査及び排出抑制の指導を実施している。

(3) 浮遊粒子状物質対策

大気中の浮遊粒子状物質（エアロゾル）のうち、固定発生源から排出されるばいじんについては、大気汚染防止法に基づき、ばい煙発生施設の種類及び規模ごとに排出基準が定められている。兵庫県では、大気汚染防止法に基づく排出基準の遵守を徹底するほか、環境保全（公害防止）協定による指導などにより、良質燃料の使用及び集じん機の設置など、ばいじん排出量の低減指導に努めている。

また、工場の煙突から出た高温のガスが大気中に排出された直後に大気との混合冷却等により粒子化する「凝縮性ダスト」の実態把握も進めている。測定方法の検討や固定発生源からの排出実態を調査し、国を中心とする調査検討会において、工場から排出されるばいじんの 30%が凝縮性ダストであると推定されている。今後さらに都市ごみ焼却炉を中心に排出実態調査を進めていく。

さらに近年、粒子径が 2.5μm 以下の微小なエアロゾル粒子 PM2.5 の健康影響が米国での疫学調査等から指摘されているが、兵庫県下の実態把握はあまり進んでいない。兵庫県の健康環境科学研究センターでは、PM2.5 の実態把握を進めるため、測定精度が高くなおかつメンテナンスが容易で、重量濃度測定の基本であるフィルター法を用いた安価なサンプラーを試作し、測定性能の評価を進めている。神戸市にある当研究所でのモニタリングでは、従来の環境基準項目である浮遊粒子状物質 PM10 の 60～80%が PM2.5 という測定結果が得られている。

自動車交通公害対策

(A)自動車単体対策

1.自動車排出ガス規制、車種規制

2.ディーゼル車の黒煙対策

・ディーゼル車に対する集中自主点検等を推進する。

・ディーゼル車の黒煙取締りを実施する。

・黒煙監視モニター（公募）制度を実施し、通報により自動車使用者を指導する。

3.低公害車導入の促進

4.特殊車両通行許可違反、過積載車両の取締り

(B)交通需要の調整・低減

1.新交通管理システム（ＵＴＭＳ）の推進

・公共車両優先システム（ＰＴＰＳ）

・交通公害低減システム（ＥＰＭＳ ）

2.ＴＤM施策の推進

自動車交通から公共交通への転換など総合的な交通需要マネジメント（ＴＤM）施策を進める

(C)交通流対策

1.道路ネットワークの整備等による交通流の分散、円滑化

2.交通円滑化のための道路改良等

3.環境ロードプライシング

4.ドライバーへの情報提供の強化

(D)道路構造等対策

ａ 低騒音舗装、遮音壁等の整備

・沿道における自動車騒音等を緩和するため、低騒音舗装や遮音壁の設置等の整備を推進する。

ｂ 環境防災緑地等の整備

ｃ 沿道地区整備

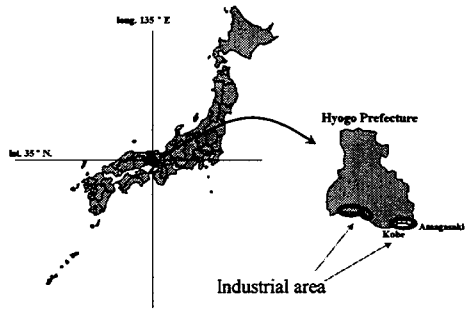
ｄ 土壌脱硝及び光触媒のフィールド実験

(E)調査・測定

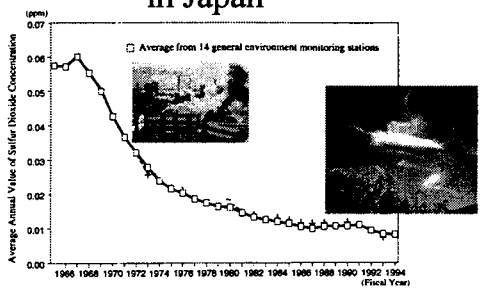
自動車排ガス測定局による大気モニタリング

Measures for the Preservation of the Atmospheric Environment in Hyogo Prefecture

Akira YOSHIMURA
The Hyogo Prefectural Institute of Public Health and Environmental Sciences , KOBE JAPAN



Changes in average annual SO_2 in Japan



Source:Environment Agency of Japan

The prefecture is tackling mainly following issues.

1)Promoting measures to control automotive pollution
2)Promoting measures to reduce hazardous air pollutants
3)Promoting measures to reduce particulate matters

The prefecture is tackling mainly following issues.

1)Promoting measures to control automotive pollution
2)Promoting measures to reduce hazardous air pollutants
3)Promoting measures to reduce particulate matters

Route43

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution
(A) Measures focusing on automobiles

1. Regulations governing automobile exhaust emissions and classifications
2. Measures to reduce black smoke from diesel-powered automobiles
3. Accelerated introduction of low-emission automobiles

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution
(B) Adjustment and reduction of traffic congestion

1. Public Transport Priority System
2. Promote to shift private automobile traffic to public transport

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(C) Measures targeting traffic flow

1. Dispersion and harmonization of traffic flows
2. Improvement of roads to smooth traffic flows
3. Environmental Road Pricing
4. Stronger efforts to provide information to drivers

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(D) Measures targeting roadway structures

1.Installation of low noise pavements and sound barriers
2.Run field tests on de-nitrification of soil and photo-catalysts

Field test on de-nitrification of photo-catalysts

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(A) Measures focusing on automobiles
(B) Adjustment and reduction of traffic congestion
(C) Measures targeting traffic flow
(D) Measures targeting roadway structures
(E) Surveys and measurements

1) Promoting measures to control automotive pollution

(E) Surveys and measurements

- Monitoring of air quality at the roadside measurement stations. (SO_2,NOx,CO, Particulate Matters(PM_{10}))
- There are about 30 stations in the prefecture.

Roadside Measurement Station

The prefecture is tackling mainly following issues.

1)Promoting measures to control automotive pollution
2)Promoting measures to reduce hazardous air pollutants
3)Promoting measures to reduce particulate matters

The prefecture is tackling mainly following issues.

1)Promoting measures to control automotive pollution

2)Promoting measures to reduce hazardous air pollutants

3)Promoting measures to reduce particulate matters

2) Promoting measures to reduce hazardous air pollutants

- In order to prevent damage to public health from exposure to the hazardous air pollutants, the prefecture has been monitoring air quality since 1997.
- 234 substances are listed as hazardous air pollutants by Ministry of the Environment.

21 Hazardous Substances

Volatile organic compounds
1. Tetrachloroethylene
2. Trichloroethylene
3. Vinyl chloride monomer
4. Chloroform
5. Ethylene oxide
6. 1,2-dichloroethane
7. Dichloromethane
8. Acrylonitrile
9. 1,3-butadiene
10. Benzene

Aldehydes
11. Acetaldehyde
12. Formaldehyde

Metals
13. Nickel
14. Arsenic
15. Manganese
16. Beryllium
17. Chromium
18. Mercury

Others
19. Benzo[a]pyrene
20. Asbestos fiber
21. Dioxins

The prefecture is tackling mainly following issues.

1)Promoting measures to control automotive pollution

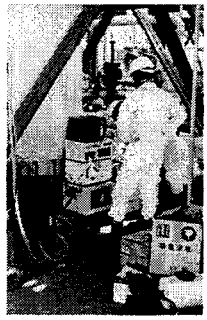
2)Promoting measures to reduce hazardous air pollutants

3)Promoting measures to reduce particulate matters

3) Promoting measures to reduce particulate matters

- Discharge standards for particulate matters discharged from stationary sources are determined.
- The prefecture has given guidance in ways to reduce the amount of particulate matters being discharged.
- Condensation Dust
- $PM_{2.5}$

Monitoring of stationary sources

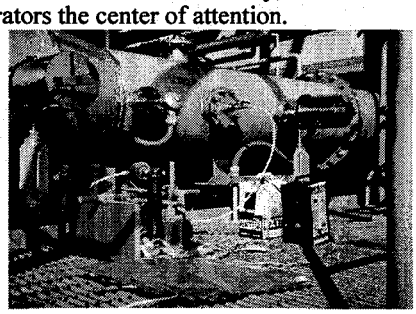


Condensation Dust

- Particulate matters in fumes formed when factory smoke mixes and condenses with the surrounding air immediately after the high-temperature gases are discharged.

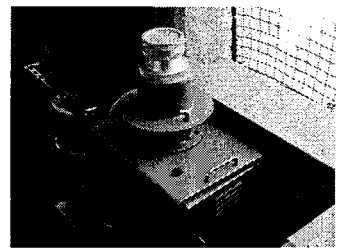
Condensation Dust

- The prefecture continues to monitor discharge conditions even more intently, with urban incinerators the center of attention.

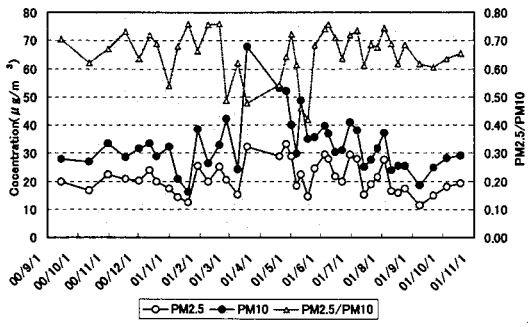


$PM_{2.5}$

- Fine aerosol particles with diameters of 2.5 μm or less
- The prefecture is running trials of low-cost samplers that employ filtering methods with high precision.



$PM_{2.5}$ and PM_{10} monitoring in Kobe



Conclusions

(1) Automotive Pollution

The prefecture is promoting, reducing black smoke, reduction of traffic congestion, road pricing. etc.

And also recommending idling-stop, eco-driving. Making efforts to reducing the number of diesel powered vehicles.

Conclusions

(2) Hazardous Air Pollutants

The 21 hazardous substances are listed and the monitoring has been conducted since 1997.

Conclusions

(3) Particulate Matters

Providing the guidance about use of clean fuels and installation of particulate filters.

And the investigation of $PM_{2.5}$ is started by the prefecture because of the measurement results obtained by the institute, 60%–80% of PM_{10} can now be classed as $PM_{2.5}$.

Air Quality Management in Korea

By Na Jung Kyun, Deputy Director
Air Quality Policy Division
Ministry of Environment, Republic of Korea

1. Air Quality Status in Korea

Air quality in Korea is gradually improving, with a number of air pollutant levels being within environmental standards. However, in the case of some large metropolitan cities, pollution levels of nitrogen dioxide, particulate matter, and ozone have intermittently exceeded the standards, showing a tendency of increasing pollution.

Sulfur dioxide and carbon monoxide levels have generally satisfied the environmental standards.

- SO_2: Following the expanded supply of clean fuel and low-sulfur diesel fuel, the air pollution measurement stations that have been installed nationwide are showing levels that meet the environmental standard of 0.02 ppm on the average per year, except for some stations installed in the Ulsan area.

- CO: The environmental standard is being satisfied in most areas. However, along roads in some large metropolitan cities, the pollution level intermittently exceeds the environmental standard of 9 ppm average per 8-hour period.

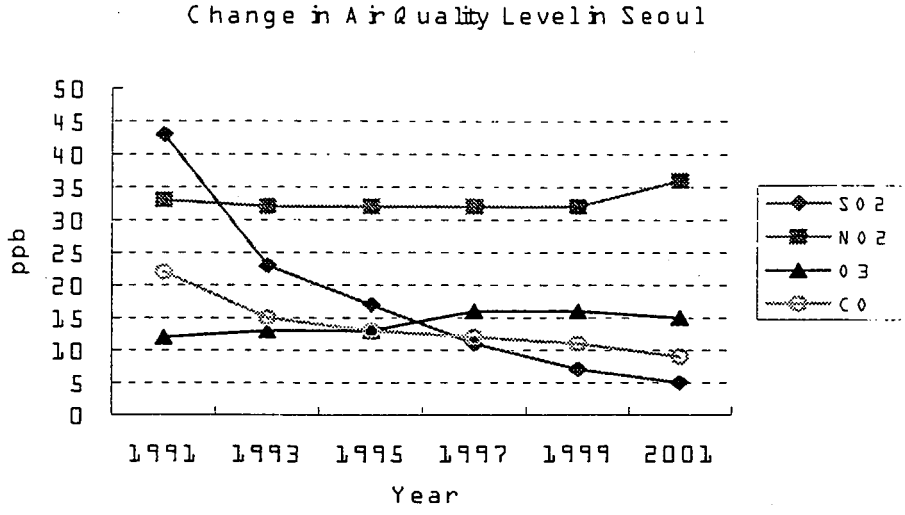
Due to increased overall vehicular emissions and the increasing frequency of the regional yellow dust phenomenon, the pollution level of particulate matter (PM10) continues to gain severity, despite the expanded use of clean fuels and strengthened emission standards. Compared to selected major cities of other industrialized countries, PM10 is 2-4 times more concentrated:

Seoul:	71	/	(2001)
London:	20	/	(2001)
Paris:	20	/	(2001)
Tokyo:	40	/	(2000)

Due to the increase in PM10, visibility in Korea has decreased from 13 km in 1996 to 10 km in 2000.

Nitrogen dioxide levels also show an increasing trend according to the increase in the number of automobiles. In 2001, of the 148 measurement stations on-line, seven exceeded the environmental standard of 0.08 ppm average per 24-hour period.

Lastly, ozone also continues to trend upwards. In 2001, of the 148 measurement stations nationwide, 113 have exceed the environmental standard of 0.1 ppm average per 1-hour, and the number of the summer ozone warnings is on the rise.



The general increase in air pollution is due to following causes:

- ✓ high population density
- ✓ high pollutant emission volume per unit area
- ✓ high rate of increase in automobile ownership and energy use

Of these, the rapid increase in the rate of automobile ownership is the most important contributor to air pollution in large cities. The number of automobiles has increased by a factor of approximately 100 over the past 30 years.

1970	130,000 cars
1980	530,000 cars
1990	3,400,000 cars
2000	12,050,000 cars
2002	13,734,000 cars

2. Policy Direction for Air Quality Management

- Emission Inventory Survey

To pursue scientific and systematic management of air quality, the Ministry of Environment is carrying out a survey to prepare an emissions inventory of pollutants. Initially, the survey was being conducted using energy statistics. However, since 2001, it has been including other variables such as production processes and waste incineration.

- Expansion of Air Pollution Monitoring Stations

Currently there are 76 monitoring stations at the national level and 231 stations at the local level. The Ministry plans to increase the total number of stations to 457 by 2005.

- Management of Special Policy Areas

The Ministry has designated industrial complex areas with serious air pollution as "special policy areas," where stricter emission standards are applied. Areas that have exceeded or are likely to exceed standards have also been designated as "air environment regulation areas" for stricter management.

- Strengthening of Vehicular Emissions Management

The Ministry is particularly concerned about reducing vehicular emissions, which is the biggest source of air pollution in large cities. The Ministry plans to reduce vehicular emissions by strengthening automobile emission standards, implementing defect inspections more strictly, strengthening fuel quality standards, and improving urban traffic systems.

- Strengthening of Point Source Emissions Management

For stricter management of point sources such as factories and other non-residential facilities, the Ministry plans to strengthen emission standards that specifically target the industrial sector. The Ministry also plans to mandate installation of automatic pollution measurement devices on factory smokestacks.

- Research on Ozone and Particulate Matter

The Ministry launched a five-year research project to identify the mechanisms involved in the generation and elimination of secondary pollutants such as ozone and particulate matter.

3. Management of Vehicular Air Pollution

In large metropolitan cities, vehicular emissions are the major source of air pollution. In Seoul, for example, a large proportion of air pollutants are generated by vehicles, as follows:

CO	89%
PM10	70%
NOx	56%
SO2	13%

The policy direction in this field can be summarized as follows:

- Motor vehicle manufacture:
  - Promote the supply of motor vehicles that use cleaner fuels such as natural gas.
  - Strengthen vehicular emission standards to promote the development of low-pollution engines.

- Motor vehicle operation:
  - Street-level enforcement
  - Institutionalize regular inspections
  - Discourage idling

- Transportation demand management:
  - Road pricing (Congestion pricing)
  - Expansion of transfer terminal networks
  - Enhanced parking management and parking fees in urban areas
  - Car-free day initiatives

The Ministry of Environment has continually pursued these measures. In particular, the Ministry has already met with some success in a number of areas, as outlined below:

- Strengthening of the emissions standard for newly manufactured automobiles.

  - The standard for newly manufactured cars has been strengthened a few times in Korea to promote the manufacture of automobiles that generate fewer pollutants. However, the Korean standard lags behind standards in other industrialized countries.

  - In the case of gasoline-powered automobiles, the Korean standard is equivalent EURO III and LEV levels. For the year 2006, the government plans to upgrade the standard to EURO IV and ULEV.

- Supply of natural gas buses

  - Large diesel-powered vehicles such as buses and trucks are quite major sources of the overall air pollution profile. The frequency of intra-city bus operation is the highest in large cities, and these buses have been recognized as the main cause of air pollution in large cities. Accordingly, the government has been promoting the supply of natural gas buses since 2000. The government is in the process of replacing 3,000 superannuated diesel-fuel city buses with natural gas buses by the end of 2002. The plan is to ultimately replace all 20,000 city buses nationwide by 2007.

  - To promote the replacement of diesel buses with natural gas versions, the government is providing bus purchase subsidies, financing the construction of refueling stations, offering cuts on value-added tax and acquisition tax, and administering an environment-friendly oil pricing system designed to favor natural gas buses over the conventional alternatives.

- Improvement and computerization of the automobile emissions certification system

  - Korea introduced a certificate system for automobile emissions in 1987. The system has been improved, reflecting the strengthened emission standards adopted since then.

- Also, the automobile import market has recently been liberalized in Korea. Certification of imported cars from the U.S., Europe, and other countries require standardization. Accordingly, improvements in the certification system as well as research into computerization have become necessary.

- The Ministry is currently examining and analyzing the problems of the Korean certification system and the systems used in the U.S., Europe, Japan, and other countries. The Ministry is engaged in improving and computerizing the system.

• Strengthening of Automobile Defect Inspection System

- In the case of the U.S., the inspection failure rate is close to 15%, whereas in Korea only one model car has failed in the past nine years.

- Accordingly, the following measures have been gradually implemented to select car models that would require defect inspections: surveillance tests, emission defect reporting requirements, and on-board diagnostic systems.

• Efforts to Develop Technologies for Low-pollution Automobiles

- The diesel engines currently produced in Korea lag behind diesel engines produced in Europe. Since 1998, projects have been pursued specifically for developing low-pollution automobile technology, such as the high-compression dispersion device-matching technology for mid-sized diesel engines.

• Emissions Regulation of Motor Vehicles in Operation

- Currently, motor vehicle emissions are measured using idling and/or a non-load rapid acceleration method in most cities. This method does not accurately reflect the emission amount of pollutants when the motor vehicle is actually in operation. Accordingly, in May of this year, precision measurement was implemented in Seoul using the in-operation load inspection method for old vehicles (i.e., passenger cars older than 12years).

- Personal habits, such as the long pre-heating of engines and not turning off the ignition key when parking or stopping the car, generate unnecessary fuel consumption and emissions. The government therefore plans to regulate idling in transportation terminals, motor vehicle depots, parking lots, and other special areas from 2003.

• Improvement of Automobile Fuel Quality

- The diesel price in Korea is significantly lower than gasoline, especially in comparison to other industrialized countries, while the percentage of diesel cars in Korea is relatively higher. Diesel cars in Korea generate approximately 52% of the total automobile air pollutants. To improve this situation, the government

plans to strengthen standards to raise the quality of gasoline and diesel fuel.

- The oil companies have endeavored to improve automobile fuel quality, in large part because the Ministry has monitored automobile fuel quality and released this information regularly since July of this year. Automobile fuel quality has improved dramatically since the Ministry began publicly reporting fuel quality data.

- Environmentally Sustainable Transport System

  - To reduce air pollution caused by automobiles, transportation demand management is critical. A road pricing system (congestion pricing) for passenger cars is in operation on some tunnels in Seoul. Private cars with more than two passengers are exempt from the fee. The Korean government encourages people to voluntarily leave their cars at home once every ten days. Cars that violate the campaign are supposed to be prohibited from entering government buildings. There are some other policies such as a carpool campaign, expansion of the subway system, expansion of transfer terminal networks, parking management and parking fees in urban areas, and car-free day initiatives to establish environmentally sustainable transport system and reduce transpotation demand

4. Management of Point Source Emissions

- Emissions Standards

  - There are currently explicit air pollutant emissions standards for 26 pollutants, including sulfur dioxide, particulates, and nitrogen oxide. Emissions standards have been strengthened a few times in consideration of the need to improve air quality, given current technological levels in Korea.

- Emission Charge System

  - To induce the voluntary reduction of air pollutant emissions, an emission charge system is being introduced. For ten pollutants, including sulfur dioxide and ammonia, charges are being levied according to the amount that emissions standards are exceeded. For sulfur dioxide and particulates, basic charges are levied, even for emissions below the emission standards.

- Stack Telemetry System

  - Stack Telemetry System (TMS) was introduced to monitor emissions from large-scale pollution-generating facilities on a real-time basis. Factories with boilers, power-generating facilities and incinerators with more than a certain capacity (e.g. boilers with a 40 ton capacity) are required to install stack telemetry devices. As

of the end of 2001, 867 measurement devices have been installed in 152 factories and the measurement data is being monitored in control centers operating in four special measurement zones. The data collected by the TMS devices is being used as the basis for determining emissions charges, and as guidance and inspection materials from 2002.

5. Special Measure on the Capital Region Air Quality Improvement

With a high population density (463 persons per square kilometer in Seoul) and a small landmass, Korea has a high pollutant emission level per unit area. The capital region including Seoul and its vicinities takes up only 12% of the total national land area, yet accounts for 46% of the total population and 58% of the emission volume. It is also projected that overcrowding in the capital region will continue, with the population expected to reach 22 million and the number of cars 8 million by 2012.

Regulating pollutant concentrations with end-of-pipe approaches will not be enough to fundamentally deal with the growing number of pollution sources; as a matter of fact, in some cases, it may only exacerbate the existing air quality. The situation calls for precautionary urban planning to prevent further urban concentration, which may include prior assessment of development projects' impacts on air pollution. In addition, since air pollution knows no boundaries, the current local management system has limitations in its ability to effectively improve air quality.

As such, drastic measures are called for to significantly improve the air quality in the capital region. Air pollution reduction measures, such as fuel policies, allowable emission standards and economic incentives should be carried out in earnest. At the same time, more aggressive policies should be adopted for those areas in the capital region with the worst air quality.

Korea is establishiong the "Special Measure on Capital Region Air Quality Improvement (2003-2012)" in order to lower air pollution levels of the captial region to parallel those of advanced nations. Key features of this measure include strengthening of preventive management mechanisms like the total maximum load system of pollutants and drastic reductions in vehicle-generated pollutants.

6. Conclusion

Keeping the air clean and fresh is the most urgent task we all have to face. How we manage it will not only affect our present health and livelihood but will also have implications for generations to come.

The status of air pollution in Korea has gradually improved thanks to the extension of clean fuel supplies and strengthening of emission standards. However, ozone levels and the frequency of ozone warnings have continued to increase, mainly due to growth in private car use. Since the major contributor to air pollution in large cities is the motor

vehicle fleet, Korea has continually pursued measures to address this source. Korea's priorities for this year are the continued supply of the natural gas intracity buses and enacting the Special Measure on the Capital Region Air Quality Improvement.

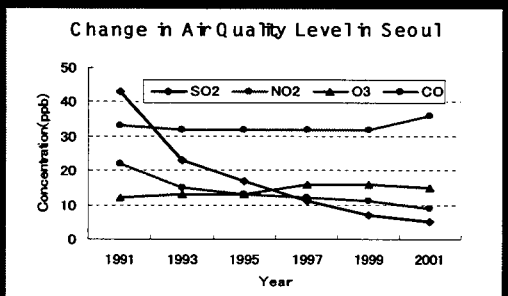
Korea is applying considerable domestic efforts to improve air quality, and is also cooperating with neighbouring countries to address regional issues that affect air quality, such as the yellow sand phenomenon.

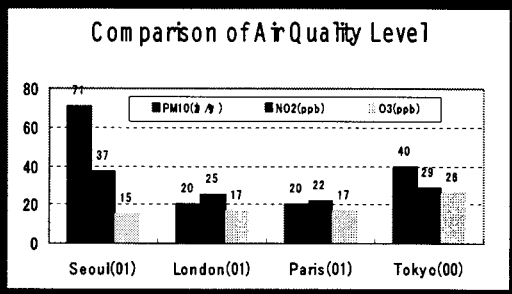
Air Quality Management in Korea

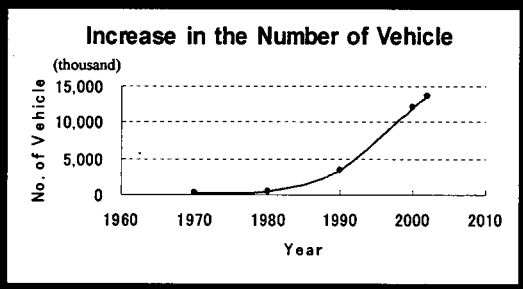
Na, Jung Kyun
Ministry of Environment
Republic of Korea

Air Quality Status in Korea

- **In early 80's, urban air pollution was serious**
  - SO_2 and dust from power plants, industries and domestic heating using high sulfur coal and heavy residual oil
- **Air quality is gradually improving**
  - supply of clean fuel and low-sulfur oil. SO_2 levels meet the environmental standard of 0.02ppm
  - but. NO_2, PM-10, and Ozone exceed the standard





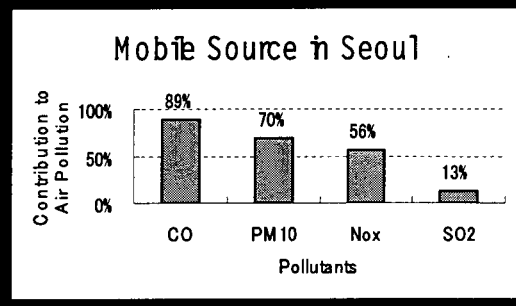


Policy Direction (1)

- **Emission Inventory Survey**
  - to pursue scientific and systimatic management of air quality
  - considering energy consumption, production process, waste incineration, etc..
- **Expansion of Air Pollution Monitoring Station**
  - currently 307 stations(76 national level, 231 local level)
  - by 2005, 457 stations
- **Management of Special Policy Areas**
  - industrial complex areas with serious air pollution
  - apply stricter emission standards

Policy Direction (2)

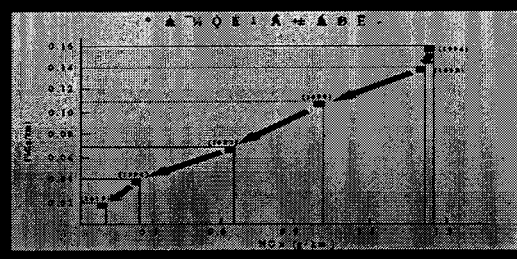
- **Strengthening of Vehicular Emissions Management**
  - strength automobile emission standards and fuel quality standards
- **Sterngthening of Point Source Emissions Management**
  - strength emission standards
  - introduce stack TMS
- **Research on Ozone and PM10**
  - a five-year research project to identify the generation mechanisms



Management of Vehicular Air Pollution(1)

- **Strengthening of the emission standards for newly manufactured automobiles**
  - currently EURO-3, LEV
  - from 2006, EURO-4, ULEV
- **Supply of NGV**
  - 3,000 intra-city buses by 2002
  - 20,000 buses by 2007
- **Improvement and computerization of the automobile emissions certification system**

Emission Standards of Small Diesel Powered Trucks



Management of Vehicular Air Pollution(2)

- **Development of technologies for low-pollution automobiles**
  - electric vehicles, hybrid vehicles
  - low emission diesel engines
- **Emissions regulation of motor vehicles in operation**
  - precision measurement using in-operation load inspection method
  - regulation of engine idling from 2003

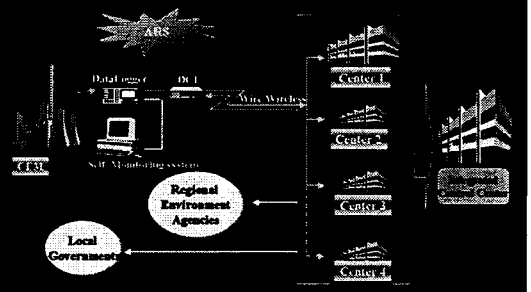
Management of Vehicular Air Pollution(3)

- **Improvement of automobile fuel quality**
  - strengthen fuel quality standards
  - monitor fuel quality and release the results regularly
- **Transportation demand management**
  - congestion pricing
  - leave cars at home once every 10 days
  - carpool campaign
  - parking management and parking fees in urban areas
  - car-free day initiatives

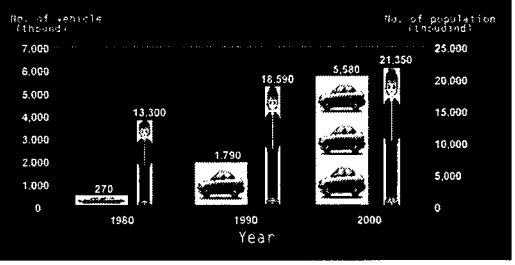
Management of Point Source Emissions

- **Emission standards**
  - considering economical and technological levels
- **Emission charge system**
  - levy according to the amount of emissions
- **Stack Telemetry System (TMS)**
  - to monitor emissions from large scale pollution-generating facilities (e.g. boilers with a 40 ton capacity)
  - used as inspection material(e.g. the basis for determining emissions charges)
  - 867 measurement devices installed in 152 factories

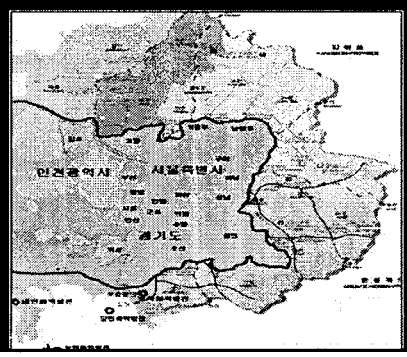
Stack TMS-Management System



Special Measure on the Capital Region Air Quality Improvement



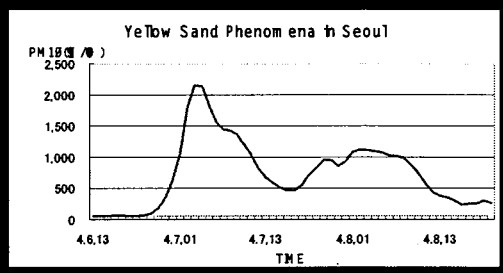
Target Areas of the Special Measure



Key Features of the Special Measure

- Total maximum load system from 2005
- Emission trade system
- Low emission vehicles
- VOC management
- Environmentally sustainable land use planning and energy management

Regional Cooperation



< Session 3> WSSD summit and NE environmental cooperation

Session 3, 11th NEAC

World Summit on Sustainable Development and Enhancement of Environmental Cooperation in Northeast Asia

Zhang Shigang
Deputy Director General, Department of International cooperation, SEPA
Dec 5-6, 2002 Bo'ao, P.R. China

Dear Distinguished Guests:

Good morning. It gives me great honor to make a speech over the world summit on sustainable development and the enhancement of environmental cooperation in Northeast Asia.

Ten years after the United Nation's Conference on Environment and Development (UNCED), the World Summit on Sustainable Development (WSSD) was held in September this year at Johannesburg. Implementation of Rio Declaration and Agenda 21 and the progress for global sustainable development were reviewed during WSSD, and Johannesburg Declaration on Sustainable Development and Plan of Implementation were approved.

In comparison with UNCED in Rio de Janeiro 1992, WSSD touched wider areas with more concrete issues which led to action-oriented results. In general, WSSD is a great success and will have deep influence on global sustainable development in the future.

1. Based on extended consensus reached by different parties, the idea of mutual and coordinated development on economy, society and the environment gradually predominates and

establishment of partnerships forms the trend. WSSD reaffirmed the principles as adopted by UNCED with special attention to the principle of "common but differentiated responsibilities". The concept of sustainable development is greatly enriched by consensus reached over relations and balance among the three pillars as economic development, social progress and environmental protection. Nation-wide participation and cooperation has become a key characteristic of global sustainable development in the future.

2. In-depth discussions are made over concrete actions. Focused on the implementation of Agenda 21 and outstanding issues in key areas, the Plan of Implementation is adopted, which raised concrete objectives for sustainable development. Among all the objectives proposed, 25 items has come up with detailed timetables. This shows a strong of responsibility and activeness from the governments on global sustainable development.

3. Adoption of Kyoto Protocol to the United Nations Framework Convention on Climate Change has been effectively sped up. As influenced by WSSD, the Protocol has now been adopted by 97 countries all over the world. Adoption of Kyoto Protocol by China and India is regarded

as a key outcome from WSSD, and has therefore raised extensive public attention.

4. International cooperation is highly regarded and voices for multilateralism is rising. Multilateralism should be emphasized so as to further implement the strategy for sustainable development and enhance international cooperation in economic and environmental fields.

5. As supplementary to the negotiation documents, interest parties has raised over 220 proposals for partnership on voluntary basis.

In spite of all the achievements made, we should admit that great difference does exist among countries in promoting measures, priorities and policy issues over global sustainable development. Some developed countries relate emphasis over environmental issues with social and political issues such as democracy, human rights and payment standards for labors, and relates environmental issues with human right issues. Some developed countries try to avoid international obligations and responsibilities of the government by over stating the importance of participation in the process of sustainable development by private sectors. The international society is still facing great challenges in the implementation of WEED outcomes as divergence of interests from different parties may influence and set barriers to international cooperation in the future.

We believe that sustainable development can only be realized

through joint efforts of countries all over the world. New strategic partnership shall be established based on equality, mutual benefits and respects so as to achieve mutual development. Technical cooperation in sustainable development shall be enhanced and international technology transfer shall be promoted to create a global economic environment in favor of sustainable development. Meanwhile, the international society should have full understanding of existing difficulties in funds, trade, and technology that developing countries are facing, and adopt effective measures for eradication of trade protection so as to facilitate with the realization of sustainable development in developing countries.

In general, China welcomes and appreciates the achievements made by WSSD. While concentrating on economic development, China, the world largest developing country, has adopted sustainable development as the basic national strategy and environmental protection as the basic national policy that should be adhered to for long term. We believe that environmental protection is the base and strong support to sustainable development. Enhanced environmental protection comes not only from the urgent need for ensuring environmental safety and human health, but also the request for change of economic growth model, poverty eradication and overall social progress.

The Chinese government has attached great importance to the

implementation of sustainable development strategy. In light of that, key indicators for sustainable development are included in the tenth five-year development plan for national economic and social development. During the 16th National Congress of the Communist Party closed a few days ago, development objectives over the next 20 years was planned as the following: Build a well-off society in an all-round way. Quadruple the GDP of the year 2000 by 2020. Industrialization will be primarily realized. The capability of sustainable development will be steadily enhanced. The ecological environment will be improved. The efficiency of using resources will be increased significantly. We will enhance harmony between man and nature to push the whole society onto a path to civilized development featuring the growth of production, an affluent life and a sound ecosystem. This covers objectives for sustainable development in economic growth, social progress and environmental protection, which is in consistence with the three supporting pillars as defined in WSSD.

Environmental cooperation in northeast Asia including China has made due contributions to WSSD and regional environmental cooperation. Northeast Asia is a region with high economic growth, high density of population and relatively complicated geological and environmental issues. Alongside with the development of regional economy and international environmental cooperation, good cooperation in northeast Asia as promoted by countries such as China, Japan, Korea and Mongolia,

etc, has been carried out in sustainable development related areas such as: environmental education and public awareness, fresh water, nuclear energy, air pollution and climate change, consumption model, poverty eradication, desertification and land deterioration. Policies and measures for further promotion over environmental cooperation in the sub region are established.

In order to assist the environmental institutions and organizations from northeast Asia in participating WSSD in an effective way, the member countries has developed the report for "issues of priority to be reported to WSSD and suggestions of resolutions to primary environmental and sustainable development issues in northeast Asia" through coordination meetings and senior official meetings. It is also noted that member countries have played an active role in WSSD.

As a main mechanism for maintaining dialogue among environmental protection authorities in China, Japan, Korea, Russia and Mongolia, the 11th NEAC and the following meetings and actions will improve understanding among member countries, facilitate the exchange of experience over sustainable development and form a solid base for extensive cooperation in environmental protection related areas. I believe that NEAC will play an important and active role in promoting cooperation in environment and development related fields among all member countries.

Thank you!

11th Northeast Asian Conference on Environmental Cooperation

5 - 6 December 2002, Qionghai, Hainan Province, China

Statement

Session 3: WSSD and Northeast Asia Environmental Cooperation

Akinori OGAWA

Director, Environmental Cooperation Office

Global Environment Bureau, Ministry of the Environment, Japan

I am delighted to be given this opportunity to present Japan's view on the World Summit on Sustainable Development. My presentation focuses on contribution of Japan to the Summit and Japan's follow up activities to it, and some views on Northeast Asia Environmental Cooperation following the Summit.

1. Japan's Contribution to the Summit

Japan actively participated in the preparatory process and the Summit itself. Prime Minister Junichiro Koizumi led the Delegation of Japanese government to the Summit. Also many NGOs, experts and enterprises participated in the Summit.

The basic principle of the Japanese government was that environmental conservation and economic development was mutually supportive to each other. Prime Minister Koizumi introduced tragic experience of pollution damage in Japan in the past and appealed for sustainable development. Based on the position, Japan addressed some approaches to be reflected in the output of the Summit. Those included achievement of an energy efficient and recycling-based society, utilization of scientific knowledge and technologies, strengthening of mega-city management, promotion of sustainable management of forest and other natural resources, and enhancement of environmental education.

Japan also made contributions in the negotiations at the Summit. As for the climate change, Japan's then-Minister of the Environment Hiroshi Ohki and Minister of Foreign Affairs Yoriko Kawaguchi led the discussion in gathering support for the Kyoto Protocol. The outcome was that a sentence "States that have ratified the Kyoto Protocol strongly urge States that have not already done so to ratify the Kyoto Protocol in a timely manner" in the Plan of Implementation.

In addition to the main conference, Japan actively hosted many parallel events. Japan Pavilion was set up jointly by the Government, private companies and NGOs in the "Ubuntu Village" which was a place to offer a variety of attractions and activities and to provide a forum for interaction between the United Nations, Governmental, Non–Governmental delegates and the public. Exhibition of

environment-friendly vehicles and panels dealing with global warming, biodiversity, etc. were displayed, and a series of seminars on various themes relating to Japanese partnership initiatives were organized in the Pavilion everyday. We had more than 15,000 visitors to the Japan Pavilion during the Summit.

2. Japan's Follow-up to the Summit

Our current task is to strengthen implementation of measures for sustainable development along with the line agreed on at the Johannesburg Summit. Japan is determined to implement the Koizumi Initiative and its partnership initiatives which are Japanese commitment at Johannesburg.

Koizumi Initiative

Prime Minister Koizumi expressed, in his statement, his firm determination to contribute toward sustainable development through the implementation of the "Koizumi Initiative" which is a package of actions of capacity building for development and environment. The basic concept of the Initiative is that simultaneous achievement of economic development and environmental protection is indispensable in order to realize sustainable development. To that end, all governments, organizations and stakeholders should share their understanding, strategies, responsibility, experiences and information. Japan will implement concrete measures with respecting the ownership of the recipient and extending support as an equal partner.

Measures were grouped under three titles: "human resources development", "development" and "the environment". Environmental measures include the "Environmental Conservation Initiative for Sustainable Development (EcoISD)," implementation of environment-related human resources development for 5,000 persons in the five-year period beginning in FY2002; taking a leading role for the entry into force of the Kyoto Protocol; proposal and promotion of the Asia Forest Partnership.

EcoISD

The Environmental Conservation Initiative for Sustainable Development (EcoISD), which is an important component of the Koizumi Initiative, provides with the Japanese policy to support developing countries though environmental ODA. The Initiative is based on the philosophy of i) human security, ii) ownership and partnership and iii) the pursuit of environmental conservation and development.

Action plans of the initiative provide with the following four priority areas of environmental ODA.

1) Efforts to address global warming

To raise awareness that global warming threatens sustainable development, to transfer to developing countries appropriate technologies,

and to enhance capacity to address this issue from scientific, social and systematic perspectives.

2) Pollution control

To provide support on measures to control pollution and improve living standards (air and water pollution and waste management) in urban areas.

3) Fresh water issues

To support the implementation of both water supply and sewage systems, as well as to promote "soft" cooperation for water resource management and water quality control.

4) Conservation of natural environment

To support the management of nature reserves, forest-related issues, prevention of desertification, and natural resources management, taking into consideration the efforts for eradicating poverty of local people.

The initiative also highlights new efforts by Japan including human resources development, provision of yen loans, enhancement of grant aid, promotion of collaboration with international organizations, and further improvement of evaluation methods of ODA projects.

Japan's Partnership Initiative

Japanese government registered 30 projects of Partnership Initiatives with the United Nations. I would like to introduce you some of our initiatives related to environmental cooperation in Northeast Asia.

- *Asia-Pacific Environmental Innovation Strategy Project (APEIS)*

Developing countries need to formulate environmental policies based on science supported by accurate data on environmental conditions and relevant social and economic activities. The Asia-Pacific Environmental Innovation Strategy Project (APEIS) aims to provide with scientific knowledge-based tools and innovative strategy options to promote informed decision-making for sustainable development for the use of policy makers, and to promote regional cooperation and capacity building for this purpose.

APEIS will develop monitoring methodologies and networks using satellite technologies; a set of assessment models to assess and predict the trends of environment conditions; and a strategic database and innovative strategy options for policy makers. These activities will be implemented by close cooperation among relevant research institutes in the Asia-Pacific region.

- *Enhancement of Regional Strategy on Climate Change through the Asia-Pacific Network on Climate Change (AP-Net)*

Greenhouse gas emissions from the Asia-Pacific region will continue to grow,

and the potential impacts of climate change are serious. The sings of those impacts have already observed in some countries in the region. In order to implement the UN Framework Convention on Climate Change and the Kyoto Protocol, the region needs to promote policy dialogues among countries and enhance regional strategy for emissions limitation and adaptation policy. The initiative aims to improve the Asia-Pacific Network on Climate Change (AP-net) for further enhancing regional strategies on climate change.

AP-net expands its scope to provide information necessary for the implementation of the Kyoto Protocol including greenhouse gas inventories and outcomes of CDM feasibility studies, and of climate policy technologies including bio-mass, energy-conservation and renewable energy. AP-net will also provide an "e-learning" system which is an online system to develop human resources for climate policy. The initiative involves 25 countries in the Asia-Pacific region, UNESCAP and the Global Environment Center in Japan.

- *Asia Forest Partnership (AFP)*

The objective of Asia Forest Partnership (AFP) is to promote sustainable forest management in Asia by addressing urgent issues such as good governance and forest law enforcement; developing capacity for effective forest management; control of illegal logging; control of forest fire; and rehabilitation and reforestation of degraded lands.

Areas of cooperation include development of forest policies, plans and programs including national forest programs, development of land use and natural resource management arrangements, use of satellite data for forest management. The initiative pays particular attention to the control of illegal logging. Proposed cooperative activities encompass various aspects of illegal logging such as establishment and implementation of guidelines for controlling illegal logging; development and enhancement of log tracking capacity; and introduction of verification system such as labeling; promotion of effective measures, in both importing and exporting countries, to eliminate export and import of illegally harvested timber; international cooperation and coordination on trade statistics, information exchange on illegal logging and illegal trade, study of possible measures related to trade. Partners of the initiative are thirteen governments, eight international organizations and one NGO, and this number is expected to increase.

- *Conservation and Sustainable Use of Sites of International Importance to Migratory Birds in East Asia and Australia*

This partnership provides a cooperative framework for conservation of migratory waterbirds and their habitats across the region through the inclusion of the habitats in “Site Networks.” The partnership is guided by the Asia-Pacific Migratory Waterbird Conservation Strategy. In order to achieve their potential, the site

networks need to include at least 25 percent of internationally important sites across the migratory flyways. At present the networks include approximately 10 percent of such sites. This initiative provides for expansion of the site network. The Ministry of the Environment Japan, Environment Australia and the Wetlands International are the lead partners of the initiative.

3. Follow up of WSSD in Northeast Asian region

The Summit ended up with two documents and registering over 280 partnership initiatives. In the follow-up to the WSSD, what is really matter is implementation of commitments we made in Johannesburg. It is crucial that the world community takes concrete actions to carry out these initiatives. In the Northeast Asian region, it is also necessary to strengthen cooperation among countries and stake holders for making priority among issues and promote implementation.

The Plan of Implementation provides one chapter to the Asia-Pacific region. It cited seven initiatives (capacity building, poverty eradication, cleaner production and sustainable energy, land management and conservation of biodiversity, freshwater resources, ocean/small island developing states and atmosphere/climate change) identified in the Phnom Penh Regional Platform on Sustainable Development for Asia and the Pacific. These issues could serve as a basis for developing follow up strategy in Northeast Asia. "Kitakyushu Initiative", which was adopted at ESCAP environmental minister meeting in 2000, was also cited in the Plan of Implementation as one of the specific actions. The initiative aims to develop network of local governments for information sharing and implementation of pilot projects.

In the follow up of WSSD, it is expected that the Northeast Asia Conference on Environmental Cooperation will continue to serve as a forum for exchange information and experiences in addressing environmental issues of our common concern.

Thank you.

WSSD and Northeast Asia Environmental Cooperation

Akinori OGAWA
Director
Environmental Cooperation Office,
Global Environment Bureau
Ministry of the Environment, Japan

Japan pavilion at WSSD

MOE Booth in Japan Pavilion

Exhibition of Low Emission Vehicles

Koizumi Initiative

1. **People and Hope (Human Resources Development)**
   - Capacity building, knowledge, science & technology
2. **Ownership and Solidarity (Development)**
   - Trade & foreign investment, energy, agriculture, ODA
3. **Today's Complacency, Tomorrow's Plight (Environment)**
   - EcoISD

EcoISD

Environmental Conservation Initiative for Sustainable Development

Action Plans

1. Global Warming
2. Pollution Control
3. Freshwater Issues
4. Conservation of Natural Environment

New Efforts by Japan

5,000 human resource training in 5 years
Environmental loan, grant aid
Collaboration with international organizations
Improvement of ODA evaluation methods

Japanese Partnership/Initiative

APEIS

Asia-Pacific Environmental Innovation Strategy Project

1. Objectives
   - To promote informed decision-making for sustainable development
   - To promote regional cooperation and capacity building
2. Activities
   - Development of monitoring methodologies and networks
   - Development of assessment models
   - Development of a strategic database and innovative strategy options
3. Partners
   - Research institutions in the Asia-Pacific region (China, India, Korea, Japan, Malaysia, Singapore, Thailand)
   - Asia-Pacific Network for Global Change Research(APN)
   - UNU Institute of Advanced Studies

Japanese Partnership/Initiative

AP-Net

Enhancement of the Regional Strategy on Climate Change through Asia-Pacific Network on Climate Change

1.Objectives
- Enhancement of the regional strategies on climate change

2. Activities
- Data base of relevant information including the Kyoto Protocol
- Collection and provision of information on climate policy technology
- Online capacity building

3. Partners
- 25 countries in the Asia-Pacific region
- ESCAP
- Global Environment Center(GEC)

Japanese Partnership/Initiative

AFP

Asia Forest Partnership

1. Objectives
   - Good governance and forest law enforcement
   - Development of capacity for effective forest management
   - Control of illegal logging and forest fire
   - Rehabilitation and reforestation of degraded lands
2. Activities
   - Development of forest policies, plans and programs
   - Development of land use and natural resource management
   - Implementation of guidelines for controlling illegal logging
   - Promotion of reforestation to rehabilitate degraded lands
   - Institutional development and capacity building and so on
3. Partners (as of 9 September 2002)
   Governments (13), international organizations (8), NGOs (1)

Japanese Partnership/Initiatives

Conservation and Sustainable Use of Sites of International Importance to Migratory Birds in East Asia and Australia

1. Objectives

Conservation of migratory waterbirds and their inland and coastal habitats across the regions through the inclusion of their habitats in 'Site Networks'.

2. Activities

Expansion of site networks across the region to include at least 25% of internationally important sites across the migratory flyways (10% of them are presently networked)

3. Partners
- MOE, Japan
- Environment Australia
- Wetlands International

Priority Areas for Asia & the Pacific

Johannesburg Plan of Implementation

- Capacity building for sustainable development
- Poverty reduction for sustainable development
- Cleaner production and sustainable energy
- Land management and biodiversity conservation
- Protection and management of and access to freshwater resources
- Oceans, coastal and marine resources and sustainable development of small island developing States
- Action on atmosphere and climate change

The 11th Northeast Asian Conference on Environmental Cooperation (NEAC)
5-6 December 2002, Hainan Province, China,

Outcomes of WSSD, Challenges and Opportunities in Northeast Asia

by Suho SEONG
Deputy Director, Global Environment Office
Ministry of Environment, Republic of Korea

Introduction

It has taken more than one year for the international community to prepare for the World Summit on Sustainable Development (WSSD), involving several preparatory meetings at various levels, including the four United Nations Preparatory Committee Meetings. WSSD is said to be the biggest Summit since Rio in 1992. World leaders from more than 190 countries gathered together in the "Cradle of Humanity," South Africa, and adopted the Johannesburg Declaration and the Plan of Implementation, both a blueprint for achieving sustainable development. While some are skeptical about the outcomes of WSSD because of lack of action-oriented paragraphs and not many clear targets and timetables in the Plan, the majority of governments have expressed their satisfaction with the results of the Summit and emphasized that what is important is to effectively implement the agreed text.

It is expected that the result of WSSD will be cited on many occasions in the post-WSSD period, as has been the case for UNCED. Many cooperative activities have already taken place in Northeast Asia especially in the field of environment since Rio. Ongoing activities need to be further strengthened through partnerships and, where necessary, new initiatives should be designed to better deal with emerging issues.

Overall Structure of the Plan of Implementation

The Plan of Implementation consists of eleven Chapters: Introduction, Poverty eradication, Changing unsustainable patterns of consumption and production, Protecting and managing the natural resource base of economic and social development, Sustainable development in a globalizing world, Health and sustainable development, Sustainable development of small island developing states, Sustainable development for Africa, Other regional initiatives, Means of implementation, and Institutional framework for sustainable development. The Plan calls for actions at all levels for sound building of the three pillars of sustainable development, namely environment, society, and economy. Environmental issues basically underlie all sections of the Plan, but are

extensively covered in 'Protecting and Managing the Natural Resource Base of Economic and Social Development'.

During the negotiation for the preparation of the Plan, poverty eradication appeared to be the highest priority for achieving sustainable development. And some of the environmental issues were closely related to the activities leading up to poverty eradication such as reducing the proportion of the people unable to access safe drinking water, sanitation and equitable sharing of biological resources. In many instances, the issues were cross-linked and could not be seen as separate from one another. Nevertheless, broad aspects of environmental issues are mostly covered in the section dealing with natural resource base. Specifically, the section deals with fresh water resources, oceans and fisheries, disaster, climate change, air pollution and ozone layer protection, desertification, mountains, sustainable tourism, biological diversity, and forests. Individual issues will be described in detail in subsequent parts of this paper.

Key Environmental Issues in the Plan Of Implementation

With respect to water resources management, launch of actions to halve the proportion of people without safe drinking water and access to improved sanitation by 2015 was recommended. To this end, financial support and transfer of technology to developing countries, promotion of access to public information and water pollution prevention for the reduction of health hazards and ecosystem protection were mentioned. In addition, the Plan encourages the development of integrated water resources management and water efficiency plans by 2005, which includes developing and implementing national/regional strategies and programmes for integrated river basin, watershed and ground water management. Other actions are also required to support developing countries in monitoring and assessing the quality and quantity of water resources, improve scientific understanding of water cycle through cooperation in joint observation and research, and to promote effective coordination among the various bodies working on water-related issues.

The paragraphs on oceans and fisheries turned out to be one of the hardest parts to reach agreement within the section on natural resource base. The UN Convention on the Law of the Sea was recognized as providing overall legal framework for ocean activities. To achieve sustainable fisheries, actions were called for, among others, restoring fish stocks to maximum sustainable level by 2015, developing and implementing regional fisheries agreements and where appropriate regional plans, eliminating subsidies that contribute to illegal, unreported and unregulated fishing and overcapacity. Strong emphasis was also

made on the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). The role of IMO was stressed to enhance maritime safety and protection of the marine environment from pollution, especially by requesting the IMO to consider stronger mechanisms in order to secure the implementation of IMO instruments by flag states.

In disaster management, several actions were proposed including the establishment of effective regional, subregional and national strategies, promoting joint observation and research, improving techniques and methodologies for assessing climate change effects, and developing early warning systems and information networks. In a related part on climate change, the agreed text turned out to duplicate the items already addressed in the UN Millennium Declaration. The language calling for the early ratification of the Kyoto Protocol ended up with the following: “States that have ratified the Kyoto Protocol strongly urge States that have not already done so to ratify the Kyoto Protocol in a timely manner.” In addition, the importance of enhancing scientific and technological capabilities, technical and financial assistance, implementation of national, regional and international strategies to monitor Earth's atmosphere was emphasized to overcome adverse effects of climate change.

The Plan of Implementation stressed cooperation at international, regional and national levels as essential to mitigating air pollution including transboundary air pollution, acid deposition and ozone depletion. In regards to agricultural activities, the Plan noted their close linkage with sustainable use, protection and management of water resources.

While the Plan of Implementation placed emphasis on strengthening the implementation of the UN Convention to Combat Desertification (UNCCD) to address the causes of desertification and land degradation, similar emphasis was also placed on enhancing synergies with other conventions such as the UN Framework Convention on Climate Change and the Convention on Biological Diversity. The Plan in this subsection called on the Global Environment Facility (GEF) to take initiatives in the designation of land degradation as a focal area for GEF.

The subsection dealing with the management of mountain ecosystems also had close linkage to land degradation and the protection of biological diversity. Especially one of the paragraphs proposed actions to implement programmes to combat deforestation, erosion, land degradation and loss of biodiversity. Like other sections and subsections, there was also an emphasis on full participation of

stakeholders like mountain communities in decision-making processes.

The Plan of Implementation stressed the promotion of sustainable tourism as a means of increasing the benefits from tourism resources for the population in host communities and at the same time enhancing the protection of ecologically sensitive areas and natural heritages.

Much of the debate on biodiversity during WSSD centered around concerning the fair and equitable sharing of benefits arising from the use of genetic resources. During the negotiation in Johannesburg many developing countries insisted to develop a legally binding international regime in this field, while most developed countries were reluctant to accept this proposal. Agreement was reached by encouraging actions to negotiate within the framework of the Convention on Biological Diversity. All States were also requested to ratify the Cartagena Protocol on Biosafety and other biodiversity-related agreements.

Like many other issues, the linkages between forest management and poverty eradication was highlighted in the subsection on forest management in the Plan of Implementation. The UN Forum on Forests was recognized as a key intergovernmental mechanism to facilitate and coordinate the implementation of sustainable forest management measures at the national, regional and global levels. Immediate action was recommended to promote and facilitate the means to achieve sustainable timber harvesting. The Plan noted matters pertaining to the recognition and support for indigenous and community-based forest management systems to ensure their effective participation in sustainable forest management.

Relatively fast agreement was reached on mining, minerals and metals during the WSSD preparatory meetings. The subsection of the Plan of Implementation on these areas calls for actions to support efforts to address the environmental, economic, health and social impacts and benefits of related activities, to enhance the participation of stakeholders including local and indigenous communities, and to foster sustainable mining practices through capacity-building support to developing countries.

Technical and financial assistance, education and participation of major groups in decision-making were identified among others as major cross-cutting issues and mentioned repeatedly throughout the Plan of Implementation.

Some issues like waste management and chemicals management were included in the section dealing with consumption and production, rather than the environment or human health. Consensus was reached on waste management at an early stage of intergovernmental negotiations but there has been a strong disagreement over the chemicals management, especially with respect to

reference to the Precautionary Approach as set in the Rio Declaration. Debate was extended as a result of disagreement over the enumeration of follow-up actions to UNEP global assessment of heavy metals like the preparation of international instrument to reduce risks from heavy metals. The agreed text merely calls for promoting reduction of risks posed by heavy metals. Nonetheless it is expected that stringent measures at global level is likely to be considered through relevant forums including the Intergovernmental Forum on Chemical Safety (IFCS).

Future Challenges and Opportunities in Northeast Asia

In this paper only a few selected issues, including freshwater management, oceans and fisheries resources management, climate change, air pollution, biological diversity and chemicals management will be discussed in detail.

First, in terms of freshwater resources, there have been only a few occasions that dealt with the management of water resources at this subregional level. Within the NEAC framework, for example, the issue was discussed two or three times in the past meetings. According to the documents from the International Conference on Freshwater held last December in Bonn, Germany, about 1.2 billion people lead an impoverished life without access to safe drinking water and almost 2.5 billion without access to proper sanitation. The Global Environment Outlook 3 (GEO3) published early this year by UNEP shows that about one third of the world's population lives in countries with moderate-to-high water stress. Also, GEO indicates that the usable portion of freshwater sources like lakes, rivers and shallow groundwater basins is about 200,000 ㎢, which is less than 1% of all freshwater on the Earth. The UNEP publication further points out that Asia and the Pacific region has the lowest availability of freshwater, with several countries already suffering from water scarcity. In addition, many reports covering freshwater resources estimate that the single most important use of freshwater is agriculture for food security because of rapid increase in population and consumption. As more and more countries become prone to water stress, the issue related to freshwater resources management faces a greater challenge due to a higher degree of potential conflicts arising from shared water sources between and among countries than ever before. For example, the report presented by the United Nations University this year suggests that there are more than 300 rivers crossing socio-political boundaries and this has led to an increasing number of conflicts among basin countries. More efforts need to be directed towards reducing the proportion of people without access to safe drinking water and to proper sanitation. This poverty-related

goals seems particularly relevant for Asia and the Pacific region considering the fact that in absolute terms, roughly two thirds of the world's poor live in this region and that achieving these goals are intimately related to the reduction of water-related diseases.

Another issue for consideration within the NEAC framework is the preparation of subregional strategies for integrated river basin, watershed and groundwater management. This integrated approach covers not only the efficient use, pollution prevention and recycling of water resources but also other various issues pertaining to shared water resources. The preparation of Strategic Action Programme for Tumen river basin could be a good example in this subregional context. Similar actions can be initiated by utilizing the currently available communication channels to promote the work in this field with several multilateral cooperative activities underway. These could include, for example, NEAC, Tripartite Environment Ministers' Meeting (TEMM), and Northeast Asian Center for Environmental Data and Training.

With respect to the oceans and fisheries resources management, the report by the UN University this year indicates that agriculture, manufacturing industries and urban areas are all major contributors to the pollution observed in East Asian coastal waters and that the level of pollution in these areas can be approximately correlated to the level of industrialization in the countries adjacent to the coastal areas. Many other examples concerning over-exploitation of fish stocks and marine and coastal pollution are described in GEO3. One example demonstrates the extent of problems associated with eutrophication due to nitrogen inputs and corresponding increase in the economic losses in fisheries and aquaculture amounting to several million dollars. Multi-sectoral coastal and ocean management, together with the implementation of relevant international and regional agreements through regional coordination and cooperation mechanisms, is essential to mitigate marine pollution and to restore the depleted fish stocks. In this respect, further work should be done at this subregional level to strengthen the existing mechanisms like Northwest Pacific Action Plan (NOWPAP) and its related activities regarding the protection of marine and coastal environment.

Recently in climate change forums, it has quite often been emphasized that developing countries, especially the least developed, countries need special attention because of their vulnerability to climate change. The issue results in other direct or indirect problems like biodiversity loss and natural disasters. During the last two years most of the specific modalities and procedures to implement the Kyoto Protocol have been resolved and, I believe, the recent

agreements will enhance the mitigation of greenhouse gases at global level.

Several cooperative activities are underway in this subregion to reduce air pollution including transboundary air pollution. For example, at the recent TEMM meeting, China, Japan and Korea have agreed to take joint actions to combat dust storm problem, which bears upon land degradation in this region. The Acid Deposition Monitoring Network in East Asia (EANET) provides another venue for further elaboration of subregional and regional efforts to deal with acid deposition. All these existing mechanisms including NEAC should be fully utilized to promote cooperation and coordination of relevant work in this field.

From time to time biodiversity-related discussion have taken place within the framework of NEAC starting from the third conference held in September 1994 in Japan. However, there has been no systematic follow-up activities in this field. Considering the level of interest shown by the five NEAC-participating countries it is not surprising to see that, although all of these countries have joined the Biodiversity Convention, none of the countries have acceded or ratified the Biosafety Protocol yet. Also considering the fact that creating an international regime to promote fair and equitable sharing of benefits arising from the use of biological diversity was one of the hottest issues during the negotiation for the Plan of Implementation, appropriate attention need to be given in this topic in future for, where necessary, creating a new regional mechanism to deal with the problems.

One last issue that I want to raise in this paper is chemicals management. In many countries there are several government Ministries/Departments/Agencies involved in chemicals management. It seems fair to say that no single government agency within a government deals with entire issues concerning chemicals management, partly because of the versatile use of chemicals from pesticides, industrial chemicals to everyday-life commodities. Moreover, there are emerging issues like the risks posed by heavy metals and endocrine disrupters. Efforts need to be made to address these matters on an urgent basis. One way of moving forward might be to prepare regional profiles to assess the current legal, institutional administrative structures in cooperation with relevant international organizations active and to strengthen the capacities for chemicals management.

Possible Approaches to Subregional Cooperation

According to the Plan of Implementation, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) was specifically asked in collaboration with other regional and subregional bodies to conduct the following

tasks:

· promote the integration of the three dimensions of sustainable development into its work in a balanced way, including through the implementation of Agenda 21;

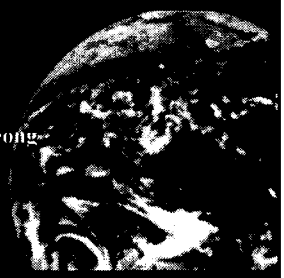
· facilitate and promote a balanced integration of the three pillars of sustainable development into the work of regional, subregional and other bodies, for example, by facilitating and strengthening the exchange of experiences;

· assist in the mobilization of technical and financial assistance, and facilitate the provision of adequate financing for the implementation of regionally and subregionally agreed sustainable development programmes and projects, including addressing the objective of poverty eradication;

· continue to promote multi-stakeholder participation and encourage partnerships to support the implementation of Agenda 21 at the regional and subregional levels.

In conclusion, bearing in mind the mandates given to the regional commission, it is highly recommended that future post-WSSD work be conducted in close cooperation and coordination with ESCAP and other regional and subregional bodies. This way it would be possible to avoid the duplication of efforts and resources. It will also enhance synergy effects among the related activities for sustainable development.

Outcomes of WSSD, Challenges and Opportunities in NE Asia



Suho Seong

Ministry of Environment, Republic of Korea

Contents

I. Overview of WSSD

II. Major Outcomes from WSSD
- i. Adoption of Plan of Implementation & Declaration
- ii. Partnership Initiatives

III. Key Environmental Issues in the Plan

IV. Future Challenges & Opportunities

V. Possible Approaches to Subregional Cooperation

I. Overview of WSSD

- Prep meetings prior to WSSD (4 UN PrepCom)
- 10-yr review on implementation of Agenda 21
- more than 190 countries attended during 26 Aug-4 Sept (Summit: 2-4 Sept) in Johannesburg
- adopted Plan of Implementation & Declaration
  - Plan of Implementation: detailed action plan to be carried out next 10-20 years at nat'l, regional & global levels
  - Declaration: expression of political commitment to the Plan
- announced 172 Partnership Initiatives

II. Major Outcomes from WSSD

< Plan of Implementation>

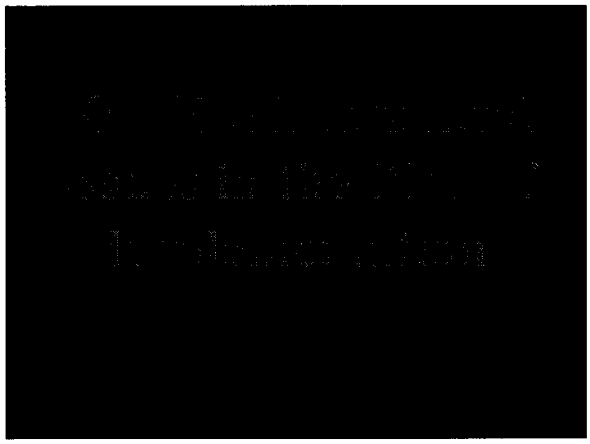
- 11 Chapters with actions to overcome socio-economic and environmental problems
- highest priority given to poverty eradication
- environmental issues are mostly covered in Chapter on Natural Resources
  - freshwater resources, oceans & fisheries, climate change, air pollution, desertification, biodiversity, forests
- Some others are throughout the Plan
  - cross-cutting issues (T/T, FA, eduation, participation of major groups), Chemicals, Wastes in other Chapters

<Johannesburg Declaration>

- only a few selected countries were involved when drafting the declaration in Johannesburg
- 10-yr review on the implementation of Agenda21
  - not so so much progress towards SD
  - lack of participation of major groups
  - imbalance betw. 3 pillars of SD: social, economic and environmental
- political will to implement Agenda21 & the Plan

<Partnership Initiatives>

- 172 PIs announced at WSSD
  - voluntary, involving IOs, Major Groups, Governments
  - not subject to intergovernmental negotiations
- still ongoing
- - to date more than 200 PIs are being carried out



<Freshwater Resources Management>

- Poverty-related goals :
  - reducing the proportion of people w/o access to safe drinking water & to improved sanitation by half by 2015
  - financial support & T/T to developing countries, promotion of access to public info., water pollution prevention
- Development of integrated water resources management & water efficiency plans by 2005
  - nat'l/regional strategies for river basin, watershed and groundwater management
- Support to developing countries in monitoring and assessing quantity & quality, joint research, etc

<Oceans & Fisheries>

- UNCLOS:
  - recognized as providing overall legal framework for ocean activities
- Restoring fish stocks to max. sustainable yield by 2015
- Developing & implementing regional fisheries agreements/regional plans
- Eliminating subsidies contributing IUU fishing
- Implementation of GPA
- Strengthening the Role of IMO

<Disaster Management & CC>

- For disaster management:
  - establishing nat'l & regional strategies
  - joint observation & research
  - developing early warning systems & info. networks
- In combating climate change:
  - duplicate of Mill. Declaration

"States that that have ratified the KP strongly urge States that have not already done so to ratify the KP"

Air pollution, Agriculture, Desertification, Mountains

- Coop at all levels to mitigate air pollution incl. transboundary air pollution, acid deposition & ozone depletion
- Strengthening the implementation of UNCCD
  - enhancing synergies with other Conventions: CCC, CBD
  - designation of land degradation as GEF focal area
- Management of Mt ecosystems – close linkage to land degradation, biodiversity, emphasis on full participation of mt communities

Biological Diversity, Forest Management, Mining

- Equitable sharing of benefits from the use of genetic resources
  - negotiation within the framwork of CBD int'l regime to promote equitable sharing of the benefits
- Ratification of Cartagena Biosafety Protocol
- UN Forum on Forests, recognized as a key intergov. Mech. to cood. Sus.forest management
- Call for actions to support efforts to address environmental, economic, health and social impacts & benefits of related activities

Waste & Chemicals

- Included in the section on Consump. & Prod.
  - early consensus on wastes but strong disagreement over chemicals management, esp., wrt Precautionary approaches
- Ratification of relevant Conventions
  - PICs by 2003, POPs by 2004
- Follow-up to the UNEP global assessment
  - stringent measures at global level is likely to be considered

Freshwater Resources Management

- Global situation
  - 1.2 billion people w/o access to safe drinking water
  - 2.5 billion w/o access to proper sanitation
  - 1/3 of population in countries with water scarcity
  - usable portion of freshwater is 1% of freshwater on Earth
  - 300 rivers crossing socio-political boundaries, high degree of potential conflicts arising from the shared water sources
- Regional situation
  - AP with the lowest availability of freshwater
  - agriculture is the single most important use of freshwater
    e.g., more than 80% of freshwater being used in agriculture
  - 2/3 of the World's poor living in AP
- Opportunities in NE Asia
  - preparation of subregional strategies for integrated river basin, watershed & groundwater management
  - utilizing currently available communication channels
    e.g., NEAC, TEMM, TumenNet

<Oceans & Fisheries>

- Global situation
  - over-exploitation of fish stocks
  - marine & coastal pollution
- Regional situation
  - Eutrophication due to Nitrogen inputs result in a heavy economic losses in fisheries & aquaculture
- Opportunities in NE Asia
  - multi-sectoral coastal management
  - strengthening existing mechanisms, e.g. NOPAP

<CC, Air Pollution, Biodiversity>

- Need special attention needed for LDCs
  - because of their vulnerability to CC, support for adaptation
  - associate problems like biodiversity loss, natural disaster
- Several coop activities to reduce air pollution
  - TEMM on dust storm, EANET on acid deposition
- First Biodiversity-related discussion at 3rd NEAC
  - no systematic follow-up activities in this field
  - all NEAC countries are parties to the CBD, but no country ratified the Biosafety Protocol yet

<Chemicals Management>

- Wide use of chemicals
  - pesticides, industrial chemicals, everyday-life commodities
  - several gov. agencies are involved in chem. Management
  - emerging issues: risks posed by heavy metals, endocrine disrupters
- Preparation of regional chemicals management profile
  - assessment of current legal, institutional, administrative structures

<Mandate given to ESCAP>

- Promote integration of 3 pillars of SD
  - in future work of ESCAP, other regional, subregional bodies
- Assist in mobilization of tech. & fin. assistance
  - facilitate financing regional & subregional SD programs
- Promote multi-stakeholder participation and encourage partnerships

<Conclusion>

- Post-WSSD work in close coop with ESCAP, other regional & subregional bodies
- Avoid duplication of efforts and resources
- Enhance synergy effects among the related activities for SD

WSSD SUMMIT AND ENVIRONMNETAL COOPERATION
IN THE NORTHEAST ASIAN REGION

The Summit in Yohannesburg proposed to the global community some crucial decisions and determined the definite objectives to provide a transfer to sustainable development.

Its great contribution was the Millennium Goals to combat poverty, to provide drinking water and sanitary supply. It also set the definite objectives to halt the degradation of natural resources and biodiversity losses, to promote a wide spread of the integrated approach to the water resources management.

It stressed the significance of the ratification of the Kyoto Protocol, of compliance with the Montreal Protocol, UN Convention to Combat Desertification and the Convention of Biodeversity.

At the Summit there been expressed a support to the Partnership Initiatives which to a great extent addressed to the NEA region.

The World Summit declared the ambitious objectives with not too many definite options how to achieve them. The Summit addressed to the regional international institutions in the environmental protection and to the countries with a high potential and the advanced experience in major environmental issues to assist in Summit Agenda implementation.

The Russian Federation actively participated in the preparatory process for the Summit. Into the documents of the Summit there have been incorporated the proposals on the water resources management, drinking water supply and sanitary services, protection and sustainable use of living resources corresponding to the interests of the Russian Federation.

In the follow-up of the Summit Russian Federation has a commitment to intensify the activity on the ratification of the Kyoto Protocol, on adjoining to the Convention on Desertification.

In the report of the Head of the Russian delegation at the Summit it was declared that Russia and its ecosystems play a determinative role in the sustaining of the global environmental balance. Russia has 25% of the world's forest resources undisturbed by development that maintain global sustainability of the biosphere. Russia has 20% of global fresh water.

Russia plays a crucial role in settling the global debt crisis. Since 1996 Russia has decreased the debt burden of the developing economies by USD 35 billion. It enables to hope that in future the conversion of liabilities into investments for the environment and sustainable development will take place.

The NEA region is characterized by a great potential of the economic growth provided by the abundance of the natural resources, definite perspectives of the development of transportation networks (pipelines, rail

and highways, Northern Marine Route), development of the integrative economic international links.
In the follow-up of the Summit resolutions we consider important to concentrate our mutual efforts on the next problems:

a. Sustainable use of water resources

In the NEA region there is an urgent need in effective integrated efforts in the sphere of use and protection of water bodies and sustainable use of their living resources. The concern over the Amur River and its tributaries is growing.
The Amur is the most remarkable river of Russia from the point of biodiversity. These problems are to be considered at the forthcoming International Conference on the environmental problems in the NEA (Khabarovsk, May, 2003).
The protection of this huge water system should be based on a common international strategy and a system of measures on protection of the ecological balance of the whole basin in respect to the national legislation and a system of bilateral agreements between the countries of its basin. The first steps to create the joint monitoring systems close to boundary regions have been already done.
This activity can give start to a new Partnership Initiative in the folow-up of the Summit.

b. Sustainable use of the forest and living resources

In the NEA region we evidence the growing scale of the illegal use of natural resources (forest, fish and marine products). It is an urgent need not only to strengthen the existing national legislation but to establish the joint control mechanisms starting from the monitoring systems and information exchange and eventually – joint programs of restoration of valuable fish populations and their habitats.
In this programs the input of each country should be defined according to their potential and size of the effected damage.
Some projects of this type are being implemented on the Russian territory with the participation of the GEF (for example “Conservation of salmon population on Kamchatka”).
Russia has expressed its support to the proposal of Japan and other countries for the Summit - “Asian Forest Initiative”. The bilateral dialogue to combat the illegal logging is on a progress. The system of the voluntary timber certification has been launched. The Association of environmentally sound producers has been established. are d by

Since this year the Ministry Inspectorate “Tiger” is supervising the inspections of illegal export of the biological resources

c. Biodiversity protection

The NEA regio1n is unique for its vast undisturbed areas on reason of a sever climate, unaccessibility and remoteness. But this situation can be changed in near future with the development of new technologies for their exploitation and new investment opportunities.

To a certain extent it can be restricted with a establishment of the trans-boundary nature protected areas (jointly Russia and China, Mongolia). The joint research of Russian and Japanese scientists is being performed in Russian reserves. The number of these transboundary reserves can be greater. We have in mind those reserves where scientific cooperation was effective.

There is need in further cooperation development on the protection of habitats of migratory birds of international significance. In the Far East regions of Russia this activity is going on in conformity with the bilateral conventions on bird protection with Japan and Korea.

Russia is at present implementing the project under support of the GEF – “Protection of the globally significant wetlands and migration corridors for the sterh and other waterfowl”. The coordination of efforts of all NEA countries is needed.

A good base for this activity has been provided by the Summit Partnership Initiative – The Conservation and Sustainable Use of Sites of International Importance to Migratory Birds in East Asia, South East Asia and Australasia.

For the recent years in the NEA regions theare have been performed very important studies for determination of major environmental and biodiversity threats within the framework of the projects under support of the international financial organizations such as:

- Transboundary Diagnostic Analysis of TumenNET,
- Diagnostic Analysis of the Lake Khanka Basin,

In the process of their implementation there have been proposed instruments of biodiversity protection which can be recommended for the other «hot spots» of biodiversity:

implementation of the joint activities in the fields of ecotourism, biodiversity conservation, wetlands and migratory birds conservation, joint environment monitoring project, enhancement of nature reserves, joint biodiversity conservation database, common ecosystem management rules, development of legal framework.

The objective of conservation of ecosystem functions in the region of rapid economic development gains its significance. This fact was stressed at the 10th NEAC Conference in 2001, which was also addressed to management of the coast ecosystems.

The NEA region is a good ground for introduction of innovative technologies of sustainable development proposed by the international institutions such as the IGES, and also implementation of the Summit Partnership Initiative - "Biodiversity Conservation in the Asia-Pacific Region - Towards New Partnerships after the Johannesburg Summit"

In the NEA region there are already represented highly effective cooperation institutions in the sphere of biodiversity protection, transboundary pollution, climate change and sea water protection as:

- The North East Asian Crane Network Center 1997,
- Acid Deposition Monitoring Network in East Asia (EANET) 1998,
- Asia Pacific Network for Global Change Research (APN),
- NOWPAP program. 1991

The EANET is enhancing its capacity and effectiveness and create the model to be replicated for the rest types of transboundary pollutants.

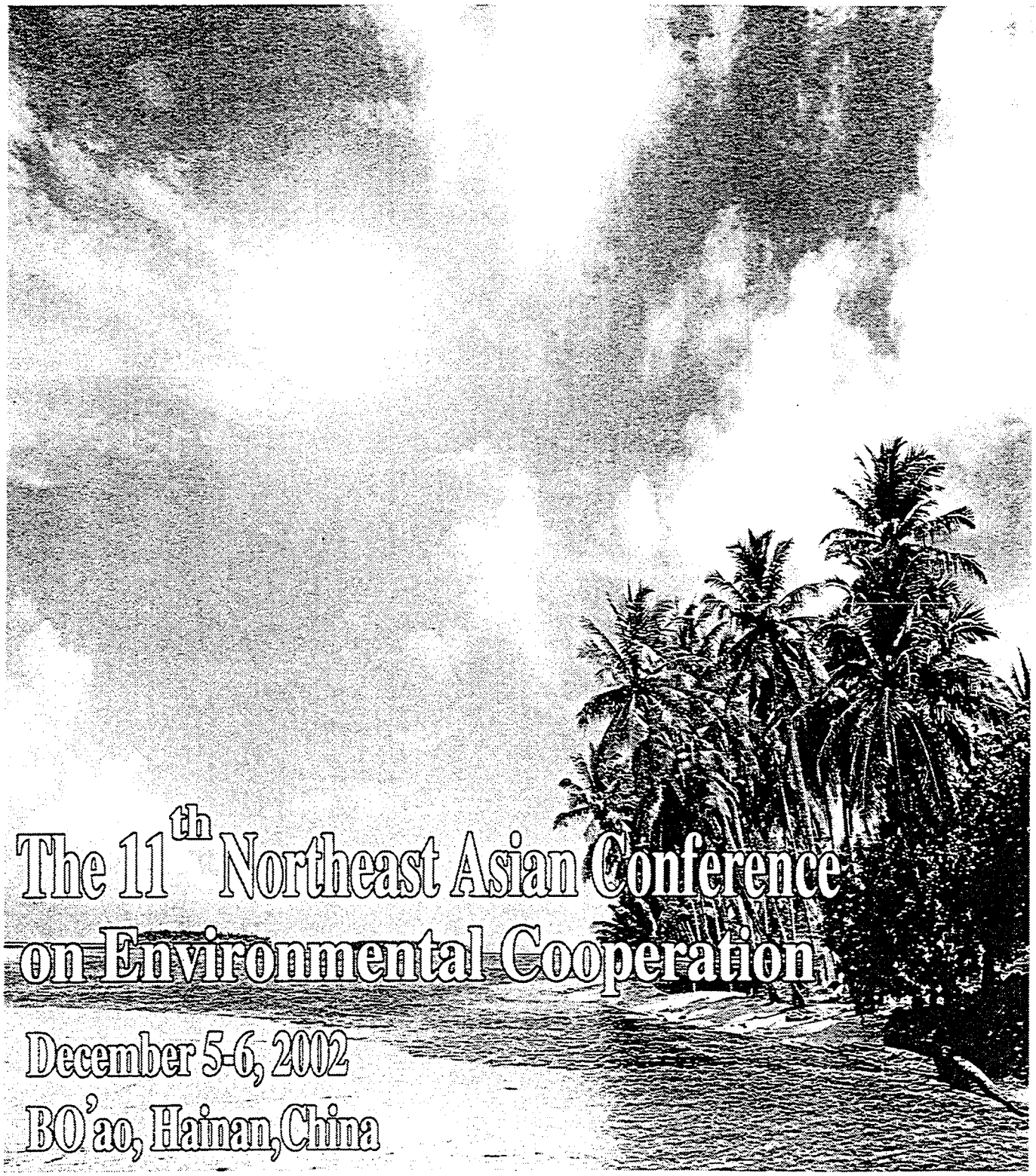
The Plan of Actions on protection, management and use of marine environment **(**NOWPAP) has been implemented since 1991 under supervision of the UNEP.

Russia is an active participant of these programs. But the rate of institutional development in the environmental cooperation in the NEA region is less compared to other regions –EEC and other regions.

T.Petrova , Senior Specialist
Ministry of Natural Resources of Russian Federation

Appendix

第十一次東北亞環境合作會議



The 11th Northeast Asian Conference on Environmental Cooperation

December 5-6, 2002

BO'ao, Hainan, China

Hosted by State Environmental Protection Administration, China

Supported by China Environmental Protection Foundation

PROGRAM

11th Northeast Asian Conference on Environmental Cooperation

December 4, 2002

Registration

December 5, 2002

8:30-9:30 Registration

9:30-10:00 **Opening Ceremony**

Introductory Speech: Mr. Zhang Shigang
Deputy Director General, International Cooperation Department, SEPA, China

Welcoming Address: Mr. Li Lihui
Vice Governor of Hainan Province, China

Opening Address: Mr. Wang Zhijia
Director General of International Cooperation Department, SEPA, China

Congratulatory Address:

1. Mr. Noriyasu Yamada
   Councilor, Minister's Secretariat,
   Ministry of the Environment, Japan
2. Ms. Sun-Hee Joo
   Chief of Environmental Education Center,
   Korean Federation for Environmental Movement

10:00-10:30 Tea Break

10:30-12:30 **Keynote Speech**

Speaker 1: Mr. Wang, Zhijia
Director General, International Cooperation Department, SEPA, China

Speaker 2: Mr. Noriyasu Yamada
Councilor, Minister's Secretariat,
Ministry of the Environment, Japan

Speaker 3: Mr. Jae-young Ko
Director General of the International Cooperation Bureau,
Ministry of Environment, Republic of Korea
Speaker 4: Delegate from Mongolia
Speaker 5: Delegate from Russia

12:30 Lunch

13:30-16:30 **Open Symposium: Environment Education and Public Awareness**

Program:

13:30 Opening
Mr. Xu Qinghua
Secretary General,
China Environmental Protection Foundation

13:45-15:15 *Part one*
Presided by Mr. Noriyasu Yamada
Councilor, Minister's Secretariat,
Ministry of the Environment of Japan
Speaker1: Ms. Cui Dandan
China Communication and Education Centre for Environmental Protection
Speaker2: Dr. Fumiaki Taniguchi
Professor, Konan University,
Secretary General,
The Japanese Society of Environmental Education, Japan
Speaker 3: Ms. Sun-hee Joo
Chief of Environmental Education Center,
Korean Federation for Environmental Movement,
Republic of Korea
Discussion

15:15-15:30 Tea Break

15:30-16:30 *Part two*
Presided by Mr. Xu Qinghua
Secretary General,
China Environmental Protection Foundation
Speaker 4: Mr. Li Ruinong,
China Environment Press

Speaker 5: Dr. Shigeyuki Okajima
Professor, Otsuma Women's University,
The Japanese Society of Environmental Society
Speaker 6: Mr. Kyu-Heung Lee
Section Chief, Environmental Planning Bureau,
Incheon Metropolitan City, Republic of Korea
Discussion and Wrap-up

16:30-17:00 Tea Break

Sessions for 11th NEAC

17:00-18:30 **Session 1:** Water Environment Improvement and Relevant Policy
Presided by Mr. Zhang, Shigang
Deputy Director General, International Cooperation Department, SEPA. China
Speaker 1: Ms. Chen Guang
China National Environmental Monitoring Center
Speaker 2: Mr. Hajime Shirayama
Senior Researcher
Northwest Pacific Region Environmental Cooperation Center, Japan
Speaker 3: Dr. Yong-Sung Park
Deputy Director
Water Quality Policy Division,
Ministry of Environment, Republic of Korea
Speaker 4: Delegate from Mongolia
Speaker 5: Delegate from Russia
Discussion

19:00 Welcome Reception

December 6, 2002

9:00-10:30	**Session 2:**	Urban Environmental Improvement: Policy and Action
	Presided by	Mr. Noriyasu Yamada Councilor, Minister's Secretariat, Ministry of the Environment, Japan
	Speaker 1:	Mr. Zhang Yutian Director, International Cooperation Office, China Research Academy for Environmental Science
	Speaker 2:	Mr. Akira Yoshimura Researcher, Hyogo Profectural Institute of Public Health and Environmental Science, Japan
	Speaker 3:	Mr. Na Jung Kyun Deputy Director, Air Quality Policy Division, Ministry of Environment, Republic of Korea
	Speaker 4:	Delegate from Mongolia
	Speaker 5:	Delegate from Russia
	Discussion	
10:30-11:00	Tea Break	
11:00-12:30	**Session 3:**	Outputs of WSSD and Strengthening Environmental Cooperation in Northeast Asia Region
	Presided by	Mr. Jae-Young Ko Director General, International Cooperation Bureau, Ministry of Environment, Republic of Korea
	Speaker 1:	Mr. Zhang Shigang Deputy Director General, International Cooperation Department, SEPA, China
	Speaker 2:	Mr. Akinori Ogawa Director, Environmental Cooperation Office, Global Environment Bureau Ministry of the Environment, Japan
12:30	Lunch	
14:00-15:00	**Session 3** (Continued)	
	Speaker 3:	Delegate From Korea

Speaker 4: Delegate from Mongolia
Speaker 5: Delegate from Russia
Discussion

15:00 Tea Break

16:30 Consideration and Adoption of Summary of the Meeting
Presided by Mr. Wang, Zhijia
Director General, International Cooperation Department, SEPA, China

18:00 **Closing of the Meeting**

19:30 Singing and Dancing Performance in Golden Beach Hot Spring Hotel
(Evening activity arranged on voluntary basis)

December 7, 2002

8:30-12:30 Tour to Shuicheng Attraction and Xinglong Tropical Garden

Participants List

Special Guest:

Hon. Mr. Li Lihui
Vice Governor
Hainan Province

China

Mr. Wang Zhijia
Director General
International Cooperation Department
SEPA, China
86-10-6615-1936

Mr. Zhang Shigang
Deputy Director General
International Cooperation Department
SEPA, China
86-10-6615-1761

Mr. Xu Qinghua
Secretary-General
China Environmental Protection Foundation
Tel: 86 10 8463 2355
Fax:86 10 8463 1438

Mr. Guo Jing
Deputy Division Director
International Cooperation Department
SEPA, China
Tel: 86-10-6612-7811
Fax:86-10-6615-1935
Guo.jing@zhb.gov.cn

Mr. Zhang Yutian
Director
International Cooperation Center
Chinese Research Academy for Environmental Science
Tel: 86-10-8491-3949
Fax:86-10-8491-3887

Ms. Cui Dandan
Research Follow
China Communication and Education Center for Environmental Protection

Ms. Chen Guang
Engineer, Water Section
China Environmental Monitoring Center

Mr. Li Ruinong
Vice President
China Environment News

Mr. Lin Shunkun
Deputy Director General
Land, Environment and Resources Department
Hainan Province

Mr. Yu Wenli
Deputy Director
Environmental Protection Department of Liaoning Province

Mr. Wang Liying
Director General
Environmental Protection Bureau
Jilin Province

Mr. Yong Hong
Deputy Director General
Environmental Protection Bureau
Inner Mongolia Autonomous Region

Mr. Guo Yuan
Division Director
Environmental Protection Bureau
Hei Longjiang Province

Mr. Peng Zhenhua
Director
International Cooperation Division
Environmental Protection Bureau
Shandong Province

Ms. Dong Yao
Program Officer
International Cooperation Department,
SEPA, China
Tel: 86 10 6612 7811
Fax:86 10 6612 7811

Ms. Wang Yu
Assistant
International Cooperation Department
SEPA, China
Tel: 86 10 6612 7811
Fax:86 10 6615 1935

Japan

Mr. Noriyasu Yamada
Councilor
Minister's Secretariat,
Ministry of the Environment, Japan
81-3-3581-4915
noriyasu_yamada@env.go.jp

Mr. Akinori Ogawa
Director
Environmental Cooperation Office
Global Environment Bureau
Ministry of the Environment, Japan
81-3-5521-8248
akinori_ogawa@env.go.jp

Ms. Kuniko Kodaka
Environment Expert
Environmental Cooperation Office
Global Environment Bureau
Ministry of the Environment, Japan
81-3-5521-8284
kuniko_kodaka@env.go.jp

Dr. Fumiaki Taniguchi
Professor, Konan University
General-Secretary
Japanese Society of Environmental Education
81-78-435-2368
fumiaki@konan-u.ac.jp

Dr. Shigeyuki Okajima
Professor
Otsuma Woman's University
Japan Environmental Education Forum
81-3-3350-6770
okajima@jeef.or.jp

Mr. Tetsuro Mita
Deputy Director-General
Civic Affairs and Environment Department
Toyama Prefectural Government
81-76-444-8727
tetsuro.mita@pref.toyama.lg.jp

Mr. Atsushi Sano
Engineer
Environmental Policy Division
Toyama Prefectural Government
81-76-444-8727
atsushi.sano@pref.toyama.lg.jp

Mr. Hiroyuki Ishitobi
Deputy Secretary-General
North West Pacific Region Environmental Cooperation Center
81-76-445-1571
ishitobi@npec.or.jp

Mr. Noboru Yoshino
Deputy Director
Planning & Coordination Division
North West Pacific Region Environmental Cooperation Center
81-76-445-1571
yoshino@npec.or.jp

Dr. Hajime Shirayama
Senior Researcher
North West Pacific Region Environmental Cooperation Center
81-76-445-1571
shirayama@npec.or.jp

Mr. Akira Yoshimura
Hyogo Prefectural Institute of Public Health and Environmental Sciences,
Hyogo Prefectural Government
81-78-735-6934
akira_yoshimura@pref.hyogo.jp

Mr. Masashi Ito
General Manager Technology
Overseas Environmental Cooperation Center
Japan
81-3-5472-0144
masashii@oecc.or.jp

Korea

Mr. Jae-Young Ko
Director General
International Cooperation Bureau
Ministry of Environment, Republic of Korea
jyko@me.go.kr.
Jaeyoungko53@hotmail.com

Mr. Jong-choon Kim
Senior Researcher
Motor Vehicle Emission Research Laboratory,
National Institute of Environmental Research
Republic of Korea
82-32-560-7680
kjc55@hanmail.net

Mr. Jung Kyun Na
Senior Deputy Director
Air Pollution Division
Ministry of Environment
Republic of Korea
82-2-504-9247
jkna@me.go.kr

Dr. Yong-sung Park
Deputy Director
Water Quality Policy Division,
Ministry of Environment, Republic of Korea
82-2-504-9252
yspark@me.go.kr

Mr. Suho Seong
Deputy Director
Global Environment Office
Ministry of Environment, Republic of Korea
82-2-504-9245
sseong@me.go.kr

Mr. Kyu-Heung Lee
Section Chief
Environment Planning Section
Incheon Metropolitan City, Republic of Korea
82-32-440-3581
kh1001@empal.com

Mr. Chi-Ho Bai
Deputy Director
International Cooperation Affairs
Ministry of Environment, Republic of Korea
82-2-504-9244
pylonbch@me.go.kr

Ms. Sun-Hee Joo
Chief
Environmental Education Center
Korea Federation for environmental Movement

Mr. Bong Hyeon Joo
Councilor
Embassy of the Republic of Korea in China

Mongolia

Ms. Kharkhuu Khishigjargal
Planning Officer
Strategical Planning & Management Department
Ministry of Nature & Environment, Mongolia
976-11-312257
k-khishig@hotmail.com

Ms. Batsaikhan Batgerel
Officer
Department of Natural Resources
Ministry of Nature and Environment
Mongolia
976-11-326617
onon_s@yahoo.com

Russia

Mr. Sergey BEDNARUK
Head
Department on the Water Management
Ministry of Natural Resources
Russian Federation
095-230-85-20

Dr. Tatyana PETROVA
Senior Specialist
Ministry of Natural Resources
Russian Federation
(095) 254-47-66
tanyapt@mnr.gov.ru

UNEP/ROAP

Mr. Choei Konda
Deputy Regional Director
United Nations Environment Program Regional Office for Asia and Pacific
66-2-288-1871
konda@un.org

Other Chinese Participants

Mr. Shen Guisheng
Deputy Section Chief
Environmental Protection Bureau
Jilin Province

Mr. Guo Dahua
Section Director
United Front Department of Fobao City
Guangdong

Ms. Zheng Ben
Director
The Office of Sustainable Development trial Zone of Tianhe Region, Guangzhou City

Mr. Liu Songtao
Headmaster
Economic and Commence College
Guangdong

Mr. Ding Peichun
Manager
Guohuan Paint Limited Company
Guangdong

Mr. Huang Yibin
Office Director
Guohuan Paint Limited Company
Guangdong

Mr. Deng Chizhang
Board Chief
Fobao Mineral Limited Company
Guangdong

Secretariat

Ms. Wang Yihong
Deputy Director
Public Relation Office
China Environmental Protection Foundation
Tel: 86-10-8463-2355
Fax:86-10-8463-1438

Mr. Wang Zairui
Deputy Director
Land, Environment and Resources Department
Hainan Province

Mr. Hu Gang
Senior Assistant
Public Relation Office,
China Environmental Protection Foundation

Ms. Wang Jun
Senior Assistant
Public Relation Offic
China Environmental Protection Foundation
Tel: 86-10-8463-2355
Fax:86-10-8463-1438

Ms. Liu Jianli
Assistant
Administrative Office
China Environmental Protection Foundation
Tel: 86-10-8463-2355
Fax:86-10-8463-1438