

1º Simpósio Brasil-Japão sobre Saneamento Ambiental e Controle de Poluição

São Paulo

25 a 27/11/87

ブラジル・日本

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1º SIMPÓSIO BRASIL-JAPÃO SOBRE SANEAMENTO
AMBIENTAL E CONTROLE DE POLUIÇÃO

SÃO PAULO

25 a 27/11/87

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JAPAN INTERNATIONAL COOPERATION AGENCY

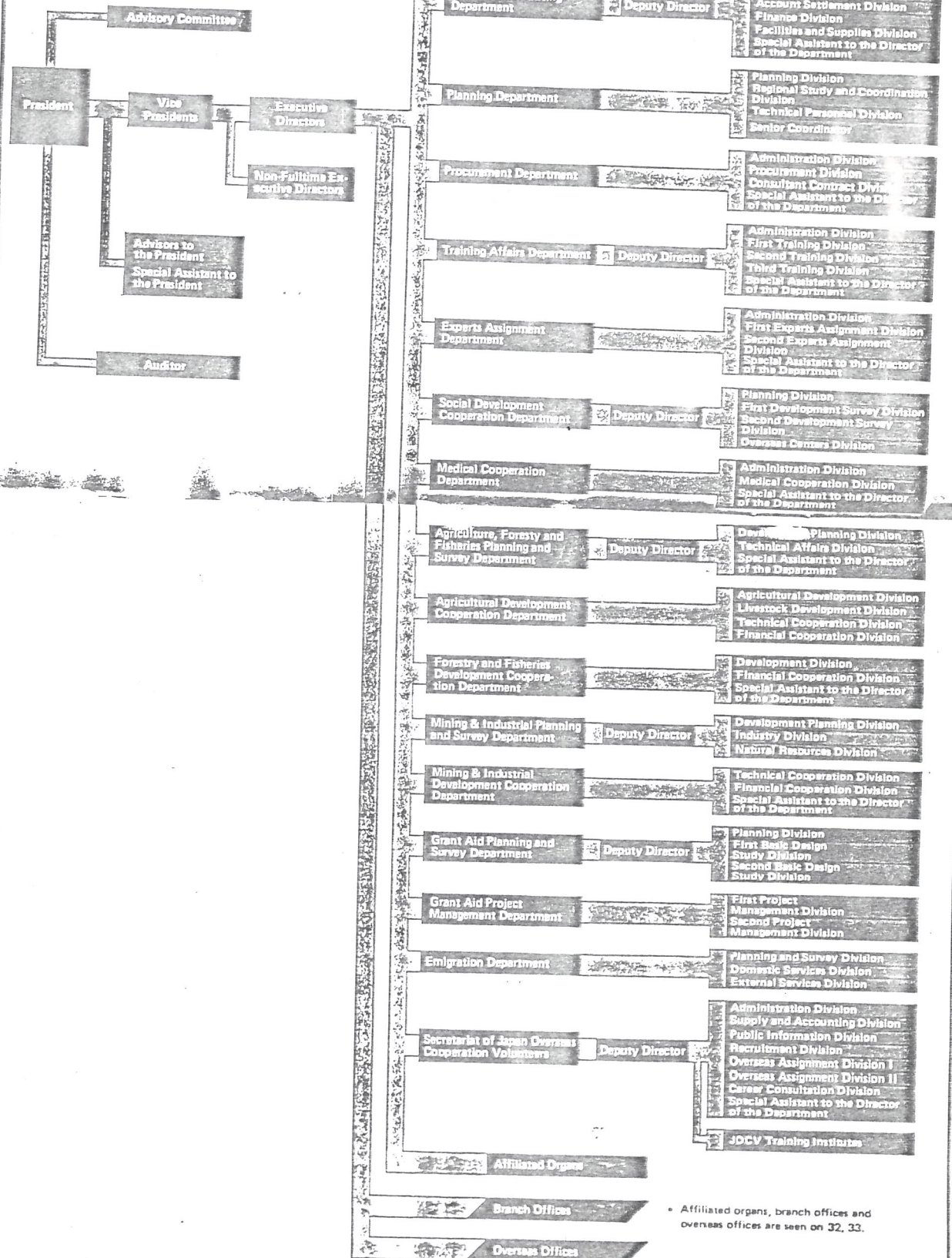
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KAZUO NAKAGAWA

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Organizational Chart



(As of June, 1987)

1. ACCEPTANCE OF TRAINEES

- . 6,000 people a year study ranging from rice cultivation to nuclear power

Over 6,000 people come to Japan per year for training. JICA, with the cooperation of the various Japanese government ministries, local governments, universities, private sector, public corporations, and public groups, and in response to requests from the developing countries, is responsible for training these people so that upon returning to their homes, they may play active roles in their countries' development efforts. They come from Asia, Africa, the Middle East, Latin America, etc... Their fields of study comprise agriculture and construction, transportation and telecommunications, nuclear power, etc.

JICA offers over 200 group training courses each year in answer to the common needs of developing countries, and also makes individual training arrangements in response to the specific needs of individual countries.

Besides training in Japan, JICA organizes training courses in other countries, contributing necessary funds. These are, generally called the third country training programme, designed to provide training at the institutes abroad in collaboration with the host country for participants from neighboring countries.

. Training Centers

There are ten training centers of JICA in Japan. Each center is provided with living quarters, classrooms and a library, sports and other recreation facilities. After preliminary orientation in Japanese culture, economy, etc, the trainees start their training.

After a day's study is over, evenings or weekends, trainees may take lessons of Japanese language, ikebana (flower arrangement), chanoyu (tea ceremony) and other traditional Japanese arts. Training centers, like international hotels, are crowded with people talking in various languages. The trainees gather in the lobby and chat about movies or shopping, or about their homelands, thus developing friendship among them.

There are some centers devoted to specific technical fields. For example, the Kanagawa International Fisheries Training Centre, facing the Pacific Ocean, has a facility for making fishing tackle and

possesses two training boats, and conducts training courses on coastal fishing and fishery management, etc.. Another example is the Tsukuba International Agricultural Training Centre. It has several practice buildings, experiment upland fields, experiment paddy fields, green houses, etc. The courses are available on rice cultivation, rice production mechanization, irrigation and drainage, and vegetable crops production.

. Social Contact with Local People

At the Christmas and New Year season, in particular, families living near the training centers would invite the trainees to their homes. Trainees may participate in school events or local soccer matches cheered by children and their parents. Thus the trainees deepen their understanding of Japanese culture, customs and traditions and widen circles of friendship, which contributes to foster lasting and cordial relationships between Japan and the developing world.

. Youth Invitation Program

"The Friendship Program for the 21st Century" was proposed by Japanese Prime Minister Yasuhiro Nakasone during his official visit to ASEAN countries in May 1983.

The Program, inaugurated in May 1984, will be continued for five (5) years under the administration of JICA with the close cooperation of youth groups and local governments.

In order to further foster friendly relations between Japan and ASEAN countries towards the 21st century, the program is proceeded at inviting to Japan young people who are to shoulder the task of nation-building, and facilitating and deepening friendship and mutual understanding between both young people through the exchange of their views and visiting scenic and historical places during 30 days staying in Japan.

Since 1986, the program has been extended to inviting youth from Burma, Fiji, PNG, China, Korea, in addition to ASEAN countries.

2. DISPATCH OF EXPERTS

. Technical Advice on National Development

JICA sends abroad Japanese experts. They provide technical guidance, consulting and advisory services, and engage in planning, survey and research at government agencies, technical training centers, experimental stations and research institutes in the developing countries, thus passing on technical knowledge and skills in relevant fields that are suited to the needs of the country in which they serve. These experts are active in various fields such as agriculture, forestry, fisheries, medicine, civil engineering, transportation, telecommunications, mining, manufacturing, etc...

. Individual Experts and Experts for Project Type Technical Cooperation

There are two categories of experts; One is that experts are individually assigned in organizations of the recipient governments as technical or administrative advisors and the other is that experts are dispatched as a member of technical advisors to training centers or institutes established by the project-type technical cooperation of Japan.

. Preserving Close Ties

In 1955, 28 experts were sent to 5 countries in South-east Asia. Since then, over 20,000 experts have followed them to work in all the developing regions, the greatest number being in Asia, followed by Latin America and the Middle East. In recent years, requests from countries in Africa have risen steadily. In a way, Japanese experts contribute to build a relationship of trust and friendship with the people of the developing countries.

3. GRANT OF EQUIPMENT

. Supply of Equipment

The equipment supply program was initiated in 1964 as part of Japan's technical cooperation. The objective of the program is to contribute to the economic and social progress of developing countries through supply of needed equipment at the request of the countries.

Principal equipment for the purpose includes, (1) that which makes more effective the work of the assigned experts and JOCV volunteers, (2) that needed by the counterparts of the country concerned to continue their services after Japanese experts left, and (3) that needed by the repatriated trainees for using effectively their knowledge and skill gained in Japan. The program is designed to increase the effectiveness of technical cooperation through, so to speak, an organic combination of man and equipment.

The equipment supplied under this program has a wide range including agricultural instruments and machinery, machine tools, textile machines, fishing equipment, medical equipment, electronic microscopes and telecommunications and broadcasting equipment.

The supply of equipment by JICA is done not only under this program but also under the Project-type Technical Cooperation Program, Expert Dispatch Program and JOCV Program.

4. DEVELOPMENT SURVEY

. Survey Teams for Development Plans and Projects

JICA sends survey teams to developing countries to help in formulating development plans and projects in the public sector.

Survey findings are compiled in a report, which is then presented to the government of the developing country concerned. Reports can be used as a basic reference in formulating government policies and in evaluating whether or not the projects are worthy of financial assistance, bilateral or multilateral. They constitute, in effect the first step toward the realization of development plans and provide an important link between technical and financial cooperation.

The development survey also contributes to the improvement of the technological level of the developing countries. It aims at providing local counterpart engineers with training opportunities through field surveys and through the activities in Japan including the analysis of data and information collected during the field survey and subsequent preparation of the report. This makes possible the transfer of overall know-how for the preparation of viable development projects from the economic, technical, financial and social viewpoints.

Survey range from a development project in a specific field of the country to a comprehensive regional development project covering several fields and countries.

. Development Surveys by Phase and Nature

Development surveys can be classified into the following categories according to their nature.

- 1) Surveys for formulating Master Plans
- 2) Surveys for drawing Maps and Marine Charts
- 3) Preliminary surveys (Project identification, Prefeasibility studies, etc.)
- 4) Surveys for feasibility studies
- 5) Surveys for detailed designs of plans and projects
- 6) Surveys for natural resources development
- 7) Surveys for aftercare services
- 8) Surveys on forestry and fisheries resources
- 9) Surveys for promotion of aid effectiveness

5. PROJECT-TYPE TECHNICAL COOPERATION

. Project-type Technical Cooperation

The acceptance of trainees, the dispatch of experts, and the grant of equipment constitute three basic components of JICA's technical cooperation programs.

These three programmes can be implemented separately, but in the interest of better coordination and effectiveness, they are sometimes combined to form a technical cooperation scheme which is called "project-type technical cooperation". These three components integrated into a specific development project will serve it comprehensively and systematically, from its planning to follow-up evaluation.

Project-type cooperation falls under the following four categories: (1) technical cooperation centers, (2) health, medical, population, family planning cooperation, (3) agriculture, forestry, and fisheries development cooperation, and (4) industrial development cooperation.

. Technical Cooperation Center

At the technical cooperation centers, thousands of young men and women, dreaming of a better tomorrow, are eagerly acquiring technical skills in such fields as urban transportation, telecommunications, electronics, small-scale industry, etc... Japanese experts and necessary equipment are sent to these centers. On the other hand, promising counterparts from these centers are accepted as trainees in Japan, so that when they return to their countries, they may replace Japanese experts.

In order to develop manpower resources needed to foster economic and social development, technical cooperation centers seek comprehensive cooperation in vocational training, research and development, experimental work, improvement of production techniques, and upgrading of engineers and skilled workers.

. Health and Medical Cooperation

The medical and family planning field involves sending medical experts and equipment to countries suffering from diseases or population pressure. JICA also accepts medical trainees from these countries. In the past, a great deal of cooperation focused upon curative measures. Recently, however, emphasis has shifted to primary health care and preventive medicine and environmental health. At the same time, it has been expanded to provide large scale cooperation to hospitals, medical research institutes, and medical universities.

. Population and Family Planning Cooperation

Japan's cooperation in the field of family planning began with the First Seminar on Family Planning held in 1967, receiving six training participants from five Asian countries. In 1969 a project on the family planning education was initiated in Indonesia. From 1973 onward, project-type cooperation programs have been carried out in the Philippines, Thailand, Bangladesh, etc.

. Agriculture, Forestry and Fisheries Cooperation

In the agricultural field, JICA is taking steps to apply the experiences and techniques of Japanese agriculture to the developing countries. This program is intended to contribute to an increase in food production, the improvement of farmers' incomes and living standards through the increase of productivity. The fields of cooperation cover rice cultivation, dry-field farming, livestock farming, fo-

restry and fishereis. The forms of cooperation include integrated rural development projects, model farms for technical upgrading in a model area, research and educational cooperation at research institutes and universities, technical guidance at agricultural extension centers and experimental stations, etc...

. Industrial Development Cooperation

The objectives of cooperation in the area of industrial development are to foster industrial growth and effective resource utilization, and to make wide use of local labor. The program extends technical cooperation for research and development of appropriate technology, development of manpower resources, technical consultancy services, basic surveys related to the geological features and mineral deposits, etc...

Included also in project-type technical cooperation are joint research projects between Japanese researchers and those of developing countries designed for further research and development of technology well-suited to the economic, social, and natural environment of the developing country concerned.

6. JAPAN OVERSEAS COOPERATION VOLUNTEERS (JOVC)

. 2-year Service

In response to the requests of the governments of developing countries, JICA dispatches JOCV volunteers to Asia, Africa, Latin America, and elsewhere for a 2-year service.

JOVC volunteers must have technical skills, language ability, and strong moral character. They must be faithful and dependable youth aged 20-35.

Because JOVC activity is voluntary, a volunteer must be able to set and meet his own goals and to channel the energy and eagerness of youth toward making a meaningful contribution to the growth of the country to which he is assigned.

Recruitment of volunteers takes place twice a year-in spring and autumn. Those who pass the test are sent to JOVC training facilities for three and a half-month orientation and intensive language training before they are sent overseas.

Efforts of volunteers for self-cultivation through participation in the cooperation activities, their sincerity in work and their in-

tegration into the local community, together with high level of their qualified skills and techniques, have gained high reputation in the host countries.

Through disseminating information about their work in developing countries, the returned JOCV volunteers are serving as media of information on the people, culture, and many more things of their host countries. In this sense, JOCV volunteers play a unique role of consolidating mutual understanding between the recipient countries and Japan at grassroots.

. A Variety of JOCV's Activities

The activities of JOCV volunteers are diverse. Some, living in remote villages are engaged in the dissemination of farming or fishing techniques. Others teach vocational techniques, Japanese language, physics or mathematics. Still others are working on architectural, civil engineering or telecommunications projects. Because they are involved in such a wide range of activities, each volunteer must find his own way of adapting to work and environment. Rice cultivation, automobile maintenance, nursing, and surveying are typical but the range of their activities is steadily widening. It now covers some 120 fields, including education and sports.

7. GRANT AID PROGRAM

. Close Relationship with Technical Assistance

Grant Aid is a form of fund assistance which is extended to developing countries without repaying obligation, on the basis of international agreements and other commitments. This type of assistance includes general grant aid, aid for fisheries, food aid, aid for the increase of food production and others. Of these, the aids which are extended by JICA are general grant aid, grant aid for fisheries and aid for the increase of food production and they are closely tied in with its technical cooperation.

a) General grant aid is offered for improvement of facilities at technical cooperation centers, hospitals, schools, research institutes and other institutions. b) In the aid for fisheries, the funds necessary for the improvement of facilities, such as fishery training facilities and fishery training ships, are offered. c) The aid for the increase of food production is offered to support the develop

ping countries self-help efforts in increasing food production provided fertilizers, agricultural chemicals and equipment.

The facilities closely related to technical cooperation comprise vocational training centers, or facilities which are to be improved according to the basic design drawn by a dispatched survey team, or those where the technology transferred by experts will be put to effective use.

Major activities of JICA under this programme are: (1) provide a basic design study as part of its technical cooperation for formulating a project (The objectives of the basic design study are to examine and assess the technical and economic viability of the project, to make general layout and design and to estimate cost of the project and implementing schedule required for its construction); (2) liaison between the recipient country and private businesses, consultations, good-offices and studies on the specifications of facilities and equipment to be offered from Japan, screening of contracts to be concluded between the recipient country and private businesses; and (3) liaison between the recipient country and Japanese banks in making banking arrangements, consultations, good-offices and studies on banking arrangements. Moreover, surveys for the speed up of disbursement of grant aid (field surveys, surveys on work progress, etc.) are also carried out.

Viewed from the framework of Capital Grant Assistance, international commitments on grant aid and disbursement are made by the Ministry of Foreign Affairs. JICA offers services related to the promotion of Capital Grant Assistance and for an effective realization of the aid objectives, by linking smoothly various stages of business involved.

8. INVESTMENT AND FINANCING FOR DEVELOPMENT

Investing in and Financing of Development Projects

This programme is intended to ensure an organic combination by JICA of technical cooperation with smooth supply of soft loans which are difficult for Japanese private enterprises to obtain from the Export-Import Bank of Japan or the Overseas Economic Cooperation Fund for reasons of risk, profitability or technical difficulties involved in the projects in the fields of agriculture, forestry, mining, manufacturing and social development.

JICA extends long-term, low-interest loans to Japanese private

enterprises for those projects which will improve the welfare of the inhabitants in the project area including the construction of schools, hospitals, roads, etc., or which are risky and must be implemented on a trial basis in the field of agriculture and mining. When needed, JICA also carries out surveys and provides technical guidance for private sector development activities. In these ways, JICA supports the development activities of private enterprises so that they may meet the needs of the developing countries.

9. EMIGRATION SERVICE

Emigration - a Sort of International Cooperation

In 1868 (the first year of the Meiji era), 153 Japanese people left Yokohama for Hawaii. They were the first Japanese to be attracted by a new land. Since then, Japanese have continued to head overseas. These emigrants, making use of their high level technical skills have been active in their new host countries in the fields extending from agriculture to industry, thus contributing to the economic development of these countries. For example, in Brazil, Japanese emigrants are praised as the "men who tame the Amazon." One could call it a new form of international cooperation.

Numbers of Japanese youth working abroad with skills and technique have increased in these years.

In South America, more opportunities are offered to become independent after assignment for a certain period of time at Japanese emigrant's farms and more Japanese emigrants are employed as engineers and technicians in the industry supporting the economy of developing countries as well as in agriculture and livestock farming.

Japanese who want to emigrate to Canada and Australia has increased in the last few years though it was mostly to Latin America where they had emigrated.

In 1985, a new system named "Overseas Development Youth Programme" was introduced with purpose of promoting increase of settlers in Latin America by offering interested young people more chances to see and experience the land and its community where they engage in an assigned work for three years.

Japanese emigrants with knowledge and technique are expected to contribute the developing countries and their contribution forms a sort of international cooperation.

- 1) Survey and Dissemination of Information Related to Emigration
- 2) Consultation and Good-offices for Emigration
- 3) Lectures and Training for Emigrants
- 4) Payment of Travel Expenses and Provision of Accommodations, Escort and Other Assistance for Emigrants at Time of Departure
- 5) Consultation and Guidance for Emigrants Concerning Business, Occupation and Life in General in Accepting Countries.
- 6) Construction and Improvement of Welfare Facilities and Other Assistance for Emigrants
- 7) Acquisition, Readjustment, Custody and Transfer of Land in Settlements and Good-offices
- 8) Loaning, Guarantee of Debts and Investment of Funds for Emigrants and Emigrants' Organizations
- 9) Loaning and Investment of Funds for Those (Other than Emigrants and Emigrants' Organizations) who Contribute to Stabilization of Emigrant Settlements
- 10) Recruit and Dispatch of Overseas Development Youth

10. RECRUITING AND TRAINING OF QUALIFIED PERSONS

Recruitment and Training of Experts

Experts to be dispatched abroad must have reliable personality, a good command of foreign languages, flexibility to adapt themselves to change in the environment, to say nothing of expertise in their respective fields.

The recruitment and training of experts is another of JICA's major responsibilities.

Each year almost 400 experts who have been chosen for overseas work take part in pre-departure training.

JICA also provides middle-term training for people who will be sent abroad in the near future long-term technical training in Japan for experts who are likely to be sent abroad again, and long-term training overseas for men and women who are expected to become experts for development.

Many experts are in their 30's and 40's, and are public servants, although the number of experts from private industry has grown in the last few years. To meet the needs of developing nations, experts in an increasingly wide variety of fields are in demand.

. Institute for International Cooperation

The Institute for International Cooperation (hereafter called 'the IFIC) was established on October 1, 1983 as an important affiliated organization of JICA for the purpose of undertaking recruitment of Development specialists, training qualified Japanese experts, research and study, collection and dissemination of information on technical cooperation.

. Development Specialists

The Development Specialists, who possess qualifications such as professional expertise and experience, and broad international perspective and adaptability to different cultures are the professionals who serve as the nucleus of Japan's technical cooperation activities

The Development Specialists belong to JICA, and engage in activities which require their abilities at home and abroad, as shown in the table below.

11. OVERSEAS EMERGENCY RELIEF SYSTEM

. 4 Groups Emergency Relief

When a disaster (such as earthquakes, volcanic eruptions, typhoons, floods and drought) takes place in a developing country, prompt and adequate rescue activities, medical relief and the assurance of the essential living condition are necessary in the face of such disasters. To meet such demand of the disaster-hit country, O.E.R.S. is expected to be arranged immediately. It comprises following 4 main groups and expected to provide comprehensive disaster relief, including emergency relief and repair work.

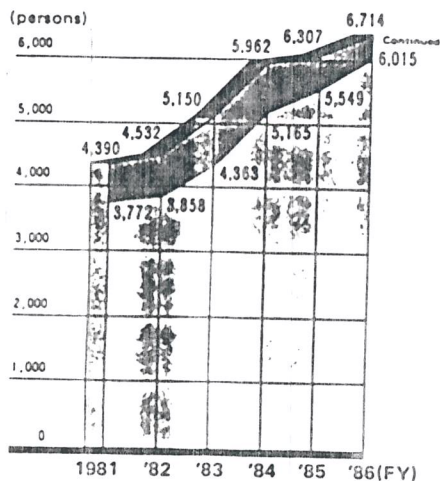
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|---|
| <ol style="list-style-type: none">1) JMTDR (Japan Medical Team for Disaster Relief)2) JRTDR (Japan Rescue Team for Disaster Relief)3) A team of experts engaged in emergency rehabilitation activities.4) A team of the ex-Japan Overseas Cooperation Volunteers engaged in rehabilitation activities. |
|---|

Among them, JMTDR has already experienced in various cases since its establishment in 1982 and now is fully prepared to provide full medical relief activities within 48 hours after receiving the request of the government of the disaster-hit country.

12. JICA's Major Performance

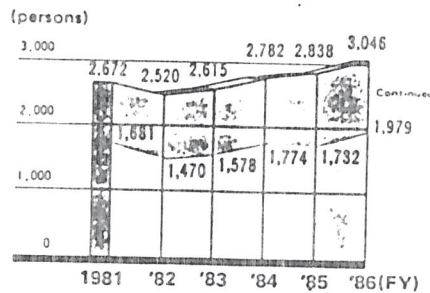
• Participants

1954-1986 (FY) **67,179** persons



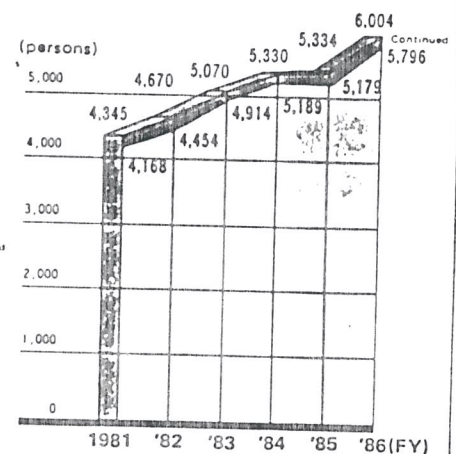
• Experts

1955-1986 (FY) **20,834** persons



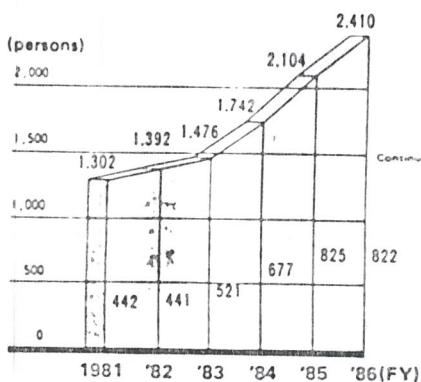
• Survey team members

1957-1986 (FY) **48,977** persons



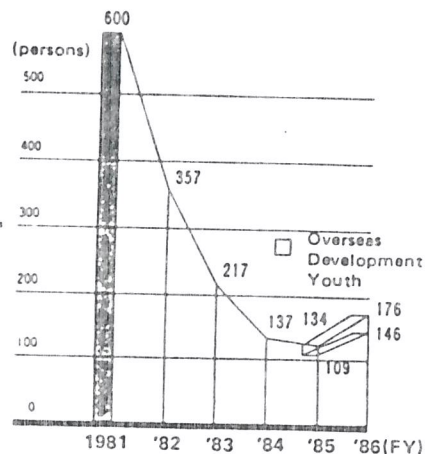
• JOCV volunteers

1955-1986 (FY) **7,248** persons



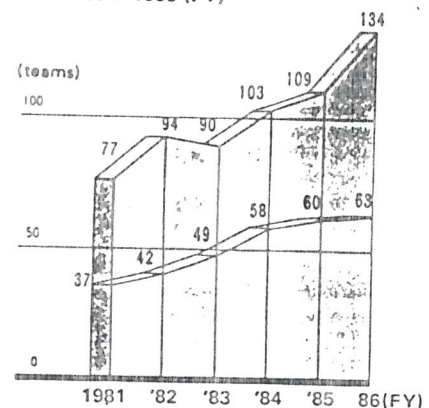
• Emigrants and Overseas Development Youth

1952-1986 (FY) **72,512** persons



• Capital grant assistance

• Survey teams for Basic Design Study ☐ **779** teams
• Survey teams for Project Management ☐ **388** teams
1974-1986 (FY)



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ブラジル・日本

1987

<Resumo sobre a Cooperação Internacional
realizada no Brasil pela JICA>

Os trabalhos de cooperação realizados no Brasil pela JICA, dentro do âmbito geral de trabalho da JICA, abrangem diversas áreas de atividades tais como, recepção dos bolsistas, envio dos especialistas, doação dos equipamentos técnicos, levantamentos para o desenvolvimento (viabilidade técnica), investimentos e financiamentos para o desenvolvimento e a cooperação técnica pelo sistema de "projeto" (project type). Não estão incluídos nestes trabalhos o envio dos membros do "Grupo de Jovens Voluntários para Cooperação ao Exterior" e os trabalhos de execução da cooperação econômica a fundo perdido.

A seguir, iremos enumerar os diversos itens das atividades de cooperação da JICA para o Brasil, realizadas ao longo dos anos, desde que o Japão iniciou a sua cooperação em 1954 até o ano de 1986.

Lembramos que o ano fiscal de JICA se inicia em 1º de abril e termina em 31 de março do ano seguinte.

1. Valor total de custo da cooperação técnica

O valor total de custo destinado ao Brasil é de cerca de ¥19.10⁹ (dezenove bilhões). A conversão deste valor em dólares é difícil devido à mudança constante de câmbio, porém, fazendo-se um cálculo aproximado e supondo-se que 1 US\$ = ¥ 280, teremos cerca de US\$ 68.000.000 (em outubro/1987: US\$ 1,00 = ¥ 145). Este valor corresponde ao 5º lugar precedidos pelos países asiáticos de Indonésia, Tailândia, Filipinas e Malásia.

Para o Japão, tanto na área de comércio exterior como na área de investimentos, o Brasil representa o mais importante país da América Latina, com quem realiza importantes intercâmbios. Além disso, aqui se encontram um pouco mais de 800 mil japoneses e seus descendentes, o que torna o Brasil um país de grandes intercâmbios culturais e econômicos com o Japão. E mesmo na área de cooperação técnica, podemos afirmar que existem importantes relações entre o Brasil e o Japão.

2. Recepção dos bolsistas

Quanto ao número de bolsistas recebidos no Japão através do serviço de cooperação técnica realizado a nível de Governo, em 1986, classificados em regiões, temos os seguintes números: Ásia 57%, América Latina 19%, Oriente Médio 11%, África 10%, e outros 3%.

Os brasileiros que foram treinados no Japão, tanto no Curso de treinamento em grupo como no Curso de treinamento individual, chegam a somar 2.037 pessoas. Além destes, os bolsistas que participaram do treinamento em um terceiro país e dos trabalhos de cooperação ao desenvolvimento chegam a um total de 65 pessoas.

Quanto ao número de bolsistas, em termos de cada país, excetuando-se os países asiáticos de Tailândia, Indonésia, Filipinas e Malásia, o Brasil possui o maior número de participantes.

Em relação ao número de bolsistas brasileiros, classificados em áreas de atividades, é conforme a tabela abaixo, sendo que tais áreas aparecem na seguinte ordem: - Indústria, Agricultura, Treinamento Médico e Saúde, Transporte, Administração Pública, Comu

niciação, Fundamentos Sociais, Comércio Exterior, Projeto de Desenvolvimento, Energia, Recursos Humanos, Indústria de Mineração etc.

Á R E A	1986	Total (~1986)
Projeto de Desenvolvimento	9	90
Administração Pública	26	168
Serviços Públicos	4	46
Transportes	20	191
Fundamentos Sociais	12	108
Comunicação	5	127
Agricultura	13	271
Educação	1	29
Indústria Florestal	3	46
Indústria Pesqueira	2	56
Indústria de Mineração	9	68
Indústria	38	284
Energia	6	82
Comércio Exterior	4	95
Turismo	0	11
Recursos Humanos	9	72
Cultura Científica	4	15
Tratamento Médico e Saúde	25	227
Assistência Social	4	35
Outros	0	16
T o t a l	194	2.037

Podemos ainda acrescentar, para seu melhor esclarecimento, de que dentre os Cursos de Treinamento em Grupo existem cerca de 200 Cursos distribuídos em diversas áreas, incluindo-se Administração Pública do Meio Ambiente, Tecnologia Ambiental - Preservação de Qualidade de Água, Tecnologia Ambiental - Preservação Atmosférica, Processamento de Resíduos Sólidos, Tecnologia de Esgotos, Medidas Defensivas dos Ambientes Industriais etc.

A participação dos bolsistas brasileiros nestes últimos anos tem sido de 170 a 200 pessoas por ano.

Conforme visto acima, um grande número de brasileiros tem recebido treinamentos no Japão e com a iniciativa espontânea de alguns membros destes grupos de bolsistas foram fundadas Associações dos Bolsistas de JICA, visando maiores entrelaçamentos de amizade e para manter contatos entre os bolsistas após regressarem ao país. No Brasil existem estas Associações em São Paulo, Rio de Janeiro, Curitiba e Porto Alegre. Para a realização do presente Simpósio, recebemos a relevante cooperação dos membros da Associação dos Bolsistas de JICA de São Paulo.

3. Envio de especialistas

O número de especialistas japoneses enviados ao Brasil, atendendo-se às solicitações deste país, tem atingido, até agora, um total de 638 especialistas.

Mesmo em relação ao número de especialistas, excetuando-se a região de Ásia, o Brasil é o país que mais recebeu tais especialistas.

As áreas destes especialistas são das mais diversificadas, desde Indústria, Mineração, Agricultura, até Tratamento Médico e de Saúde, Transporte, Energia, Fundamentos Sociais etc. Dentro de suas áreas específicas, os especialistas desenvolveram suas atividades nos órgãos federais ou estaduais, tais como, Institutos de Pesquisas, Laboratórios Experimentais, Centros de Treinamento, Universidades etc., ao lado de pesquisadores e técnicos brasileiros.

4. Doação dos equipamentos técnicos

Tendo como base as atividades dos especialistas japoneses e seus contrapartidas e dos bolsistas, ou ainda, dentro da relação de cooperação técnica no sistema de projeto, baseando-se no pedido feito pelo Brasil, estamos realizando a doação de equipamentos necessários. Até o presente momento, o valor total chegou a cerca de ¥ 5 bilhões (cerca de 18 milhões de dólares). Este valor está logo abaixo dos valores doados a diversos países da Ásia, tais como, Indonésia, Tailândia, Filipinas etc., citados anteriormente.

Dentre os diversos equipamentos já doados ao Brasil, tais como os seguintes:

- Equipamentos para Agricultura (Vale do Ribeira)
¥ 571 milhões (US\$ 2.572 mil)
- Equipamentos para Indústria Florestal
¥ 419 milhões (US\$ 1.806 mil)
- Equipamento para Centro de Tecnologia Industrial
¥ 359 milhões (US\$ 1.624 mil)

- Equipamento de Fiscalização para Prevenção contra Poluição Atmosférica
¥ 24 milhões (US\$ 101 mil)
- Equipamentos para Pesquisas de Poluição Ambiental devido aos Inseticidas Agrícolas
¥ 23 milhões (US\$ 97 mil)
- Equipamentos para Pesquisas Químicas do Catalizador
¥ 54 milhões (US\$ 227 mil)
- Equipamentos para Concentração de Minérios
¥ 49 milhões (US\$ 208 mil)
- Equipamentos para Pesquisas Horticólicas
¥ 11 milhões (US\$ 50 mil)
- Equipamentos para Pesquisas de Energia Atômica
¥ 12 milhões (US\$ 57 mil)
- Equipamentos para Testes de Fibras
¥ 11 milhões (US\$ 41 mil)
- Aparelhos de Radioterapia
¥ 19 milhões (US\$ 70 mil)
- Equipamentos para Navios de Pesquisa da Indústria Pesqueira
¥ 25 milhões (US\$ 85 mil)
- Equipamentos para Combate ao Câncer
¥ 10 milhões (US\$ 34 mil)

5. Levantamentos para desenvolvimento (estudo de viabilidade)

Os levantamentos para desenvolvimento do projeto consistem na realização de cooperações de consultoria que possam auxiliar na evolução do projeto oficial de desenvolvimento, o qual exerce um papel importante no desenvolvimento social e econômico do Brasil. Para isto, são formados grupos de estudos com especialistas que realizam as pesquisas locais e trabalhos no Japão.

Quanto aos levantamentos já realizados no Brasil, existem os seguintes:

- Levantamento sobre o Projeto de Desenvolvimento Industrial para Aproveitamento de Madeiras
- Levantamentos Básicos sobre o Projeto de Desenvolvimento de Energia Elétrica do Nordeste Brasileiro
- Levantamento sobre o Projeto de Desenvolvimento de Recursos Minerais
- Projeto sobre o Corredor de Exportação
- Confecção de Mapas
- Levantamentos Básicos sobre o Desenvolvimento Econômico
- Levantamento Confirmativo sobre a Seleção de Projeto Industrial de Mineração
- Projeto de Construção de Novas Linhas Ferroviárias
- Projeto sobre Conjuntos Industriais no Litoral de Suape
- Projeto de Construção do Porto de Praia Mole
- Projeto de Desenvolvimento Urbano de Vitória
- Projeto de Desenvolvimento Conjunto entre Três Estados
- Levantamento de Dados sobre Recursos Naturais do Mar

- Levantamento sobre o Projeto de Produção de Álcool da Man
dioca
- Levantamento sobre o Projeto de Padronização Industrial no
Brasil
- Projeto de Construção do Centro de Treinamento dos Bombei
ros do Brasil
- Levantamento de Dados Básicos sobre Cooperação para Explota
ção de Recursos Naturais na Região de Antagorda
- Levantamento sobre o Projeto de Desenvolvimento Geral de
Carajás
- Levantamento de Dados Básicos sobre Cooperação para a Ex-
ploração de Recursos na Região de Ribeira
- Projeto de Beneficiamento das Águas no Vale do Rio Itajaí
- Levantamentos de Dados Confirmatórios da Seleção do Projet
o de Levantamentos Básicos de Cooperação para a Explota
ção de Recursos Naturais

6. Cooperação técnica pelo sistema de projeto

É uma combinação de diversos sistemas de cooperação, tais como, estudos de viabilidades, envio de especialistas, recepção de contr
apartidas (bolsistas), doação de equipamentos etc., isto é, é uma atividade de cooperação técnica resultante da união orgânica entre recursos humanos e materiais.

As atividades realizadas no Brasil são as seguintes:

- | | | |
|---|-------------------|-------------|
| (1) Centro de Treinamento Técnico
das Indústrias de Fibras | (3/1962~11/1973) | Recife (PE) |
| (2) Instituto de Pesquisas de Me-
dicina Tropical da Universida <u>d</u>
de de Pernambuco | (10/1967~10/1973) | Recife (PE) |

- | | | |
|---|--|---------------------|
| (3) Centro de Pesquisas das Doenças Geriátricas da Universidade Católica do Rio Grande do Sul | (11/1974~3/1979) | Porto Alegre (RS) |
| (4) Cooperação para o Desenvolvimento dos Produtos Primários de Cerrado | (Estudo Preliminar em 1974, projeto de execução em 1975) | |
| (5) Desenvolvimento de Recursos Minerais | (4/1978~3/1981) | Antagorda (SP, PR) |
| (6) Centro de Treinamento Profissional do SENAI | (3/1979~3/1984) | Belo Horizonte (MG) |
| (7) Desenvolvimento de Agricultura no Vale do Ribeira | (10/1975~6/1981) | Registro (SP) |
| (8) Cooperação para Pesquisas Agrícolas | (5/1977~9/1985) | Brasília (DF) |
| (9) Pesquisa sobre a Indústria Florestal de São Paulo | (4/1979~3/1986) | Cunha etc. (SP) |
| (10) Desenvolvimento das Pequenas e Médias Indústrias do Estado do Paraná | (10/1980~10/1986) | Curitiba (PR) |
| (11) Fabricação de Vacinas (Poliomielite, sarampo) | (8/1980~8/1984) | Rio de Janeiro (RJ) |
| (12) Técnicas de Preservação contra Desastres em Minas | (9/1981~9/1985) | Rio de Janeiro (RJ) |
| (13) Centro Independente de Patologia Imunológica da Universidade de Pernambuco | (5/1984~5/1989) | Recife (PE) |
| (14) Centro de Técnicas de Instrumentação Industrial do Espírito Santo - SENAI | | |

7. Investimentos e financiamento para o desenvolvimento

Para o desenvolvimento social e econômico do Brasil, além da cooperação financeira e cooperação técnica realizadas pelo Governo, a cooperação econômica realizada a nível de empresas privadas, principalmente os investimentos diretos, tem sido de grande ajuda.

A atuação da JICA, em relação às atividades de desenvolvimento realizadas por estas empresas privadas, consiste em financiar fundos com juros baixos e a longo prazo para as obras de equipamento das instalações que servem para o melhoramento das condições assistenciais aos moradores, tais como, estradas, viadutos, escolas etc., das regiões periféricas e, ainda, para as obras experimentais realizadas a fim de permitir a estruturação do sistema técnico apropriado às condições ambientais etc., nas áreas de indústrias agrícolas e de reflorestamento, indústria de mineração etc. Contudo, em relação às empresas existentes no Japão, a JICA financia com o yen e este fundo é financiado ou investido pela empresa em questão às empresas correlacionadas existentes no Brasil.

Em relação às atividades até então realizadas, foram financiadas cerca de 17 obras, ou seja, cerca de ¥ 17 bilhões , (± 73 milhões dólares), para a construção de estradas, cultivos experimentais dos produtos agrícolas etc.

(Observação): os valores indicados em dólares em cada um dos itens acima descritos foram calculados com base no câmbio médio do ano em questão ou do período em questão, sendo valores para simples referência.

**1º Simpósio Brasil-Japão sobre
Saneamento Ambiental e
Controle de Poluição**

ブラジル・日本

1987



**Governo do Estado de São Paulo
Secretaria de Economia e Planejamento
Gabinete do Secretário
Assessoria de Projetos Especiais**

ÁREA DE COOPERAÇÃO TÉCNICA INTERNACIONAL

A Cooperação Técnica contribui fundamentalmente para o fortalecimento da estrutura científico-tecnológica do país, servindo como instrumento complementar às diretrizes governamentais, maximizando os recursos já existentes e dotando o país de melhores perspectivas no contexto internacional.

A Secretaria de Economia e Planejamento vem atuando na área de cooperação técnica desde 1980 por solicitação da Secretaria de Planejamento da Presidência da República. Em 1983 esta atuação foi institucionalizada por força do Decreto nº 21.142.

OBJETIVOS

- Promover um melhor aproveitamento das oportunidades de cooperação técnica oferecidas pelos países desenvolvidos e organismos internacionais;
- otimizar os recursos já existentes no Estado;
- dinamizar as atividades relacionadas às diretrizes do governo do Estado de São Paulo;
- integrar as iniciativas de cooperação técnica de diferentes instituições paulistas;
- evitar a duplicação de projetos no mesmo setor;
- formar uma visão global da atuação do Estado com relação a cooperação recebida.



**Governo do Estado de São Paulo
Secretaria de Economia e Planejamento
Gabinete do Secretário
Assessoria de Projetos Especiais**

ATRIBUIÇÕES

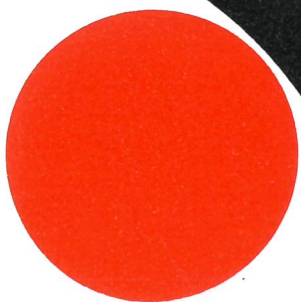
- Identificar oportunidades;
- divulgar informações;
- analisar e encaminhar projetos e convênios;
- acompanhar a tramitação, execução e avaliação dos projetos e convênios;
- publicar os dados referentes à área.

São Paulo, outubro de 1987.

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IMPACTOS AMBIENTAIS NA METRÓPOLE DE SÃO PAULO

Jorge Wilhelm

As sociedades, ao criarem aglomerados urbanos, alteram a paisagem do sítio natural encontrado, criando uma paisagem cultural, a qual, por sua vez, será gradualmente alterada no decorrer do tempo. No processo dessas transformações, as características naturais do sítio - seu solo, suas águas, a vegetação, seu ar, sua paisagem e seu clima - são utilizados como recursos para a construção de um ambiente novo : o ambiente urbano.

Durante séculos de crescimento demográfico e de urbanização, aparentemente houve pouca preocupação com a forma como os elementos naturais eram utilizados para fins de criação de um ambiente urbano; o crescimento das cidades sendo lento, havia tempo e condições para a manutenção do equilíbrio do ecossistema local, mediante a recriação dos recursos utilizados.

No entanto, nos últimos 150 anos, esse equilíbrio começou a ser rompido, seja porque numerosas cidades passaram a crescer a taxas mais elevadas, seja porque a tecnologia urbana introduziu formas de utilização dos recursos naturais excessivamente eficazes ou excessivamente devastadoras.

O rompimento do equilíbrio nos ecossistemas urbanos ocorre, após um processo gradual, quando se alcança um determinado patamar. A percepção deste patamar vincula-se à aferição de níveis de desconforto e nocividade. Assim como os recursos constituem uma categoria cultural, cujo uso varia no tempo e no espaço, o nível de desconforto também constitui um valor cultural, somente tornado óbvio quando se aproxima do limite da nocividade, isto é, da morte. Assim, variam os níveis de tolerância ao desconforto e as exigências por qualidade de vida, sendo estas crescentes. O caráter cultural da percepção de níveis de desconforto é patente no caso de São Paulo, cuja população, em grande parte migrada de regiões pobres do país, tem tolerado níveis de desconforto muito superiores aos que seriam tolerados por cidadãos de Londres ou de Buenos Aires.

É, por isso, insuficiente e vão buscar dimensões urbanas ideais, fixando-as em 500.000 ou em 1 milhão de habitantes. É de bom senso dizer-se que uma cidade de menos de 1 milhão permite a seus habitantes um razoável conhecimento de toda a trama urbana, conhecimento este que se perde à medida que a cidade cresce. Mas do ponto de vista da qualidade de vida ou dos impactos ambientais sobre o meio ambiente, a variável "população" deve ser cotejada com as variáveis "renda per capita", "densidade", "hábitos culturais", "condições edáficas do solo", etc. Assim, por exemplo, mesmo em locais de baixa densidade, a ignorância, decorrente da pobreza, aliada à falta de infra-estrutura básica, podem ser responsáveis pela degradação do meio ambiente. Já um bairro de renda elevada suportará altas densidades, pois sua infra-estrutura provavelmente já estará construída, podendo, ainda, arcar com soluções técnicas capazes de equilibrar uma situação prejudicada.

O objetivo deste documento é subsidiar o debate e a melhor compreensão da relação entre o desenvolvimento urbano e o meio ambiente. Para que esta relação melhore, seria necessário estabelecer níveis de desconforto toleráveis, normas para diminuí-los, organização social para sua fiscalização, etc. Longe de qualquer ciência exata, é no campo mais amplo da cultura e da política que se alicerçará qualquer estratégia do tipo que objetivamos.

Com esta meta e dentro do quadro referencial desta reunião, proponho apresentar o caso de São Paulo, através de três aspectos :

- . o ritmo de urbanização;
- . as expectativas dos cidadãos;
- . o impacto ambiental observado.

O ritmo de urbanização

O censo brasileiro de 1980 revelou uma população de 119.100.000, irregularmente distribuída pelas regiões do País, que cresceu a uma taxa de 2,48% a.a. durante a década de 1970-80. Como a área total do País é de 8.511.965 km², tem-se uma baixa densidade média, de 13,99 hab./km². Segundo a Pesquisa Nacional por Amostra de Domicílios, publicada pela Fundação IBGE, em 1985 a participação estimada da população urbana do Brasil era de 70,51%. Em 1980, essa participação era de 67,0%; em 1970, de 56%; em 1960, de 45,1% e, em 1950, de 36,2%. Essa proporção, que evidencia claramente uma urbanização crescente, varia de acordo com a região.

No caso de São Paulo, o estado mais dinâmico da Região Sudeste, a população urbana atinge 89,0% de um total aproximado de 25 milhões de habitantes. Cerca da metade dessa população reside na área metropolitana (ou seja 10,6% do total da população brasileira), subdividida em 37 municípios, incluindo a capital do estado, com o mesmo nome; em que pese terem diminuído as taxas geométricas de crescimento, tanto da região metropolitana (de 5,53 na década 60-70 para 4,47 na seguinte) como da Capital (de 4,84 para 3,68), o incremento populacional da Capital de São Paulo ainda é muito superior ao total da população de outras capitais, como Belo Horizonte, Porto Alegre, Salvador, etc.

A rede de cidades demonstra uma forte polarização de 10 metrópoles, de rápido crescimento (Belém, Fortaleza, Recife, Salvador, Belo Horizonte, Rio de Janeiro, São Paulo, Curitiba, Porto Alegre e Brasília), e uma distribuição irregular de cidades de tamanho médio, que poderiam converter-se em alternativas para o destino final das correntes de migração interna. O maior número dessas cidades de tamanho médio encontra-se nas regiões mais desenvolvidas do sudeste e do sul, tornando-se mais esparsas em outras regiões. Tal fato sugere uma relação entre desenvolvimento, crescimento da economia e da rede urbana, cujo aprofundamento não é pertinente a este documento.

O futuro dessa rede urbana não depende exclusivamente do crescimento endógeno e vegetativo, mas, principalmente, do inter-relacionamento de regiões bem diferentes em oportunidades de emprego e de serviços urbanos. Em outras palavras, as diferenças entre as regiões e sua rede urbana, características de uma situação ainda subdesenvolvida, acarretam urbanização intensiva e migração constante, que ocorre em maior escala na direção de grandes centros localizados no sudeste do País, para São Paulo em primeiro lugar.

Crescimento urbano e concentração nas cidades maiores parecem ser uma tendência constante no Brasil. Comparando-se o censo de 1960 com o de 1980, temos os seguintes aumentos percentuais :

- a. cidades com até 100 mil habitantes : 42,45% de aumento em número e 33,22% em população;
- b. cidades com 101 a 500 mil habitantes : 113,78% em número e 148,82% em população;
- c. cidades com mais de 500 mil habitantes apresentaram no período um crescimento de 157,14% em número e 182,99% em população.

Como se vê, um quadro de migração, urbanização e concentração constantes. Para melhor compreender o caso brasileiro (ou mesmo latino-americano), convém apontar duas características :

- a. jamais houve, no Brasil, a típica "aldeia", a partir da qual desenvolveu-se a maior parte dos búrgeois medievais europeus; a baixíssima densidade nos tempos da colônia, as distâncias imensas e a forma de exploração colonial resultaram em apenas três formas de fixação : ou dispersas em "colônias" dentro de imensas fazendas, ou em acampamentos improvisados ao longo de sítios de mineração, ou em cidades político-administrativas, símbolos do poder vigilante da Coroa portuguesa;
- b. a migração rural resulta da estagnação agrícola (fator negativo) ou de mudanças tecnológicas ou sociais, que liberam mão de obra (fator positivo); ela não representa, fatalmente, um mal; e, apesar da conveniência de melhorar a situação do trabalhador rural, deve-se esperar que durante uma ou duas décadas ainda persista, com taxas decrescentes, o êxodo rural; o problema não é tanto impedi-lo e sim direcioná-lo a fim de evitar excessiva concentração em poucas metrópoles.

A população da Capital e de sua Região Metropolitana foram projetadas, para 1990, considerando-se como prováveis os seguintes parâmetros : no caso da Capital haverá fecundidade constante, mortalidade e migração decrescentes; no caso da Região Metropolitana haverá fecundidade decrescente, mortalidade decrescente e migração constante.

ANO	SÃO PAULO Região Metropolitana	SÃO PAULO Capital
1970	8.143.000	5.930.900
1975	10.177.000	7.186.000
1980	12.588.745	8.493.217
1985	15.142.897	10.036.905
1990	17.448.284	11.380.300

FONTE: Fundação Sistema Estadual de Análise de Dados Estatísticos - SEADE , 1987.

A rede urbana brasileira é o resultado de quatro séculos de acumulação de capital através de ciclos e processos econômicos bem definidos. É de bom senso supor que as taxas de natalidade tendam a decrescer via educação e planejamento familiar não dirigido; há condições para ampliar a preservação da saúde pública, mormente se houver melhor distribuição de renda. No entanto, ainda que políticas de incentivos governamentais venham a ser intensamente desenvolvidas como instrumento para reduzir disparidades regionais e, conseqüentemente, diminuir a migração, vários anos de fluxo migratório em direção ao sudeste e intensa urbanização na região ainda terão que ser enfrentados.

As expectativas dos cidadãos

Já que a migração interna parece ser a variável mais dinâmica no fenômeno de urbanização de São Paulo, seria útil incluir algumas observações sobre as expectativas de um migrante típico que resolve reconstruir sua vida na região que ironicamente, porém com inveja, é apelidada de "Sul Maravilha".

O que leva um cidadão a se deslocar de uma região para outra ? Em primeiro lugar os motivos de expulsão, a insatisfação e a insegurança na região em que vive. Condições climáticas difíceis e falta de segurança no emprego, aliadas às dificuldades em se tornar proprietário de um pedaço de terra e regimes de trabalho pré-capitalistas no campo constituem fatores de mobilização comuns. Como afirma o escritor brasileiro Antônio Candido de Mello e Souza, "quando o pobre lavrador sente a pressão insustentável da miséria, ele não se revolta, ele se desloca". Esse fenômeno seria pouco provável num País de pequenas dimensões ou numa ilha, mas num País enorme como o Brasil é uma alternativa sempre possível.

Além da constante existência do espaço contíguo disponível, da inexistência de qualquer barreira, o migrante não desconhece o fato de que poderá ter uma vida melhor em outra parte, quando isso parece impossível ao nível local. A radiodifusão e a televisão têm exercido grande influência ao criarem uma imagem atraente do sul, em geral, e de São Paulo, em particular. A fim de quantificar essa influência, assinalo que alguns programas diários (telenovelas ou telenoticiários) têm audiências de 40 milhões no País...

Assim, por motivos objetivos e subjetivos, somam-se, a cada ano, aproximadamente 400 mil pessoas à população presente na Região Metropolitana da Grande São Paulo. Segundo o censo de 1980, 49,1% dos habitantes da Cidade de São Paulo nasceram na Capital, 15,3% em outras cidades do estado e 31,8% em outros estados. Considerando os não-nascidos na Grande São Paulo, 7,9% tinham chegado durante aquele ano, 10,9% entre um e dois anos, 9,5% entre três e quatro anos e 63,2% de cinco a 10 anos ou mais.

O que esperam encontrar em São Paulo todos esses migrantes ? E até que ponto suas esperanças se concretizam ? Um estudo recente indicou que três fatores principais atraem população para esta cidade :

- a. oportunidades de emprego;
- b. serviços públicos de saúde;
- c. melhor rede escolar.

Estas são expectativas objetivas, ligadas à sobrevivência e à possibilidade de "melhorar de vida". Ao mesmo tempo, os meios de comunicação de massa (o rádio, a televisão e um ou outro jornal ilustrado) divulgam a imagem de São Paulo como uma metrópole moderna, "locus" de todos os projetos de futuro sonhados pelos migrantes, a começar pelo alcance das expectativas acima. Arranha-céus, Volkswagen, cigarros, máquinas, uma vida de surpresas boas, mecanismos brilhantes, conforto. A televisão oferece objetos de consumo e lhes empresta uma conotação sensual quando não erótica. Todos esses ingredientes vão formando a imagem de um estilo de vida. Viver neste estilo passa a ser, para o migrante, a meta a atingir; as oportunidades de emprego e lucro são o caminho a aproveitar. Para concretizar seu projeto de vida, julga o migrante

que somente é necessário ter coragem, agressividade e obstinação. O estilo de vida implica, portanto, forte dose de individualismo, característica que resulta na diminuição da solidariedade, situação infelizmente típica da vida em metrópole.

Essa forma individual de conquista urbana resulta, frequentemente, em expressões e organizações coletivas fracas, com escasso interesse pela "coisa pública" e numa exploração abusiva do solo e das propriedades. São Paulo já destruiu quase todo o seu passado histórico de quatro séculos, a fim de construir edifícios lucrativos.

A especulação imobiliária não é resultado apenas da voracidade de lucro de alguns capitalistas : ela foi permitida - quando não estimulada - por ausência de legislação adequada e é frequentemente aplaudida por toda a população que, numa escala menor, muitas vezes compartilha da experiência de "ficar rico junto com o crescimento da cidade". Terras foram compradas e mantidas à espera de melhoramentos públicos; inflação e crescimento natural foram fatores que contribuíram para a grande valorização de propriedades imobiliárias.

O migrante é um "conquistador" e sua urbanização representa uma conquista individual de oportunidades, de bens de consumo e de lugar (terra). Como diz Lefrèvre, a "cidade é um lugar de consumo e o consumo do lugar". Essa árdua conquista individual é responsável pela dinâmica da vida urbana que existe em São Paulo. Mas, durante toda esta aventura de conquista, o migrante está sempre receoso de ter que retornar à sua origem ou de ter seus sonhos frustrados. Para obter segurança e ter certeza de que não será obrigado a deixar São Paulo, ele agarra o primeiro emprego possível; entretanto, seu derradeiro anseio de segurança ainda

permanece : o de ser dono de sua própria casa, ou seja, ser dono de um pedaço dessa terra cobiçada. Ser dono de uma habitação representa, para o migrante, em primeiro lugar, ser proprietário de um pedaço de terra, um conhecido símbolo de segurança. Para atender essa demanda, surgiu a rendosa atividade mercantil do retalhamento e venda do solo urbano, marcando o início dos impactos ambientais do desenvolvimento sobre o meio ambiente urbano.

Assim, se, por um lado, o sistema econômico vigente gera condições e regras para o consumo da terra urbana, por outro lado, as expectativas do migrante conquistador também contribuem para uma dinâmica urbana agressiva, seja nas relações inter-pessoas, seja nas relações com o meio ambiente.

Impacto ambiental resultante

Qual tem sido o impacto ambiental deste agressivo processo de metropolização, no exemplo escolhido de São Paulo ?

O primeiro impacto a considerar é o desmatamento.

O Estado de São Paulo só possui hoje cerca de 4% das matas originais e, em sua capital, loteamentos, sistema viário e construções resultam em maciça derrubada. A ausência de normas urbanizadoras até meados deste século e o aparecimento tardio (1976) de legislação de proteção dos mananciais hídricos na região metropolitana permitiram a destruição legal e indiscriminada de áreas naturais. Até 1975 a relação entre áreas verdes e habitantes era, na Capital, de 1,8m²/hab. Em 1979, mercê da incorporação de novas áreas tornadas públicas, este índice subiu

para 2,1 m²/hab. Atualmente, essa relação atingiu 3,9 m²/hab. *

No entanto, não é simples quantificar este impacto ambiental. Por que e quanta área verde seria necessária por habitante ? Os parâmetros das Nações Unidas (12 m² por habitante) são todos empíricos e nunca foram relacionados com bem-estar, saúde física e mental, oxigenação da atmosfera, etc.

O valor do "verde" urbano é claramente um valor cultural; não pode ter o mesmo significado numa pequena cidade no meio duma floresta africana ou em Nova Iorque e São Paulo. Mas qual é a percepção do problema por parte dos cidadãos ?

Em 1977-78 realizaram-se alguns esforços para que as famílias da periferia cultivassem hortas domésticas; objetivava-se inicialmente induzir e ajudar famílias de baixa renda a diminuir seus gastos com alimentos. No decorrer das pesquisas de campo, verificou-se que hortaliças raramente eram adquiridas por estas famílias, não havendo, portanto, a perspectiva de diminuição de gastos. Insistiu-se, pensando que pelo menos seria uma forma de melhorar a dieta alimentar e tentou-se sugerir também o plantio de algumas ervas medicinais . O programa, no entanto, não foi implantado, pois, em toda a periferia,

* Segundo informação do Departamento de Parques e Áreas Verdes, da Prefeitura de São Paulo, esse aumento não se deve exclusivamente ao aumento de áreas verdes na Capital, mas também à extensão do conceito utilizado para quantificar essas áreas, que hoje engloba as avenidas arborizadas, os pátios arborizados de escolas públicas e qualquer conjunto arbóreo público que possa ser considerado um mini-bosque.

encontrou-se forte resistência por parte da dona de casa : esta lutava contra os resquícios de terra, contra a poeira que sujava sua casa e procurava obter do marido a total pavimentação do quintal. A arborização, o plantio, as flores naturais são percebidos como valores positivos desde que públicos e afastados. Dentro de casa, azulejos e flores de papel ou cera.

Ignoro se existem pesquisas sobre a percepção do verde em cidades latino-americanas. Limito-me por isso a algumas suposições. Em primeiro lugar, para o migrante pobre, a imagem de modernidade é o asfalto, o anti-verde. A árvore e a terra são "a sujeira" do seu passado, daquele passado que rejeitou ao se urbanizar. Em segundo lugar, no Brasil, os atos civilizatórios, atos de cultura, na fase da colonização branca, significaram a vitória sobre a floresta, habitat de seus inimigos: serpentes, insetos e índios. Civilizar significou derrubar árvores. Em terceiro lugar, a consciência do verde como valor reaparece apenas agora e na medida em que a sociedade se urbaniza, alterando e destruindo o ecossistema.

O impacto ambiental do desmatamento e da aridez urbana teve que chegar a extremos graves para que o problema dessa queda em qualidade de vida pudesse ser amplamente percebido.

O segundo tipo de impacto ambiental decorrente da urbanização é a erosão. Parcelar e vender lotes urbanos constitui como vimos o maior negócio da cidade. A demanda constante, garantida pelas migrações, e a disponibilidade de terra, igualmente permanente, faz com que a cidade se espalhe qual mancha de óleo, metropolizando-se na medida em que se conurba ou preenche vazios entre aglomerados coexistentes. No entanto, ao crescer a cidade, os

custos diretos de transporte e o ônus indireto da falta de equipamentos e infra-estrutura diferenciam altamente o preço da terra. Este valor mercantil não é intrínseco ao solo, mas depende da localização relativa e do lucro que se possa obter quando nele se edifica algo. A proximidade de transporte e de emprego e a demanda por serviços aumenta de tal forma o preço dos lotes que, por um lado, a população pobre é empurrada para locais cada vez mais afastadas e, por outro lado, a terra é dividida em parcelas cada vez menores.

O conflito entre normas que exigem dimensões mínimas de lotes e outras exigências de urbanização e a forte demanda e possibilidade de lucro fácil, levou à multiplicação, em São Paulo, de loteamentos clandestinos. Estes parcelam o solo urbano de forma aventureira, sem cuidado algum pela captação de águas pluviais, sem documentação perfeita e sem infra-estrutura. Uma aventura lucrativa que rapidamente abandona em mãos dos pobres migrantes proprietários minúsculos lotes em declives perigosos, sem garantias físicas nem legais. Um negócio que explora a necessidade e ignorância dos pobres, consumindo vorazmente o solo urbano.

Esta forma clandestina de parcelamento e uso do solo impede ou dificulta à Prefeitura o acompanhamento da expansão urbana; as ruas não recebem guias, nem sarjetas nem redes de águas pluviais ou pavimentação. E a água abre sulcos, destrói barrancos, arrasta terra, entope canalizações e provoca enchentes.

O terceiro impacto ambiental, em parte vinculado ao anterior, é a poluição doméstica, ou a poluição do próprio solo; nos lotes

minúsculos acima descritos, em face da carência de rede de água e esgoto, o proprietário cava um poço para água e constrói uma fossa negra para o esgoto. A proximidade entre ambos resulta fatalmente na poluição da água pela própria fossa. A situação; em São Paulo, tornou-se tão grave em 1975-76 a ponto de obrigar uma concentração de recursos para fechamento dos poços : 20.000 ligações domiciliares de água encanada passaram a ser feitas por mês, durante 14 meses e puderam melhorar uma situação de saúde pública que se aproximava da calamidade. A mortalidade infantil, em grande parte decorrente da água dos poços infectados, pôde assim baixar na Capital de 103 por 1000 para 62 por 1000, de janeiro de 1976 a janeiro de 1978.

O quarto impacto ambiental é a poluição das águas. A taxa de crescimento de São Paulo nunca pôde ser acompanhada pelo crescimento de sua infra-estrutura de esgoto. Aliás, enquanto se utilizar o sistema de "cloaca máxima", isto é, o método dos antigos romanos, dificilmente poder-se-á acompanhar crescimentos populacionais acima dos vegetativos. Na Grande São Paulo apenas cerca de 50% do esgoto doméstico são coletados pelas redes, pelos coletores e pelos interceptores existentes. Destes, cerca de 20% são tratados, sendo este tratamento apenas primário, o que só remove 30% da carga poluidora, liberando, portanto, um efluente ainda poluente. O resto do esgoto, inclusive o hospitalar, segue naturalmente pelos 1.200 km de córregos, canalizados ou não, até chegar aos rios maiores (o Tamanduateí, o Tietê , o Pinheiros), hoje esgotos de céu aberto. Tais rios, mortos, sem oxigênio, estão a exigir rápidas e enormes inversões para impedir o aumento de carga poluída, com risco de diminuir em poucos anos a sua fluidez na estiagem, demandando, neste caso, a cobertura de seus canais.

Seria mais confortável se verificássemos que a poluição das águas urbanas é provocada apenas por indústrias : com a obrigação do tratamento do efluente ou com a exigência de seu deslocamento, estaria resolvido o impacto ambiental. No entanto, as medidas feitas pela Companhia de Tecnologia de Saneamento Ambiental - CETESB em toda a área metropolitana dimensionam e localizam a poluição industrial das águas. O seu impacto, controlável, não se compara com a morte dos rios decorrente da poluição domiciliar, diretamente resultante da forma rápida e das condições da metropolização.

O quinto impacto é a poluição atmosférica. Esta é produzida por quatro grupos de poluentes : material particulado, dióxido de enxofre, monóxido de carbono e oxidantes fotoquímicos.

Na Grande São Paulo, a emissão diária de poluentes na atmosfera tem sido reduzida em função dos programas de controle de poluição desenvolvidos pelo Governo do Estado de São Paulo, através da CETESB. Em 1982, a emissão diária nessa região era extremamente grande: 500 toneladas de material particulado, dos quais 70% lançados por indústrias; 900 toneladas de dióxido de enxofre, dos quais 90% result^{ado} da queima de combustíveis; 5.000 toneladas de monóxido de carbono, ^{sendo} 90% produzidos por veículos; dos precursores de oxidantes fotoquímicos, 750 toneladas de hidrocarbonetos produzidos por veículos (70%) e por indústrias (15%), e 400 toneladas de dióxido de nitrogênio, dos quais 80% produzidos por veículos. A poluição industrial, no que tange a material particulado foi localizada : 53 indústrias , responsáveis por 87,9% des a emissão nociva.

Atualmente a emissão reduziu-se a 250 toneladas de material particulado, sendo 65% proveniente das indústrias; 80 toneladas de dióxido de enxofre, sendo 90% da ^{queima} de combustíveis; 3800 toneladas de monóxido de carbono dos quais 94% são produzidos por veículos; 700 toneladas de hidrocarbonetos, sendo 74% proveniente de veículos e 20% de indústrias; 620 toneladas de óxidos de nitrogênio, dos quais 90% provêm de veículos.

Quanto à participação dos veículos, responsáveis por grande parte deste impacto ambiental, o problema é mais complexo em função da dificuldade de seu controle.

Em 1978 obteve-se , pela adição de 20% de álcool à gasolina, uma diminuição de 18% de monóxido de carbono e de uma parte do chumbo tetraetila. A utilização crescente de veículos a álcool (hoje cerca de 700 mil em São Paulo) reduziu a emissão de monóxido de carbono em cerca de 50% daquela do veículo a gasolina, e em 70% a emissão de hidrocarbonetos. No entanto, contribuiu para o aumento das emissões de aldeídos à atmosfera (4 a 5 vezes maior que a do veículo a gasolina).

Altos valores de concentrações de poluentes relacionados a veículos têm sido registrados na Cidade de São Paulo. Esta situação foi agravada pelas condições de tráfego e só terá solução a médio e longo prazo. Está em desenvolvimento o Programa de Controle de Poluição do Ar por Veículos Automotores - PROCONVE, que pretende reduzir significativamente a emissão de monóxido de carbono, hidrocarbonetos e óxidos de nitrogênio a partir de 1992.

O Governo do Estado, através da Secretaria do Meio Ambiente e CETESB, em conjunto com a municipalidade, tem planos de emergência para paralização do tráfego na ocorrência de altos níveis de poluição do ar (níveis de alerta e emergência). Níveis que obrigariam tais paralizações ainda não haviam sido atingidos até 1986. Em 1987 já ocorreu o nível de alerta, contudo não houve redução ou paralização compulsória de tráfego de veículos em função da improvável eficácia da medida nas condições atuais. Por outro lado, claro que estas preocupações não constituem uma solução do problema. Assim, quando no inverno cessam as chuvas

e diminuem as correntes de ventos, São Paulo é coberta por uma calota avermelhada, um "smog" em que se misturam todos os elementos poluidores da atmosfera, produzindo irritação de olhos, tosse e malestares.

Os impactos ambientais citados revelam que alguns dos efeitos nocivos são causados pela industrialização. Mas evidenciam igualmente que esta não pode ser acusada como única agressora do meio ambiente, pois hábitos de consumo e a agressividade egocêntrica inerente ao crescimento por migração são igualmente responsáveis.

O sexto impacto ambiental é a poluição sonora. Desde a revolução industrial, tem aumentado o ruído urbano pela introdução de máquinas, de veículos e pelo aumento da própria densidade populacional. Curiosa experiência de universidade norte-americana, em que se mede há mais de 100 anos a acuidade auditiva da população, revela que esta acuidade diminui constantemente. O homem defende-se do ruído crescente, ensurdecendo gradualmente. Talvez seja cedo para tirar conclusões, mas em duas ou três gerações é inegável que aumentou o volume sonoro da música popular; os equipamentos de som, domésticos ou de "discotecas", habituaram a juventude de hoje a "ouvir" música num nível de decibéis muito superior ao de seus pais e avós.

O impacto psíquico e cultural da poluição sonora não deve ser menosprezado; não é apenas o ouvido que é afetado : o tímpano, habituado a elevado e prolongado nível sonoro, terá dificuldade em perceber o cicar de folhas ou a palavra murmurada. Por outro lado, num ambiente tão fortemente sonorizado não se pode conversar: a comunicação inter-pessoal só pode ser copórea, por gestos codificados, ou mental. Finalmente, como substituir o silêncio, na hora da concentração ou da recuperação intra-psíquica, tão necessária ao habitante da cidade grande ?

Finalmente, o último impacto ambiental provocado pela urbanização é a destruição de valores culturais. No início deste trabalho, afirmamos que a urbanização altera o sítio natural ao transformá-lo em ambiente cultural ou urbano. Mas, no decorrer de seu crescimento, o próprio ambiente urbano é alterado, seja pela substituição de uma edificação por outra, seja pela mudança de uso e função de uma determinada edificação, seja, ainda, pela destruição de edificações com o fim de abrir espaços públicos.

A história nos legou importantes exemplos dessas transformações urbanas ; percebe-se que elas foram possíveis e graduais enquanto o crescimento urbano se mantinha inferior a digamos, 4 - 5% ao ano. No entanto, quando este índice alcança, como em São Paulo e em tantas outras metrópoles latino-americanas, taxas superiores a 10% ao ano, a cidade explode : não apenas cresce, mas se refaz. A limitação e concentração de infra-estrutura e de equipamentos empresta elevado valor mercantil a certas áreas urbanas, justificando, do ponto de vista capitalista, a demolição de um prédio de 10 andares para, sobre o mesmo terreno, construir outro de 30. A voracidade dos negócios imobiliários, viabilizados pelo sistema econômico e pelo crescimento de demanda, reflexos do próprio subdesenvolvimento, leva à autofagia urbana : em São Paulo, cidade fundada em 1554, mal se encontram meia dúzia de edificações do fim do século passado e pouquíssimas construções anteriores a 1930.

Um valor cultural no sentido mais amplo não significa apenas um edifício de valor histórico ou estético, mas, sim, uma edificação ou um ambiente urbano que tenha significado na vida de um grupo social : um ponto de referência, palco de atividades coletivas, símbolo de momentos importantes, espaço que serve para identificar situações e atividades repetidas diariamente,

a ponto de fortalecerem os laços entre a pessoa e o meio ambiente urbano.

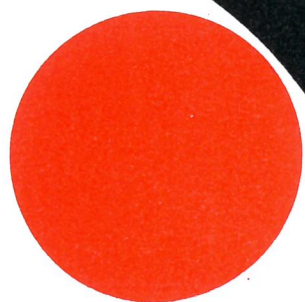
A destruição da memória e de referências urbanas constitui grave impacto ambiental em uma metrópole, especialmente quando metade de seus habitantes não nasceram nela, como é o caso de São Paulo. Como não se pode viver cotidianamente a metrópole como um todo, deve-se identificar aquele conjunto de elementos metropolitanos que constituem o cotidiano, o habitual, o ambiente reconhecido e familiar de cada pessoa. Há múltiplas combinações desses elementos, mas cada pessoa compõe seu próprio conjunto. Da preservação das referências que constituem esse conjunto, depende, em boa parte, o sentimento individual de apropriação do espaço urbano, de homeostase entre a pessoa e o espaço que utiliza. É, portanto, um importante fator de qualidade de vida.

Para resumir : o fenômeno da metropolização, no contexto do subdesenvolvimento, acarretou impactos ambientais típicos, todos resultantes num nível de qualidade de vida malsão. No caso de São Paulo, vive-se numa metrópole ruidosa, de ar poluído, com níveis periclitantes de saúde pública e de escassa preservação de valores culturais. Para os habitantes de renda elevada, os aspectos modernos que esta vida oferece compensam alguns dos prejuízos ao nível de qualidade de vida. Mas, para os habitantes de baixa renda, que habitam zonas afetadas por inundações e cujos filhos mal nutridos estão sujeitos a doenças decorrentes da poluição, os impactos ambientais pioram as condições precárias resultantes da injusta repartição de renda e de oportunidades.

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DEVELOPMENT OF ENVIRONMENTAL POLICY AND ITS
INSTITUTIONAL MECHANISMS OF ADMINISTRATION AND FINANCE

by Michio Hashimoto

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DEVELOPMENT OF ENVIRONMENTAL POLICY AND ITS INSTITUTIONAL MECHANISMS OF ADMINISTRATION AND FINANCE

Michio Hashimoto

1. Introduction

The contemporary concept of environmental policy in Japan has been developed through intensified social awareness and political concerns about the environmental degradation, pollution and destruction emerged as the adverse side effects of rapid economic and industrial development in the 1960s. However, numerous multiple policy approaches to the environment had already been implemented by 1960 which had complex interactions among changing problems and interests in relation to the environment. The problems of environmental degradation, pollution and destruction are the consequences of numerous multiple policy approaches, and issues of adverse environmental problems are externalities of past policy approaches. In environmental policy approach, in a contemporary sense, deals with those externalities through confrontation and struggle over long periods, aimed at an incorporation of environmental considerations into already existing policy framework and, furthermore, creation and development of a new framework and approach with anticipatory policy formulation for the sustainable harmony among the complex mutual relations between man and his environment. There have been various spectra of environmental problems throughout the history of economic and social development. Development of environmental policy should be studied in close relationship with the long-term process of national development with a view to identifying development policies and their externalities as well as clarifying the evolution of environmental policy to the present.

2. Orientation for Japanese Case Study

Japan was well-known in the past as the worst polluted country in the world. However, Japan is considered to have achieved remarkable progress in environmental pollution control during the 1970s. In the OECD report of "Environmental Policies in Japan," it was summarized that Japan has won many pollution abatement battles, but not yet won the war for environmental quality. This is the stage at which we are now, in the development history of environmental policy in Japan.

Japan was virtually a closed country up to 1868. The Meiji Restoration 1868 was the start of the modernization of Japan after which efforts were made to catch up with Western European countries. The population of Japan was 34 million at the stage of Meiji Restoration, whereas the present population is about 119 million. It is a small island country of 377 thousand km², two-thirds of which is mountain and forest. Modernization and economic and social upliftment have taken place through industrial development and structural changes under the constraints of domestic resources and territorial space over the past 115 years. At the same time, policy attitudes in relation to the environment have been strongly influenced by power groups and interests among political and economic establishments. Particularly national political institutions, legal relations between national and local governments, government-people-enterprise relations and the innovation of new technology have played decisive roles for policy changes in relation to the environment. In the days following the Meiji Restoration the large-scale industrialization of the country made Japan a polluters' paradise. The contemporary concept of environmental policy was initiated through local autonomy in post war Japan and organized public action against environmental pollution. The action constituted a large impact on the national government. Drastic policy changes which took place in 1970 can be or should be understood as a kind of cultural revolution in Japan. There was a drastic turnaround in the country's attitude towards polluters and at the end of the 1960s Japan was no longer a "polluters' paradise." Significant changes, both politically and socially, in attitude towards environmental issues continued well into the 1970s.

This is the remarkable experience of environmental policy in Japan. The crisis was virtually overcome so that the stage was set for an entirely new policy direction for future developments. It should also be mentioned that the international impact also had an important role in policy changes after 1970. Foreign criticism of Japan as the "Worst Polluted Country in the World" in 1970, provided the first impact. The second impact was caused by the energy crises in 1973 and 1979 and trade friction after 1980 provided a third impact.

The development of environmental policy is neither easy nor a smooth process. The bitter Japanese experience of pollution throughout the century following the Meiji Restoration together with the successful experiences after 1970 can provide useful learning material for those countries now at the developing stage.

3. Development of Environmental Policy

3.1 From Meiji Restoration to the End of the Second World War 1868-1945

Since the Meiji Restoration, Japan was opened up to the rest of the world. Capital was removed from Kyoto to Tokyo. Government-owned industrial plants were transferred largely to private families. The slogan "build up wealthy, strong and modernized Japan and catch up with the Western European countries" was the national aspiration and political goal. When the first stage of urbanization and industrialization had taken place, the policy direction in relation to the environment, was at a primitive stage but, nevertheless of some importance.

Firstly, the Government ordered the settlement of farmers' rights for land and water use for agriculture and also fisheries rights for fishermen. These were essential measures following the abolition of the feudal system under the Tokugawa Shogunate. It is interesting to realize that one of the first Government Orders issued was for protection and preservation of old shrines and temples as important national heritages. This represented the start of the protection policy of historical and cultural

property. A licensing system for mining enterprises had also been settled during the very early stages. Ten years after the Meiji Restoration, the Policy Authority in Osaka had already enacted regulations explicitly for pollution control provisions for manufacturing plants in the city.

Those series of Government Orders aimed at establishing the basic institutional social order to deal with environmental property, but as a natural outcome of urbanization and industrialization, pollution of the environment rapidly increased. Some pioneering police regulations against industrial pollution had been carried out in Osaka and Tokyo, however, every effort had been suppressed and, had in reality failed. With foreign trade and poorly sanitized urbanization expanding, epidemics became widespread, constituting an imminent danger to the population's health. The national government organized a sanitary administration through the police organization, which was a measure against environmental health hazards, and nationwide grass-roots organizations for community sanitation were established for urban refuse disposal. Local government organization was established at the prefectural level in 1871, and county, city, town and village levels followed in 1878. Meanwhile, flood disaster and irrigation management were important issues as public security measures. Property rights for water use were very sensitive issues in villages, with local water use and flood defense unions being organized by government order. These were the basic social institutional orders and infrastructures relating to the environment during the initial development stages in Japan.

In 1890, Imperial Congress was organized and a general election was held. However, only 1.1 per cent of the population was eligible for voting in this election. A number of legislative actions had been taken and implemented in relation to the following aspects of environmental concerns: (a) communicable disease control; (b) refuse disposal; (c) waterworks; (d) sewerage systems; (e) rivers; (f) sand guard, (g) forests; (h) fisheries; (i) agriculture; and (j) mining. Legislation for Factory Law had been suppressed due to opposition of industrial and economic groups. In spite of the enactment and implementation of the Mining Enterprise Law, 1905, no effective control of pollution hazards from mining operations had been achieved. The famous case of mining damage caused by Ashio

copper mine in the nineteenth century showed that regulations and laws by the Government and the Diet could not provide effective enforcement measures. Policy priority for allocation of government capital investment had been specifically directed to that infrastructure for transportation and industrial development. Capital development in Tokyo had been initiated around 1839. City and Ward Rearrangement Ordinance had been enacted on this occasion as the first legal approach to city planning. The Forest Law and subsequent legislation in relation to forests after 1898 had established an important substantive foundation for national park and nature conservation.

Since the turn of the century, heavy industry had begun to develop. The Factory Law was enacted in 1911 and implemented in 1916. Local industrial pollution disputes occurred in the areas surrounding heavy industrial plants, in addition to mining and smelters. These were the issues of interindustrial disputes. Against this background organized protests by farmers and fishermen, occurred, with violent clashes between factory management and farmers and fishermen's unions. The Civil Law of 1896 provided the liability of tort in the event of damage caused by deliberate or careless act. The Supreme Court verdict in the case of Osaka Alkali Works provided an important judicial precedent hereafter. However, it is to be noted that a few mining and industrial enterprises achieved high grades of pollution control measures through individual voluntary efforts. In response to urbanization and bay-area development, legislation for city planning, building permits and a licensing system for land reclamation in the zone of public water were passed and enacted around 1920.

After the worldwide economic depression following the "crash" of 1929, political trends of socialization through the labour movement incorporated industrial hygiene regulations in working environments. Meanwhile, public health laboratories in Osaka had begun hygiene studies into urban and industrial pollution. Japan's population was 65 million in 1931, which was nearly double the 1868 figure. With the growing militarist trend, national policy interests in the population problem grew in relation to the national resource-supply situation. The scope of public health was broadened to meet the political demand for raising a strong

population to strengthen military potential. The National Park Law of 1931 was enacted based on the recommendations of the Economic Council to improve the national balance of payment by expanding foreign tourist potential.

On the other hand, the rural waterworks and parasite control projects and the introduction of a sanitary toilet system were begun in 1931 as the revitalization programme for depressed rural communities.

After 1931, wartime special measures were strengthened at the expense of environmental protection efforts which were curtailed by expanding military expenditure. Flood disasters located on bay areas on the occasion of typhoons in industrial regions, such as Tokyo, Osaka and Nagoya, became worse due to ground subsidence. In spite of a report by Dr. Wadachi in 1940 concerning the theory of ground subsidence, in which excess pumping up of underground water by industrial enterprises had been pointed out as the cause of ground subsidence, no administrative measures were taken until 1956.

Mining extraction was accelerated in order to supply mineral resources for industrial production for war preparation. Accordingly, mining pollution and damage to agriculture, forestry and fishery worsened. On the other hand, the national food supply was also an important political concern. Strict liability legislation, under the Mining Enterprise Law had been passed and implemented in 1939 to deal with these interindustrial conflicts. After 1941, the Second World War had brought a jeopardizing impact on all of these administrative efforts since the Meiji Restoration. Most of the industrial urban areas had been destroyed by Allied bombing prior to the Japanese surrender in August 1945.

3.2 Postwar Chaos and Reconstruction 1945-1949

Here again, environmental problems had been put back to the very primitive stage of the spectrum. The population was 71 million in 1945, with the return of several million expatriates. Urgent resettlement for refugees and returnees, as well as adequate provision for a minimum food supply were top priority issues. The old political and economic power

structure was completely dismantled by order of the Occupation Forces. In relation to the environment administration, the Ministry of Interior was abolished and an independent administration for public health, construction, labour and local autonomy established in its place. Outbreak of epidemics, food poisoning, malnutrition, emergency settlement and special city planning for reconstruction from war disaster had been the main national problems related to the environment.

The Imperial Constitution of 1889 was abolished by order of the Supreme Council of Allied Powers (SCAP), and a general election was held in 1947 with all people above 20 years of age being eligible to vote (this represented 48.7 per cent of the population). The 1946 Constitution which was implemented in 1947 contained provisions for national responsibility for health and welfare, democracy, freedom, abandonment of war and establishment of local autonomy etc. This constituted a strong background for the development of environmental policy hereafter. The first outcome of these new constitutional provisions was revealed in the Industrial Pollution Control Ordinance of 1949 by the Tokyo Metropolitan Government Assembly in response to the overwhelming number of complaints, filed to the Tokyo Metropolitan Government. This was the prototype of pollution control legislation by the mid-1960s. However, Tokyo Metropolitan Assembly had also attached the additional note to request the special consideration for smooth economic development during implementation. At this stage, national government was busy in national efforts of war recovery and showed little concern about industrial pollution control. It should also be noted that there were different policy attitudes among local governments in formulation and implementation of the Law of Special City Planning for Postwar Reconstruction in 1946. Local governments with clear policies for rational city planning, through zoning and siting control, laid the foundation for better city environments decades later.

3.3 Industrial Recovery and the National Development Plan 1950-1954

The National Comprehensive Land Development Law was enacted in 1950. This provided an institutional framework for national development planning. National priorities for development at this stage were directed towards energy resource development, food production and natural disaster prevention through river and mountain management.

The Electric Power Source Development Promotion Law, enacted in 1952, provided the institutional procedure for examining master plans of power station development projects. In the provision of interministerial coordination, the conservation of the national territory was included. There is also another provision which requires the prefectural governor's assessment in advance of the final decision. These two procedural requirements have provided an effective basis for the inclusion of environmental impact assessment as an integral part of project plan formulation. Eventually these provisions have facilitated opportunities for the negotiation of environmental pollution-control agreements between local government concerns and electric power companies since 1964. Meanwhile, the huge modern engineering technology for construction of hydroelectric dam had resulted in large-scale environmental destruction in some national park areas, and many fossil-fuel power stations constructed before 1964 had caused widespread air pollution.

In the case of stepped-up food production, the expanded use of chemical fertilizers, agricultural pesticides, and herbicides had resulted in a drastic increase of chemical input to the natural environment. Natural decomposition of human excreta as manure in soil gradually disappeared, such that the engineering approach for collection and treatment of night-soil became imperative. The Waste Disposal Law of 1900 was abolished and the Public Cleansing Law was enacted in 1954.

As the outcome of the postwar reorganization of administration, community organization approaches had been widely applied by health centres, agricultural extension centres, rural life improvement services, community education centre, and social welfare offices in rural communities. The past autocratic approach, through police organization, was abolished and participation of villagers actively encouraged. Rural environmental problems, such as insect and rodent control, waste and refuse disposal, communicable disease prevention, rural water supply and farmers' home life improvement, were the most popular community programmes. Government subsidies for those community programmes through various sectoral administrations had provided a great incentive to promote rural community upliftment with self-help principle. In four major industrial regions, heavy industries had gradually recovered. The industrial recovery was

accelerated by special industrial demands generated by the Korean War (1950-53). The Peace Treaty with the Allied Nations had also accelerated more independent planning for future industrial development. Accompanying industrial recovery, local industrial pollution problems again began to revive and worsen. Prefectural industrial pollution ordinances were enacted by Kanagawa, Osaka and Fukuoka. In 1953, the Ministry of Health and Welfare had conducted nationwide pollution survey as a programme of environmental sanitation. A WHO sanitary engineer was invited to examine the problem of water pollution and conservation measures. The recommendation of this consultant provided direction for a water pollution control programme. However, due to the interministerial sectionalism and bureaucratic power struggle, no concerted legislative action developed. The Ministry of Health and Welfare drafted the Living Environmental Pollution Prevention Standard Act in 1958. However, the legislative effort was opposed by all other ministries as well as economic and industrial establishments. Even the Local Government Federation opposed it. Opponents claimed that economic recovery and growth would be retarded by the legislation. The atomic bomb, tested in Bikini by the U.S. caused the death of a Japanese fisherman who died from acute radioactive burns as a result of being exposed to the fallout. Radioactive contamination of tuna fish was detected resulting in the abandonment. A nationwide pandemic mass reaction occurred as a result. The problem of global environmental radioactive pollution had also arisen together with the problem of air, water and fish (food) pollution.

3.4 Economic Growth with Energy Shift and Urban Concentration 1953-1959

Electricity generation shifted away from hydroelectric power to oil generated power, and the energy structure shifted from coal to petroleum. These energy policy changes had important environmental implications and consequences. Although the coal-mining industry began to decline, water pollution caused by coal mines with heavy suspended solids (SS) loads in downstream drew public attention. Meanwhile with the rapid development of petroleum refineries and petrochemical industries environmental pollution originating from petroleum also began to appear. The petrochemical industry began mass production of various consumer products. Ground

subsidence in the bay area regions of Tokyo, Osaka and Nagoya had been regarded as a kind of slow disaster so that legal restrictions for underground water pumping by industry were started by the Ministry of International Trade and Industry (MITI) in 1956. This was the start of the national legislative approach to environmental pollution. The situation of water pollution began to deteriorate, a violent clash between fishermen's groups and a paper mill in the Edogawa area occurred. This was not only a local incident in the Tokyo Metropolitan area. Congress and government were shocked and reacted quickly with legislative action. As a result, a series of laws such as Public Water Zone Conservation Law, Industrial Effluent Control Law, Sewerage Work Law and Water Work Law were passed in 1958. The Public Water Zone Conservation Law of 1958 was under the jurisdiction of the coordination power of the Economic Planning Agency under the Prime Minister's Office with scattered power and jurisdiction over the ministries concerned. In spite of the rapid legislation, the implementation of the laws was very slow.

The case of Minamata disease became known to the public with the detection of unknown cerebral disorders in a child in 1956. As the result of extensive study by the Medical School of Kumamoto University, Alkylmercury compound was suspected as the causative agent in 1959. Food Sanitation Council of the Ministry of Health and Welfare (MHW) had issued the findings associated with the report by Kumamoto University and expressed the belief that the industrial plant located on Minamata Bay area could be the pollution source. However, complete scientific evidence concerning source-environment-patient relations as well as the cause-effect relationship had not as yet been satisfactorily proved. Economic Planning Agency and MITI did not exercise their powers provided by the Public Water Zone Conservation Law and Industrial Effluent Law. The second outbreak of Minamata disease can be attributed to the inaction of the Government. The first petrochemical complex had operated since 1954 in Yokkaichi. Public annoyance had broken out in surrounding communities of the industrial complex. No pollution control measures were enacted restricting these industrial plants in Minamata and Yokkaichi. The first report of Itai-itai disease was presented by Dr. Hagino at Medical Assembly and soon after, some toxic metals in mining effluent were suspected as the causative factors of Itai-itai disease. The doctor who reported Itai-itai disease met with strong local political and social pressure.

Severe damage caused by environmental pollution, though not yet identified as of pollution origin, had become very apparent at this stage. However, only in the case of ground subsidence, which had already been warned against in 1939, had national legislative actions for control been taken, i.e., the Industrial Water Law of 1956.

Along the course of industrialization and economic growth intensive population migration had occurred with a strong trend towards urban concentration. Overconcentration of population and industry in the capital region was recognized as an important social and environmental issue. The Capital Region Development Law was enacted in 1956 and regional planning for orderly development was started. The Law for Industrial Siting Restriction in Developed Urban Areas of the Capital Region was enacted in 1959. Projects such as the construction of the toll highway and large-scale public housing compounds were started by the Japan Highway Public Corporation and the Japan Housing Corporation respectively after 1955. Revenue from gasoline tax was earmarked for highway projects in 1954.

The National Park Law was revised as the Natural Park Law in 1956 and tourism and recreation gradually recovered. However, large-scale development projects of dams and highways constituted a grave environmental impact on some areas of national park land. Urban concentrations of population and industry away from the rural areas resulted in a significant social impact to agriculture and forestry.

Traditional local administrative institutions of city, town and village governments experienced new social and economic demands as a result of economic expansion. It was essential that the administrative and financial capacity of those local government institutions was renewed and strengthened in order to meet these changing social and economic needs. The nationwide programme of amalgamation among local governments in order to form suitable sizes and capacities was promoted by the Ministry Local Autonomy (MLA) and the financial incentive was provided by the New City, Town and Village Development Law of 1956. The Ministry of Agriculture and Forestry developed programmes of the new agricultural village development plan in 1955.

The first national five-year economic plan began in 1955 with the policy slogan of "Economic Independence." The priority programmes were "modernization of industrial facilities," "foreign trade promotion" and "improvement of self-supply economy." Annual growth rate of GNP was set at 5 per cent, while real performance was 8.7 per cent.

3.5 Regional Industrial Development and Growing Anti-pollution Movement 1960-1964

The prime minister inaugurated the national income doubling plan in 1960 with the duration set at ten years. The annual growth rate of GNP was targetted at 7.2 per cent. As the priority programmes, expansion of social overhead capital investment, diversification of industrial structures, promotion of foreign trade and international cooperation were advocated. Two special laws were enacted to promote regional industrial development. Twenty-one regions were designated as "special industrial development" regions. A series of regional development plans were formulated with the aim of redistribution of population and national income towards more equitably balanced national development. Meanwhile, industrial pollution was deteriorating with new types of industrial pollution appearing in Yokkaichi as a result of the petrochemical industry. Greater environmental risks arose and widespread journalistic interest was attracted. There were still no national legal provisions for the regulation of industrial pollution yet. Existing local industrial pollution ordinances as yet provided no preventive measures. Warnings against industrial pollution by the Ministry of Health and Welfare (MHW) had been ignored or even called damaging actions against economic and industrial development within national and local governments. However, a new effort was initiated by resident groups and a few local governments. The anti-pollution and anti-development campaign was first organized in Nishinomiya city and environmental impact assessment approaches were initiated by Osaka prefecture and Nishinomiya city concerning the industrial development projects under their jurisdiction. The Mishima-Numazu area in Shizuoka was designated as a special industrial development area in 1963 by the central government based on strong demands from the local government. However, during the implementation stage of the master plan, organized citizen action was initiated and gained momentum, under the slogan

of "No More Yokkaichi." Furthermore, they were supported by a group of scientists and scholars who had organized in relation to environmental pollution. Shizuoka Prefecture Government thus requested the national government to conduct an environmental impact assessment for the prevention of pollution.

In 1963, MHW and MITI jointly organized the Kurokawa Commission for the comprehensive investigation of Yokkaichi air pollution in an attempt to find an effective solution. The Commission was composed of multidisciplinary experts, and proposed a wide-range of measures which were both comprehensive and unique. However, no legal provisions were enacted at this stage. The two agencies again organized a multidisciplinary expert team which was sent to the Mishima-Numazu region. The first large-scale environmental impact assessment in relation to air and water pollution was carried out and the recommendations were presented to MITI and MHW in 1964. Again, no available legal provision existed to guarantee the implementation of recommendations. Citizens' groups for anti-pollution action also conducted an environment impact assessment with the support of a group of scientists.

As a reaction to the extensive antipollution campaign, three municipal governments in the Mishima-Numazu area held municipal assembly sessions and decided by vote to cancel the development project. It was a profound shock for national and local governments as well as economic and industrial establishments. This was the incentive needed to begin new legislative action for basic laws to facilitate a comprehensive approach to industrial pollution control. At the same time, a new construction project of coal-fired power station plan was presented to the Electricity Source Development Council of Prime Minister's Office. The legal procedure of the Council was already settled by the law in 1952. Meanwhile the Public Water Zone Conservation Law of 1958 was implemented in 1962, and Smoke and Soot Control Law (1962) was implemented in the following year. Both were implemented only in designated water zones or control districts with mild enforcement standards. These legal pollution controls were taken only in those areas, which were already heavily polluted. Those enforcement standards had been settled through several years of negotiation among ministries and also industries and other interested

parties concerned. Without gaining a consensus among all concerned parties, designation and enforcement standards could not be settled. This was the basic reason for delayed implementation with only mild enforcement standards. In the case of Sumida River, the pollution in terms of BOD, was composed of 60 per cent domestic effluent and 40 per cent industrial effluent. The enforcement schedule for industrial effluent was linked with the progress of the public sewerage system. However, all new industrial sources were legally obliged to meet the effluent standard of 20 ppm in terms of BOD. This standard had a substantial effect on siting control for new industrial plants with heavy pollution potential. In 1963, a new law was enacted to accelerate the development of environmental sanitation facilities such as sewerage systems, nightsoil digestion plants, and urban incinerators through a higher subsidy rate. Necessary costs for investment were integrated and earmarked over a five-year economic plan period. This system has continued since then with each five-year span commencing one year in advance of each fiscal budget. The Law for Promotion of Water Resource Development was enacted in 1961. Regional water resource development plans were worked out to meet the increasing regional demand of water resource by urbanization, industrialization and irrigation. A new River Law was enacted in 1964. The old River Law (1896) was abolished. There was a provision through which waste effluent restriction was feasible, however, no water pollution control had been taken under the River Law of 1964. This law played an important role in flood disaster prevention and control and also institutional arrangements and coordination of water-use rights among interested parties.

The expanded supply and demand of pesticides, chemical fertilizers, synthetic detergents, plastic products and automobiles after 1955 had created a large source of potentially damaging environmental pollution and was growing worse in the early 1960s. Nationwide construction work of various development projects had also resulted in large-scale environmental deformation, degradation and destruction. Many common species of birds, fishes, and insects, as well as trees and forests had disappeared as a result of the effect of general development and widespread use of chemicals. Rapid expansion in motorization had accelerated pervasive changes, resulting in pollution of urban environment with noise from heavy traffic.

Due to the increased urban migration, rural communities had declined and agriculture, forestry and fisheries were weakened. The Ministry of Agriculture and Forestry had enacted the Basic Law for Agriculture in 1960, the Basic Law for Forestry in 1964, and the Coastal Fishery Promotion Law 1963. As a result, in spite of the improvement of agricultural productivity, traditional forestry practices had declined. Liberalization of foreign currency exchange had resulted in large influxes of cheap lumber and farm products from abroad. These brought grave social and economic side effects to domestic agriculture and forestry. On the other hand, coastal fishery had declined due to land reclamation in bay areas, water pollution caused by coastal industrial zones, and increasing disruption from oil tanker navigation routes.

New production technology was innovated in agriculture, cattle raising, coastal and inland fish cultivation. Higher productivity rates were achieved by the application of these new practices, however, environmental side effects of these technical practices slowly began to become apparent. Residue from pesticides in food, water pollution resulting from excess nutrients attributed to artificial feeding in fish farms, and large-scale cattle raising and domestic effluent were all typical environmental pollution problems arising during the late 1950s. These adverse environmental effects reached a peak in the mid-1960s. Social and political concerns rapidly intensified through mass communication campaigns. The problem of environmental pollution was focused upon as the top priority issue of the election campaign in 1964. In the presidential campaign of the Liberal Democratic Party, Mr. Sato stated that environmental pollution was the outcome of a distorted economic growth. He pledged himself to combatting this as a candidate for president. He won the election and became Prime Minister. The Environmental Pollution Control Division was organized by MITI in 1963 then MHW in 1964.

In spite of growing social and political concerns, the Government still ignored the academic reports of the Medical School of Kumamoto University, which produced conclusive scientific evidence showing the cause-effect relation between Minamata disease and alkylmercury from industrial plant effluent. This was verified from evidence of chemical analysis of reactors content and supplemented by animal experiments.

The suspected company paid compensation to the families of victims of Minamata poisoning in 1959 through mediation of Fishery Coordination Council. MHW provided medical care costs to patients as a category of research funds and the Economic Planning Agency was assigned as the ministry responsible for investigation. However, government inaction facilitated a second outbreak of Minamata poisoning in Niigata prefecture in 1965.

3.6 Special Industrial Pollution Control Committee in the Diet and the Legislation of Basic Law 1965-1969

Special Committee for Industrial Pollution Control was organized in both houses of the Diet in 1965. The first legislation by the Committee was for the Law of Environmental Pollution Abatement Corporation 1965, which was drafted by MHW and proposed as the joint jurisdiction by MITI. This was aimed at providing long-term and low interest loans to private industry to meet the growing capital needs for investment in pollution control. The fund of the Corporation was planned to borrow from the Government Fund for Investment and Loan Scheme, which was expected to be expanded by the cumulated pension fund due to the expansion of the National Pension Programme.

The problem of industrial pollution control was listed as the top political issue in 1965. To overcome the weakness of pollution control laws, which was very obvious in the cases of Yokkaichi and Mishima-Numazu, MHW had drafted the Basic Law for Environmental Pollution Control for integration of the piecemeal sectoral pollution control laws through the establishment of environmental quality standards as the goals of comprehensive pollution control measures and also provision of administrative procedure for the comprehensive areal pollution control planning. The crucial policy controversy in the course of legislation was the harmony principle between pollution control measures and sound economic growth. The legality of any environmental quality standard was also very controversial.

The harmony clause was provided in the policy consideration dealing with the living environmental conservation issues. The legal nature of

environmental quality standard was defined as "the desirable goals to be maintained" through effective implementation of comprehensive measures by National Government. The National Government was legally requested to set up a pollution dispute settlement institution, institute pollution victim relief measures and pass a separate law for cost bearing rules for pollution abatement work by enterprises. This Basic Law was enacted in 1967.

The budget allocation for pollution control was sharply increased after 1965. MHW disclosed the results of a study of air pollution's effect on health in Yokkaichi and Osaka. Japanese and English monographs on Minamata disease compiled from the academic reports of Kumamoto University Research Team were prepared for official publication by MHW. The second outbreak of Minamata disease occurred in the Agano River basin of Niigata Prefecture. MHW had embarked upon an extensive study of Itai-itai disease and also toxic-trace metal pollution around mining operations and smelters. The overwhelming tide of social and political concern had arisen through mass communications and political campaign, thus intensifying the citizen's anti-pollution movement. The pollution-related disease patient groups had also begun mass demonstration and confrontation with responsible enterprises with the support of citizen's groups, scientists and lawyers. All of them criticized the behaviour of industrial concerns and also the slow government responses and lax policy attitudes at this time. The key issues for policymaking were the problems of scientific evidence validating cause-effect relations in polluting industry, causative agents in the environment and the resulting health hazards to citizens. These were complex difficulties in relation to environmental policymaking due to the uncertainties resulting from different sectoral scientific interpretations and judgements in the complex situation of conflicting interests and policies among concerned ministries and social, economic, and political pressure groups. Based on the results of scientific study over the past twelve years, MHW published written findings and conclusions about Itai-itai disease with additional clarification of hitherto unknown factors. MHW made the decision to deal with cadmium as the causative agent for Itai-itai disease and to begin pollution control measures, as well as implementing relief for patients through its research fund. The MHW conclusion was accepted.

in the Cabinet session and it was authorized through government consensus as a conclusion to the case of Itai-itai disease. This was a turning point in relation to environmental policymaking inasmuch as decisions were made in an atmosphere of uncertainty resulting from a shortage of scientific evidence. The same procedure was adopted for two Minamata disease incidents in September 1968. The Special Law for Relief Measures for Pollution-Related Disease Victims was enacted in 1969. The Federation of Economic Organizations provided funds for medical care costs. In 1968, the Air Pollution Control Law and Noise Regulation Law were enacted with previous relating laws being abolished. The air quality standard for SO_2 was settled after a long and controversial debate between MHW and economic and industrial groups concerning the economic impact and energy implications. MITI recognized the necessity of desulfurization measures within the framework of energy policy in order to achieve the newly settled standard for SO_2 . The Comprehensive Energy Study Council under jurisdiction of MITI formulated a ten-year plan for desulfurization. MITI mobilized all available institutional measures to implement this law. Financial measures were established through long-term loans, and special tax relief by MITI and Ministry of Finance as special measures in force only for a limited period of time. The environmental impact assessment approaches had been implemented for industrial development projects by MITI and MHW since 1965. However, the assessment was limited to air and water pollution. The result of the assessment was disclosed to a certain extent without specific public procedure. At the same time environmental pollution control agreement procedure was rapidly expanded among the local governments concerned. The pollution control requirements specified in these agreements were detailed and strict for the individual factories and plants concerned, however, despite this industrial enterprises generally accepted the requirements. Organisation for Economic Co-operation and Development (OECD) described them as a tailor-made control method through local government intervention into the enterprise management. The automatic monitoring network of pollution was established by local governments using national subsidies.

Nationwide surveillance for mercury and cadmium was conducted in 1969 by MHW and the provisional control guidelines were also issued by

MHW. The legal enforcement standards of mercury for industrial effluent was implemented in 1969. The Second National Comprehensive Development Plan issued in 1969 aimed at the development of a nationwide network of rapid transportation systems. Huge bridges across the Seto Inland Sea and gigantic industrial development projects in underdeveloped regions were planned. This was called the Japanese Archipelago Reform Plan.

In the meantime, the international cooperation programme had been expanded gradually. UN appeal for Human Environment had provided new impetus to the domestic concern for environmental policies. The administrative organization for environmental pollution was expanded in MHW and MITI. But, organization for national park administration was downgraded under administrative reform, although new programmes for marine park and the popular hiking roads were started.

Ministry of Construction began an active approach to urban green development and also conservation measures for historical and cultural environs in ancient capitals such as Nara and Kyoto. The urban redevelopment project was also undertaken with the aim of creating better commodity traffic flow systems. Rapid expansion of motorization generated needs for new structural and functional infrastructure redevelopment of urban and suburban regions while the environmental problem of automobile transport was becoming a growing public concern. Automobile control in USA and Europe had made an impact on Japanese automanufacturing for exports. To the Air Pollution Control Law was added a new provision of autoexhaust pollution control measures. The control of carbon monoxide emission from automobiles was implemented in 1966, however the control of hydrocarbon emission was not implemented due to opposition from the automobile industry in spite of their attachments of hydrocarbon emission control devices for the export of cars to the USA in compliance with the enforcement standard of the State of California.

3.7 Drastic Changes of Environmental Policy in the Social and Political Crisis Situation, 1970-1974

The cumulated social and political potential, in relation to environmental pollution issues, exceeded the threshold level in 1970. It was a

kind of social and political crisis situation in which news of lead poisoning together with the photochemical smog episode, by the middle of 1970 was playing a key role in sensitizing the public. The UN appeal of Human Environment and OECD report of "Problems of Modern Society," and President Texts on Human Environment in USA had also played an important role in activating social and political concern.

In July 1970, Prime Minister Sato ordered the organization of the Environmental Pollution Combat headquarters directly under his office to integrate and unify all ministerial approaches. Prime Minister ordered drastic reinforcement of pollution related laws and institutions. The Diet decided to hold special sessions for pollution control legislation. Thirteen legislations were prepared by Government Pollution Control Headquarters and passed by the Diet within two-and-a-half months. Those legislative actions were as follows:

- (1) Harmony Clauses were deleted. Soil pollution was placed in the pollution category, and nature conservation provision was added.
(Revision of the Basic Law 1967.)
- (2) The Water Pollution Control Law was passed. Two old laws of water pollution control were abolished, and the nationwide coverage of enforcement standards and also the power delegation to prefectural governor to authorize for setting stricter standards if necessary to achieve environmental quality standard. Penalty provision was strengthened.
- (3) The Air Pollution Control Law of 1968 was revised to provide nationwide coverage of enforcement standards and the authority was delegated to prefectural governors so that the same situation prevailed as that for water pollution control. The autoexhaust control standard provision was strengthened. Penalties were also strengthened.
- (4) The Agricultural Soil Pollution Abatement Law was enacted.

- (5) Urban Cleansing and Industrial Wastes Disposal Law was enacted. The Public Cleansing Law of 1953 was abolished, and the toxic substance control provision for industrial wastes was added.
- (6) The Sewerage Work Law of 1958 was expanded. The regional sewerage system was newly provided.
- (7) Pesticides Regulation Law of 1950 was strengthened, by additional clauses to include Chemical Assessments of environmental toxicity of pesticides.
- (8) The Poisonous Substance Control Law of 1950 was strengthened. The provision for safety in transportation of toxic materials was added.
- (9) The Pollution-Related Dispute Settlement Law was enacted.
- (10) The Law for Cost Bearing by Enterprise to Share the Cost of Public Pollution Abatement Work had been enacted.
- (11) The Environmental Pollution Crime Law was enacted.
- (12) The Ocean Oil Pollution Control Law of 1966 was expanded to the Ocean Pollution Control and Accident Safety Law.
- (13) The Noise Regulation Law of 1968 and Road Traffic Law 1964 were revised to cope with the traffic pollution problem.

In July 1971, Environment Agency was established under the Prime Minister's Office and the environmental pollution control and the nature conservation had been integrated as the basic function of the Environment Agency. The Environment Agency was empowered to coordinate government environmental programmes in administration and research and the Director-General (the State Minister), was appointed from members of the Diet. The Director-General can exercise his power not only as the head of the Environment Agency, but also in place of the Prime Minister in certain specified cases. Under the leadership of Minister Oishi, the nature Conservation Law was enacted in 1972 at the

same time as the Stockholm Human Environment Conference. Nature conservation was legally expanded to cover all national territory. A series of court verdicts were announced in pollution-related health damage disputes, which upheld the claims of pollution-related victims. The liability of the source enterprises was interpreted with increasing severity, and past government policies was implicitly criticized in these verdicts. The special scale of the damage evaluation was first realized in the court verdict for a dispute in Yokkaichi. In response to these court verdicts, the Government and the Diet took legislative action for a strict liability (Non-fault Liability) clause in Air Pollution and Water Pollution Control Laws and passed in 1972.

In 1973, a Pollution Related Health Damage Compensation Law was enacted and the Special Relief Law of 1969 was abolished. The Compensation Law provided that benefits include not only medical costs, but also losses of earnings. The budget for compensation expenditure was financed by the pollution levy system in case of air pollution health damage. The most difficult problem for legislation was how to deal with the institutional settlement between scientific judgement and legal judgement. Without strong political direction and decisions supported by all parties concerned, the institutional settlement of these issues was impossible. This was the special feature of legislation for the Compensation Law, decided under social and political crises situations, which took into account the governments past record of inaction in the face of growing pollution dangers. The Government decided, through Cabinet Resolution, to implement an environmental impact assessment procedure for public works projects having significant environmental impact potential.

The sectoral legislative actions for environmental impact assessment were also taken by the ministries concerned. i.e., The Environmental Toxicity Assessment Law for New Chemicals in 1973; The Harbour Law and the Law for Land Reclamation in Public Water Zone were revised to include the new environmental impact assessment provisions. The Special Law of Environmental Conservation Measures for the Seto Inland Sea and the Industrial Siting Law also contained environmental impact assessment clauses.

In 1974, the Air Pollution Control Law was strengthened through new provision of the areal total mass emission regulation, which was devised and initiated by the Mie Prefectural Ordinance of 1972 for Yokkaichi air pollution control. The National Landuse Planning Law was also enacted in 1974. However, huge development projects had already been sharply cut back due to the economic recession caused firstly by the Dollar shock of 1971 and secondly, by the oil crisis of 1973. The Law was also aimed at suppressing the inflation of land prices by regulating land transactions.

Since 1970, international aspects of environmental policy have had important implications for domestic environmental policy development. The Japanese share in world trade has increased, and the behaviour of Japanese industry and government has been placed under the international scrutiny and criticism. Japanese participation to the Human Environment Conference in Stockholm and the OECD Environment Committee provided opportunities for orientation of Japanese environmental policy in international society. The automobile industry was obliged to comply with foreign enforcement standards, particularly in the USA.

The US Clean Air Act of 1970 provided an important impetus to Japanese pollution policy for autoexhaust control. The goals of the 1975 and 1976 enforcement standards for carbon monoxide, hydrocarbon and nitrogen oxides for automobile exhaust by US Clean Air Act 1970 were adopted as the Japanese standards of 1975 and 1976 by the Environment Agency in 1972. In the USA and Europe, the Dollar devaluation and oil crisis had a restraining effect on stringent environmental enforcement policies. However, there was no slackening of efforts in Japan to implement stringent environmental policy measures which had been established in the Special Congress Session of 1970.

Autoexhaust emission standards for nitrogen oxides for 1976 had been relaxed by EPA of USA since 1972. However, Japanese policy of Environment Agency did not change. In actuality the automobile industry had claimed that it would have great difficulty in meeting the standards of nitrogen oxides emission by 1976, so that as a result in 1974, the Environment Agency postponed enforcement of its regulation to 1978.

The seven largest local governments organized a technology assessment team for autoexhaust emission in relation to nitrogen oxides, which claimed that it would be feasible by 1976. The Government, as well as the automobile industry were severely criticized. Vigorous political debate ensued in the Diet. Enforcement schedules for air and water pollution control for fixed sources, drawn up in 1971, were achieved by 1974. A sharp increase of pollution control investment made in the early 1970s contributed to this achievement. OECD environment committee programme tried an econometric approach in relation to the economic impact of the pollution control cost and its outcome. Environment Agency, Economic Planning Agency and MITI had conducted independently the econometric assessment of the cost impact to the Japanese economy. As a result, in spite of large amounts of pollution control investment during economic recession, it was stated that there had been no significantly adverse effects to the Japanese economy. There was some controversy relating to the cost impact to the automobile industry due to implementation of the stringent autoexhaust control. Japanese industry made extraordinary efforts at pollution control after 1970, which was followed by rationalization to overcome the dollar shock of 1971, and then energy-saving technology to overcome the impact of the oil crisis of 1973. The free competition in the open market among competing industries through their own Research and Development efforts were the key factors to overcome domestic and international difficulties. The International Treaty for Ocean Pollution Control (1973) resulting from Ocean Dumping of Wastes, also resulted in new legislative action by the Japanese government.

3.8 Crisis Overcome. Human Environment Issue has Come 1975-1979

As a result of drastic enforcement efforts, the situation regarding heavy pollution greatly improved. In general, it can be said that the crisis was overcome. However, in the areas of clean and natural environmental conditions, maintenance of those good levels is not an easy task. The ambient air quality standard for NO_2 (1978) was criticized in that the decision was taken although there was a paucity of scientific data. An environmental policy review was carried out by the OECD in 1976. This provided a good opportunity for international evaluation of the Japanese situation. In addition, a scientific review of air quality

criteria of NO₂ by a WHO-UNEP Expert Committee was held in the same year. This was an opportunity to obtain an examination of criteria documents by a team of international experts. After the results of these appraisals were revealed, a new criteria report was issued by the Expert Committee of the Central Advisory Council of Environmental Pollution Control Measures in 1978.

Following extensive debate on policy decisions based on the new criteria, an ambient air quality standard of NO₂ was revised in 1978 which was a kind of readjustment process in relation to the policy decided during the crisis stage. The enforcement of NO₂ was implemented with only a slight delay. Controls were fully enforced by 1983.

A new feature of environmental policy at this stage can be explained as a "quality of life issue" in human environment. Environment Agency had appealed the problem of amenity. The Third National Comprehensive Development Plan contained a qualitative element aimed at enhancing the human settlement and cultural environment. This was clearly different in orientation from the Second National Comprehensive Development Plan, the so-called Japanese Archipelago Reform, which included gigantic physical development programmes aimed at economic growth alone. Under the situation of low economic growth and a declining world economic situation, as well as heavy financial deficits of both the national and local governments, the development ideas spanned in the days of rapid economic growth lost their potential. The new policy direction, towards local autonomy is also important. Local community development embodying a holistic concept of environmental quality was promulgated by governors and mayors across the nation. However, it is also important to note that the environmental Pollution Control Agreement has been steadily maintained. Conservation of greenery, protection of historical and cultural properties, maintenance of traditional environments in towns, and energy-saving measures have become the most popular programmes in holistic local community development. The Cultural Property Protection Law was revised, adding provisions for the protection of traditional architecture within built-up areas. The City Planning Law was also revised, adding the procedure of the district planning method through participation of residents. In the field of environmental pollution

control, industrial pollution problems have shifted to the problem of "transport and environment," which includes such elements as airport noise, bullet train noise and vibration, and roadside pollution from highways. In 1975, the Environment Agency established a programme of technology progress review for nitrogen oxides control of automobile exhaust emission. The Expert Committee, which was composed of university scholars, experts on the internal combustion engine, held a series of hearings from each individual company based on a detailed technical report of ongoing research, with strict guarantees of confidentiality of company information by the Environment Agency. The information, apart from trade secrets, which was obtained from the hearings (nitrogen oxides emission control technology) of the assessment for compliance of the 1978 autoexhaust standard was disclosed not only in Japan but also in the European Community and the USA. The stringent nitrogen oxides emission standard specified for automobiles built after 1978 was achieved earlier than the target year. Compliance with the same standard by imported cars was postponed, after negotiations, with the EC and USA, to 1981. The automobile exhaust emission control problem now became shifted from passenger cars to trucks and buses. The two stages of the long-term goals for noise and nitrogen oxides control standards for trucks and buses was established in 1977, and a similar technology assessment programme was also provided. After four major court cases of industrial pollution, the environmental court action was shifted towards government instead of industry. This was due to the problem shift from the industrial pollution to the transport pollution. The Vibration Regulation Law was enacted in 1977.

In the field of water pollution, eutrophication in enclosed areas of water such as lakes was worsening. The Water Pollution Control Law was revised in 1978 adding a provision regarding the total permissible amount of chemical oxygen demand (COD). Shiga and Ibaraki prefectures enacted local ordinances for eutrophication control of lakes in advance of central government. Under these ordinances, synthetic detergents with phosphate compound were prohibited. The problem of diffuse areal sources of pollution from agriculture, fishery and domestic effluent have become the most important sources of phosphate and nitrate deposits in lakes. The source control target has shifted away from industry towards domestic activities.

The problem of the toxic industrial wastes has also become an important problem. Industrial waste treatment plants were increased by a new legal enforcement in 1976. However, old deposits of underground toxic waste were detected which posed difficult problems requiring appropriate solutions. The space necessary for terminal disposal of treated wastes by incinerator has become a difficult problem in large urban and industrial regions. The Law for Promotion of Alternative Energy Supply was enacted in 1979 just after the second oil shock. A Summit Meeting was held in Tokyo and guidelines fixing upper limits for future petroleum demands were agreed upon by each country at this meeting. The use of coal and nuclear energy were increased as alternative energy sources in the place of petroleum under the national energy source supply plan. New energy sources were also posited as important research and development project goals. As a consequence of the second oil shock, Japanese industry concentrated on development of energy-saving technology. At the same time, the national industrial structure was gradually shifted away from high energy and resource-intensive structure to a more energy and resource efficient type. Low economic growth, energy-saving efforts and structural changes resulted in an improvement in environmental pollution conditions. The Environment Agency organized a multidisciplinary expert team for the preparation of new policy direction for pollution control to meet the increase in coal-burning as an energy source. This was an adjustment and assessment approach to the structural change of energy consumption essential for the future. The international cooperation of the Japanese government was strengthened in programmes of UNEP, OECD and WHO, and the International Programme of Chemical Safety (WHO-FAO-ILO) was started on the initiative of the WHO. Japan actively supported WHO and participated in the programme of IPCS. As an example of international cooperation for developing countries, Japan International Cooperation Agency (JICA) developed several environmental programmes. The bilateral international cooperation programme between Indonesia and Japan for the promotion of community health in North Sumatra with special emphasis on Asahan development area is a typical example for the prevention of pollution, and the promotion of sanitation, and the control of endemic and epidemic diseases. Several international training courses for environmental programmes were also operated by JICA with active supports from the ministries concerned.

3.9 Anticipatory Approach with Policy Adjustment Towards Twenty-first Century 1980-

World trade has declined, protectionism and trade friction have begun to prevail on a worldwide scale. Low economic growth and increasing unemployment with financial deficit spending by the government dominates the national economic situations. Environmental policy has been caught in this trend. No budget increases with, in some cases even slight decreases have been called for under the lines, adopted for administrative reform. Nearly 80 per cent of the population indulge in standards of living which can be called "middle class." Environmental concern has remained high, but the express needs for an accent on environmental issues among various competing options for priority, have been downgraded. Long-term efforts for legislation of Environmental Impact Assessment by the Environment Agency have failed. However, environmental impact assessment practices have largely been incorporated into the procedures of planning and implementation of power station construction, highway and urban development, super express trains, and airport construction programmes by MITI, MC and MT. Four prefectural governments have already enacted local ordinances, while seventeen local governments have also issued guidelines for environmental impact assessment. The crucial issue for legislation is that for public procedure for disclosure of assessment reports and public hearings prior to the final decision. In spite of the lack of any comprehensive legal basis for assessment, the Kansai International Airport Project has followed the proposed procedure of assessment, disclosure and hearings since 1977, prior to government decision of the project. On the occasion of the development of bio-engineering, technology assessments had important social and political implications in national and local level development. Science and Technology Agency and the Ministry of Education carefully examined the probable risks and issued the necessary guidelines. In relation to genetic engineering, ethical issues have also been integrated as items of discussion for assessment. The anticipatory approach through assessment have been internalized to a considerable extent, however, legal provisions for information disclosure and public hearings have still not been established. Only some provisions of sectoral laws and the Cabinet Resolution for Environmental Impact Assessment in 1972 exist at present.

Another important environmental policy issue of legislation for the "Lake Environmental Conservation," focused on eutrophication control is still suspended. The original draft of the Environment Agency was amended through interministerial coordination, and presented to the Diet, but was unfortunately abolished due to dissolution of the Diet in 1983. Two prefectural governments had already enacted local ordinances for eutrophication control in lake environments. In contrast to the Water Pollution Control Law of 1970, the eutrophication control programme for lake environmental conservation requires behavioural changes in public consumption, technical changes in traditional agricultural and fishery production (as the diffuse areal sources) in addition to the stricter control of designated stationary effluent sources. The participation of the general publics and the readjustment of livelihood practices are indispensable to an acceptable solution. The National Government was defeated in a Supreme Court verdict on a disputes over aircraft noise from Osaka International Airport in 1982. Twelve and a half billion yen (¥12.5 billion) has already been spent for noise defense work in surrounding designated areas. At Narita Airport, landuse designation, construction standards for building permits, areal classification by the grade of aviation noise have all been legally linked after the implementation of the Law for Special Measures of Aviation Noise Abatement in Special Designated Airports (1978). Extensive court actions have been ongoing in the cases of Route 43 and Kawasaki City. Two stages of the long-term goals for noise and nitrogen oxides emission for trucks and buses were reached by 1983. The Central Council of Environmental Pollution Control Measures recommended that special environmental development measures be implemented for trunk-roadsides through landuse and siting controls, as well as provisions to curtail the heavy commodity traffic flows by new economic measures. However, the progress towards implementation of the Law of Environmental Development along the Trunk-Roadside Zone (1980), has been extremely slow. In general, the stage of environmental policy in the 1980s has reached a phase of maintenance and management of existing environmental conditions, such as urban greenery, preserved nature, valuable historical areas, cultural property and architectural compounds and improved environmental quality. Achievement of pollution control is rather easy compared to the maintenance of environmental quality in the face of increasing population and economic growth. The

overall integrated consequences of past programmes of flood disaster control, dam and floodgate construction for quantitative water resource development, changes in agricultural structure for higher productivity, and fish farms of artificial feeding have gradually, but pervasively, changed the hydrological conditions of lakes and river basins with increasing eutrophication. The readjustment and coordination of these programmes for eutrophication control inevitably involved disputes and conflicts of interest among sectoral administrations accompanied by various interest groups. The pattern of required administrative approaches to eutrophication control is not only the traditional enforcement approach through setting effluent standards for designated fixed sources, but also educational, counseling, guidance to the public, farmers, and fishermen to attempt to induce a change in their traditional production practices and modern lifestyles, as consumers. The financial difficulties of local governments have also resulted in a delayed compliance with the legal standards in pollution sources of public facilities, such as nightsoil disposal plants. The waste disposal programme have also arrived at a different stage. Siting and land acquisition for disposal plants for sludge and waste from water treatment plants, sewage disposal and nightsoil disposal plant, garbage incineration plants and other industrial waste control installations have become difficult regional environmental problems of outstanding importance. This is the problem which crosses all municipalities and prefectural boundaries, and effect industrial and urban regions. The Law for Regional Bay Area Environmental Development Centre was enacted in 1981. The environmental sanitation authority and the port authority had begun a joint effort to organize the special corporation in the Osaka Bay area first. The project of the Urban Rural Environment Combine System (URECS) in Toyohashi is a unique integrated approach to implement resource recovery and energy generation accompanied by the waste disposal programme with coverage of both areas of urban and rural community. This is the outcome of cooperation between the environmental sanitation administration, the agricultural administration and industrial administrations through the extraordinary efforts of Toyohashi City.

The problem of litter, particularly aluminum cans has also posed a problem particularly in popular places of tourism. Some local

governments have already enacted local ordinances designed to cope with the problem. However, it is a very difficult matter how to coordinate and integrate among the public, consumers, retail stores, manufacturers and governments so as to share the responsibilities and costs evenly among them. The deposit system is considered the best solution, however, no consensus has yet been reached. The problem of toxic chemicals in waste material has again appeared to pose renewed problems. Because of the absence of the appropriate legal provisions to deal with toxic combustion products in waste disposal and also the legal classification of mercury contained in dry batteries for household use, toxic waste control has arrived at a new phase. Underground toxic waste deposits and effluent of unknown origin have also contributed to the serious problem of underground water pollution. Some municipal wells were ordered to cease operation because of the pollution of carcinogenic organochloride compounds. Technical, legal and administrative approaches to these new issues of wastes have been carried out by MHW and EA at present. The Public Cleansing and Industrial Waste Disposal Law of 1970, is implemented in accordance with the Ocean Pollution and Wastes Dumping Regulation Treaty 1973, which was ratified in 1980. Industrial waste treatment plants have been rapidly expanded since the reinforcement of this law in 1976. The waste energy recovery from incineration plants and nightsoil disposal plants has also been expanded by a MHW subsidy programme. The solid waste disposal plants have also been expanded.

Towards the end of the 1970s, new dimensions of environmental policy have emerged in response to the policy goals provided in the Third National Comprehensive Development Plan of 1977. Among others, a new style of local development has been initiated by many local governments which aims at improving the quality of life through situation-specific approaches to the development and management of human settlements at the local level. This is a new, holistic kind of approach to human environment, rather than one centred around gigantic modern technological innovations. Thus, creative policy ideas and initiatives by governors and mayors have become more important than the initiative of central government through ministerial sectoral programmes and projects. The former pattern of organized citizens' movements in confrontation with government and industry, as in the early 1970s, has also shifted to

that of a more participatory and cost-sharing approach. Local governments and concerned citizen's groups have become interested in the National Trust system of the United Kingdom as a viable system of forest and greenery conservation. Forestry administration has also encouraged "shared ownership of forest by interested management publics" for promotion and improvement of forestry. Furthermore, Special Fund Systems have been established in many locations for forest and water resource conservation by those local governments situated downstream, who receive the benefit of water resource supplies. These are the new measures designed to support declining forestry. Despite the fact that there is a gradual trend away from heavy, polluting industry, towards a less polluting, knowledge-intensive industry, it is important to note that stringent pollution control programmes have continued to be strictly implemented. In spite of the resulting improvement of air pollution, the number of newly certified patients of nonspecific pulmonary diseases in designated areas under the Law for Compensation of Pollution-Related Diseases Patients has steadily increased. This is an irrational phenomena, which can be attributed to a reluctant attitude of government to revise and readjust the necessary legal provisions for the criteria for designation of district and certification of patients by the Law. The Environment Agency is thus currently under heavy pressure from both sides for policy revision. This is, thus, the complex and unreasonable, but not unexpected side effect of the Compensation Law of 1973.

On the other hand, those import procedures requested under several laws relating to environmental control have been claimed as non-tariff barriers by foreign nations. To delete issues of trade friction, legislative action was taken by the government and the Diet to simplify the legal procedures of nearly thirty laws, in 1983. This is an example of adjustment of environmental policy according to a standpoint of international trade. However, consumers' groups have criticized these policy changes, particularly the revision of standards for a few food additives in accordance with international levels. The environmental policy in dealing with risks, particularly in relation to human health hazards has reached a phase of critical examination with appropriate criteria for judgement on risk-cost-benefit balance. "Technology versus perception" has come to be an important policy issue at present. The international aspects

of environmental policy have also reached a new phase in the 1980s. The Japanese government has been actively participating in the programmes of international organizations such as UNEP, OECD, WHO and others for almost two decades. In the new phase of international environmental policy, Japan is expected to play an important role in promoting environmental policy in the international community. The proposal of the Japanese delegate at the special assembly of UNEP in 1982 concerning the establishment of a special commission to explore the ideal global environment for the 21st century revealed an epoch-making change in Japanese international environmental policy attitudes.

4. Institutional Mechanisms of Environmental Administration

4.1 Government Organization

Japan is a parliamentary democracy. The Government is ruled by the parliamentary party. Three basic state powers, the Diet, the Government and the Court are mutually independent under the 1946 Japanese Constitution. There are twenty-two ministerial agencies under the Prime Minister with Prime Minister Secretariat Office. The Environment Agency is under the Prime Minister's Administration Office with jurisdiction over the environmental pollution control administration and nature conservation. Japan is divided into forty-seven prefectures, with each prefecture being divided into municipalities of city, town and village. Currently there are 3,225 municipalities. Those prefectures and municipalities are empowered with "Local Autonomy" under the constitution. They are endowed with legislative powers for local ordinance through prefectural or municipal assemblies unless in violation of national law. The prefectural governors, mayors of municipalities and members of prefectural and municipal assemblies are all chosen by general election similar to the Diet. The Tokyo Metropolitan Region coincides with the prefecture of the same name in terms of local autonomy and election of governor by a general election. Governors were appointed by the Minister of Interior following the Second World War, but the system became completely reorganized. Since the environmental problems originated at the local level first, and still largely has a direct bearing on local

affairs, the institutional and political background of national, prefectural and municipal powers in governments have important implications for environmental administration. Additionally, Japan is divided into eight or nine regions, each covering group of prefectures. A number of ministerial agencies have their regional administrative organizations, however, power delegation to these agencies has been extremely limited. They are merely regional branches of national ministries in relation to sectoral administration having no legal nature of a local public body under the Law of Local Autonomy. Environmental administrations in the field of environmental sanitation, pollution control and cultural property protection have traditionally been largely decentralized. However, enforcement administration in relation to mining, electric power, gas, transport, and water resource have been centralized under the jurisdiction of the ministries concerned.

4.2 Planning and Coordination in the Environmental Administration

There are two types of planning and coordination in environmental administration. The first type is carried out under the jurisdiction of the Environment Agency. The second type takes place in the form of participation and intervention by the Environment Agency in the planning processes initiated by other ministerial agencies.

4.2.1 Environmental Planning under the Jurisdiction of the Environment Agency

The Law for Organization of the Environment Agency (1971) provides the Agency with the powers and coordination functions in the annual budgeting process by all ministerial agencies in relation to environmental conservation programmes and also the coordination of planning for research and development in relation to environment conservation. The final decision of budget allocation, in the hands of the Ministry of Finance. Therefore, this is limited only during the preparation and compilation stage of budget planning for environmental conservation programmes and research and development projects within each ministry concerned. The most substantive coordination by the Environment Agency is carried out on the occasion of environmental pollution control planning

for designated areas in accordance with Article 19 of the Basic Law for Environmental Pollution Control Measures, 1969. The Environment Agency plays the role of secretariat to the Prime Minister, who is the chairman of Interministerial Council for Environmental Pollution Control. The Prime Minister issues planning directives to the prefectural governors concerned, after consultation with them. He then prepares comprehensive environmental pollution control plans for five to ten years ahead. The expenditure estimates on both sides of public and private sectors are also formulated. The draft plan is then presented to the Prime Minister. The Inter-Ministerial Meeting for Environmental Pollution Control is convened by the Prime Minister to examine the draft plan. Special increases of subsidy rates and a favourable allocation of local loan schemes are provided in accordance with the 1971 Law for Special National Financial Measures for Environmental Pollution Control Programmes, after the approval of the Prime Minister. The Master Plan for Environmental Conservation of the Seto Inland Sea also follows a similar process to that of Areal Pollution Control Plan. The Environment Agency also formulated the Long-Term Plan for Environmental Conservation in 1977 in accordance with the Central Advisory Council of Environmental Pollution Control Measures. The Plan was intended to act as a policy guide up to 1985. But this was only within the jurisdiction of the Environment Agency. It is now at a stage of revision. The National Park System Plan is an example of implementation programmes formulated within the jurisdiction of the Natural Park Law of 1956. The plan is made up of programmes for enforcing conservation measures as well as programmes for developing national parks for recreation purposes. Prefectural governors are empowered to the jurisdiction designate Natural Parks and also expected to work out similar plans and programmes according to the Natural Park Law.

4.2.2 Participation and Intervention

The overall goals of the environmental administration cannot be achieved solely by an environmental conservation planning approach within the jurisdiction of the Environment Agency. The Director-General of the Environment Agency, a state minister, is legally empowered to intervene other ministerial agencies' issues, if it is deemed necessary.

There have been two occasions when this power has been exercised: The first was the aviation noise problem arising from Osaka International Airport in 1971, and the second was the noise and vibration caused by the express train ("bullet train") of the National Railway in 1972. These two cases were handled through interministerial confrontation. In the long run, routine intervention and participation in the national planning process is essential to safeguard environmental consideration in terms of policies and resources allocation. This is to be encouraged not only in a legal, administrative, economic, and technical sense, but as a means of encouraging a comprehensive and farsighted policy development. The first type of such an approach has been attempted on occasions of formulating the national, social and economic development plan, the national landuse plan and the national comprehensive development plan. The Economic Council attached to the Economic Planning Agency formulates the long-term and medium-term social and economic development plans. These plans provide the basic and overall policy framework and guideline for future national development programmes.

The National Landuse Planning Council in the National Land Agency formulates the long-term plan for national landuse. The Comprehensive National Land Development Council in the National Land Agency formulates the national comprehensive development plan. The first plan was issued in 1962, the second plan was issued in 1969 and third plan was issued in 1977. The fourth plan is now under preparation. The long-term population forecast by the Institute of Population, MHW and the long-term projections of demand and supply of energy, water resources and foods, formulated by MITI, NLA and MAFF to the year 2000 A.D. contain important environmental implications for future planning of environmental administration.

The second type of approach has been adopted on the occasion of formulating various master plans and implementation plans for development by the ministries concerned. This is a more concrete stage of the planning process compared to the first stage.

The regional development plans, such as the Capital Region Development Plan, infrastructure development plans for road, sewerage systems,

waste disposal and parks, structural improvement programmes in agriculture, forestry and fishery, industrial development plans such as technopolis development and electric power development plans such as power stations and dams, transportation development plans such as bullet trains, airport and harbours, large-scale project plans, such as the Seto Inland Sea Bridges and Hanshin International Airport are some of the concrete examples. All those plans and programmes have important and long-range environmental implications. Of particular importance is the environmental impact in cases of huge physical development projects. Special technology development projects also constitute an important issue from the viewpoint of technology assessment. Environmental impact assessment requires a really complex and difficult process for environmental administrators, but this is the most essential way to promote the anticipatory policy approach. The internalization of environmental policies into policies of other ministerial agencies is an important task to be carried out by the Environment Agency. MITI's desulfurization plan is a typical example of the internalization of environmental policy into the national energy supply planning by MHW. These policy developments are beyond the sectoral capacity of environmental conservation administration.

4.3 Institutional Mechanisms for Coordination and Integration

In Japan, legislative initiative is usually taken by the government. That is to say, a bill drafted by a ministry must get through intensive and sophisticated legal, administrative and technical scrutiny by other ministries with vested policy interests. This is the most important, yet complicated, process of coordination and integration by environmental administrators. In reality, this process of interministerial examination tends to be mostly taken up by antagonism to environmental legislation.

The draft law, worked out by the concerned ministry must be approved by the Cabinet prior to submission to the Diet. This is the final stage of coordination. The coordination at the stage of implementation of the promulgated law takes place on the occasion of settlement of Cabinet Orders and Ministerial Orders, concerning, for example, designation of areas for pollution control planning, designation of sources and

products to be controlled, establishment of environmental quality standards and enforcement standards. In general, the decision making process for environmental planning and standard setting can be classified into three stages: the first is the technical process which is dealt with at the scientific expert level. The second is the organizational process which is a matter for administrators within the administrative organizations concerned. The third is the political process where political interaction takes place among government, political parties in the Diet pressure groups composed of both supporters and opponents and the general public. The mass media plays an important role in activating the political interaction. This is the final stage of the policymaking process. In this regard, the problem of disclosure to the public of the information necessary for policymaking and also the public procedure for such policymaking such as the presentation of official statement and public hearings have considerable significance for final appropriate policy formulation.

4.4 Government Policy for Distribution of Powers, Responsibilities and Functions

As far as environmental pollution control and nature conservation are concerned, the basic legal powers and responsibilities are centralized in the Environment Agency. However, the powers and operation of the direct implementation as routine enforcement actions are mostly delegated to prefectural governors, except mining, electric power and gas, aviation, railway, automobile and navigation. The basic powers of landuse and siting control come under the jurisdiction of the Ministry of Construction. The implementation of city planning and building permits are delegated to the municipal and prefectural governments. The responsibilities and functions of providing public facilities and services for environmental pollution control come under the jurisdiction of the ministries concerned. The construction operation and management at the local level mostly come under the jurisdiction of the municipal government and prefectural government in case of transboundary affairs. In the case of nature conservation, the powers, responsibilities and functions for the nationally designated parks and prefectural and municipal parks are delegated to the prefectural and municipal governments

concerned. The patterns of distribution of powers, responsibilities and functions under the Cultural Protection Law are similar to those pertaining to nature conservation. However, at the local level, the Board of Education at prefectural and municipal levels has substantive powers, responsibilities and function assigned under this Law.

The laboratory system in environmental pollution control administration is the important institutional mechanism providing scientific background through routine laboratory examination, monitoring, and surveillance as well as problem-investigation. At the national level, each ministry establishes a laboratory and research institute, while every prefectural government establishes a prefectural public health and environment laboratory. The larger municipal governments also establish laboratories by themselves.

4.5 Government Approach and the Public Perception

The crucial problem of environmental policy decision making in environmental administration is related to the issues regarding the choice of an environmental quality standard to be achieved, the necessary resource allocation, the provision of the necessary restrictions on the civil rights of the public and also the establishment of cost-bearing rules for attainment of these goals. Decisions concerning these issues have to be usually made under uncertain situations with differences in understanding among experts and also the conflict among vested interests and policies concerned. Government approach often leans towards sectionalism. The coordination and integration process in legislation and planning is initially a struggle among ministries which have conflicting policy interests and directions. Therefore, without the awareness of needs, expressed demands and strong public support, progress in environmental policy decision making cannot be expected. There is a need for a wholly public approach through adequate information disclosure in order to obtain a well-oriented understanding so that as much as possible can be engendered from the general public. Although the ideal environmental policy would be welcomed by the public in principle, the reality is that actual preference is not necessarily the same as the principle. The activist approach tends to focus only on the most

crucial issues, leaving other peripheral issues aside. The environmental administration approach is required to be equitable, appropriate and well balanced, except in extreme crisis situations. In spite of the sectionalism approach by each ministry concerned, at the national level, the policy attitude of the governor and mayor are often more suited to local perceptions. There are often complex political interactions between national and local governments.

4.6 International Issues

Environmental administration has been increasingly involved in the various aspects of international issues. The standards relating to the products of international trade can be enforced by non-tariff barriers. Some environmental policy decisions may generate distortions of international trade and resource allocation in the international market. These important international issues are handled mainly through diplomatic procedures by the Ministry of Foreign Affairs. The international organizations play an important role in additional bilateral talks. The case of automobile exhaust emission standards of passenger cars was settled through EC-Japan talks and the exchange of memorandum between USA and Japan. Compliance with automobile exhaust emission standards (1978) by imported cars was enforced after 1981. The development of international cooperation programmes is also an important aspect. Japan International Cooperation Agency (JICA) under the jurisdiction of the Ministry of Foreign Affairs is responsible for the fostering of such cooperation. However, smooth interministerial coordination and the cooperation of local governments for recruitment of essential expert teams by JICA are difficult but essential policy issues to be considered.

5. Institutional Mechanisms for Financing Environmental Administration

5.1 General Framework of Government Budget

In fiscal year 1982, national government expenditures from the General Account amounted to ¥49,680 billion. In the same year the total amount of local government expenditures was ¥47,054 billion. The total

amount of transfer from the General Account to local governments amounted to ¥20,138 billion i.e., 40.5 per cent of the General Account to expenditures, 42.8 per cent of local government expenditures came from the General Account of the government, while ¥36.6 billion was transferred to the government. A breakdown of the main sources of local government revenue are as follows:

Local Tax - 32.3 per cent
 Local Transfer Tax - 0.9 per cent
 Local Equalization Grant - 16.5 per cent
 National Expenditure - 21.3 per cent
 Local Bonds - 11.3 per cent

The main sources of the government revenue for the General Account are as follows:

Revenue from taxes and revenue stamps - 73.3 per cent
 National bond - 24.5 per cent

(Quoted from Ministry of Finance sources for fiscal year 1980)

In addition, the Financial Investment and Loan Scheme of the government is also an important financial source. In fiscal year 1982, the total amount of the Financial and Investment Scheme was ¥23,788 billion. The major sources of this scheme are those accumulated government funds and deposits of pension schemes and postal savings. The main programmes covered by the scheme are housing (25.3 per cent), living environment (14.1 per cent), regional development (1.7 per cent), etc. The budgeting of national and local expenditures and Financial Investment and Loan Schemes provide the basic and common framework for environmental administration. The fiscal calendar in Japan begins in April and ends in March of the following year. In the normal course of events, each ministerial agency starts budget preparation for the next fiscal year in May and a ministerial budget draft is presented to the Ministry of Finance in September. After scrutinizing and examination hearings of the budget draft by Budgeting Officers of the Ministry of Finance, the first budget draft by the ministry is disclosed in December to each

ministerial agency via a Cabinet meeting. In case of legislative action, each ministerial draft law is at first presented to the Cabinet Legislation Agency for examination. If new organization or reorganization of ministerial agency is planned in the following fiscal year, the organization draft is also presented to the Administrative Management Agency for examination. The drafts of budget, legislation and organization also need to be scrutinized by the respective committees concerned of the ruling party, the Liberal Democratic Party (LDP), around November. The financial and taxation policies for the ensuing fiscal year are examined respectively by the Financial Policy Council and the Taxation System Council of the Ministry of Finance. The Committees of the ruling party corresponding to those councils also examine the financial and taxation policies in parallel with the Ministry of Finance. As far as the total scale of the following fiscal year's budget as revenue and expenditure are concerned, the Ministry of Finance takes the initiative, but in the case of taxation policies, the Taxation Committee of the LDP plays a decisive role in national and local government taxation policies, as a whole. After intensive political interaction and pressure from interest groups, the government's final budget draft is decided through Cabinet resolution, based on the prepared final draft of the Ministry of Finance. The government draft of the next fiscal year's budget is then presented to the Diet.

The decision for organization policy is settled, parallel to the final decision making process of draft budget. In the case of legislative action, the draft law from each ministerial agency cannot be presented at a Cabinet meeting without a final interministerial examination parallel with the examination by the Cabinet Legislative Agency. The policy direction action also has decision making power. Prior to the Cabinet Meeting for resolution of the draft law, it is required to be scrutinized by the LDP. Cabinet Resolution for the draft law is made just after the approval of LDP for the draft law. The legislative deliberation schedule of the Diet is decided through complex political interactions among all parties. After the completion of the necessary parliamentary procedure of both Houses of the Diet, the draft budget and the draft law are approved and become the new fiscal year budget and the new law to be promulgated. Those are not only purely

administrative procedures, but also complex processes of political and social interaction. Local governments also follow more or less the same process, although after some months delay. After the settlement of national government budget as well as the official issue of guidelines of national policies and subsidy programmes etc., local governments must revise their initial budget plans to match the forthcoming national subsidy programmes concerned. As far as international cooperation and assistance programmes are concerned, Ministry of Foreign Affairs is responsible for preparing the budget plans of the Japan International Cooperation Agency, and the Japan Foundation and also responsible for budget preparation of Japanese Government's contributions to the international organizations concerned. The institutional mechanisms of budgeting are the most basic, substantive procedures for coordination and overall integration.

5.2 The Scale of Environmental Conservation Budget

In fiscal 1982, the environmental conservation budget amounted to ¥1,192 billion. The total budget for public works, which is assumed as the expenditure which has a variety of environmental impact potentials, amounted ¥6,654 billion. The total national budget amounted ¥49,681 billion. That is to say 2.4 per cent of the national budget was spent for environmental conservation purposes which corresponded to 17.9 per cent of the total public works budget. In the case of the Financial Investment and Loan Scheme, ¥1,300 billion was allocated to the budget of environmental conservation from a total of ¥20,288 billion. Out of ¥20,288 billion, ¥19,176 billion was allocated for domestic investment and loans. Thus, 6.4 per cent of the Financial Investment and Loan Scheme was allocated to environmental conservation, which is 6.8 per cent of domestic investment and loan. The environmental conservation budget has been increased twenty-five times from the 1967 fiscal to 1982. The total amount of pollution control investment by manufacturing enterprises during this year was nearly ¥600 billion of ¥11,820 billion from a total investment. That is about 5.1 per cent of total investment. In fiscal 1982, ¥165 billion of Financial and Investment Scheme was allocated for the purpose of pollution control investment loan for private enterprises. It can be assumed that about one-fourth of private investment for pollution control was aided by this government loan scheme.

Based on the OECD report of Environmental Policies in Japan, subsidy-equivalent of assistance schemes as a percentage of private anti-pollution investment of Japan was 2.6 per cent in 1975, which represented the second lowest rate among the six OECD member countries. The Environment Agency is responsible for coordinating budgeting, related to environmental conservation. Based on the Annual Report of Environmental Quality, 1983, fifteen ministerial agencies had budget items for environmental pollution control and eight had items of nature conservation in 1982. The environmental pollution control budget amounts to ¥1,192 billion, and nature conservation budget amounts to ¥108 billion.

The classification of environmental conservation budget in fiscal 1982 is as follows:

Various programmes of standards setting	¥1 billion
Enforcement programmes	¥5 billion
Environmental pollution abatement programme, assistance	¥9 billion
Promotion of public works related to environmental pollution control	¥1,008 billion
Promotion of studies, research and development	¥35 billion
Compensation, and relief for pollution-related victims	¥19 billion
Promotion of nature conservation	¥108 billion
Others	¥7 billion
Total	¥1,192 billion

Those public works related to environmental pollution control measures, such as sewerage development (¥696 billion) and noise abatement in areas surrounding airports or air defense force bases, are the two biggest programmes among ¥1,008 billion programmes. The budget of the Environment Agency in 1982 was ¥46 billion.

The government finances have been under severe restraint due to the heavy burden of national bonds -- ¥122,000 billion in fiscal 1984.

Public works budget has decreased by 2 per cent, and the Environment Agency budget has decreased by 2.6 per cent between fiscal 1983 and the fiscal 1984 budget. The government financial recovery plan by 1990 has been submitted to the Diet and administrative reform has proceeded. In spite of these financial difficulties, the budget allocated for international cooperation and assistance programmes has been increased by 9.7 per cent. This represents the highest rate of increase indicating exceptionally favourable budgetary treatment.

5.3 Special Financial Measures for Environmental (Conservation) Administration

5.3.1 Special Financial Measures for the Costs of Areal Environmental Pollution Control Planning

Areal pollution control planning is provided by article 19 of the Basic Law for Environmental Pollution Control Measures (1967 and 1970). This is a comprehensive long- or medium-term plan covering both public and private sectors. The subsidy rates for those programmes of local government, such as development of a monitoring station network, laboratory equipment, public works facilities related to environmental pollution abatement are higher than the normal rate. For example, subsidies range from as much as one-half to two-thirds higher than the normal rate. The special subsidies for the payment of interest on local bonds can also be provided. The Law of Special National Financial Measures for Environmental Pollution Control Programmes was enacted in 1971. A little more than ¥20 billion as incremental increase was allocated each fiscal year for special higher rates of national shares and subsidies.

5.3.2 The Law of Cost Bearing of the Enterprise for the Expenditure of Pollution-Related Public Works

The Law was enacted in 1970, in accordance with article 22 of the Basic Law for Environmental Pollution Control Measures of 1967. The kinds of pollution-related public works are provided by article 2 and further substantiated by Cabinet Order. These are as follows:

- i. Green belt to be utilized as buffer zone.
- ii. Dredging of bottom sediments of accumulated pollutants and construction of irrigation facility in public water zones as responses to industrial pollution.
- iii. Land reclamation and necessary facilities for reduction of agricultural soil pollution.
- iv. Sewerage, wastes treatment facilities mainly used by industries.
- v. Relocation of residential housing areas adjacent to industrial pollution.
- vi. Joint industrial building for the purpose of joint pollution control.

Industry's share in costs will be settled by the Cost Bearing Council. Proportion of rates extending to 100 per cent of necessary costs, based on the extent of pollution contribution of the enterprise concern, will be decided by the Council. Sixty-two projects from the 136 billion programme expenditures had been executed by the end of fiscal year 1982. The total share of costs to be borne by enterprises amounted to ¥68 billion, i.e., a 50 per cent share.

5.3.3 The Environmental Pollution Abatement Corporation Law 1965

This is a quasi-governmental corporation organized under the 1965 Law. The Corporation has two functions; the first is direct construction based on the contract between the enterprise and the Corporation, and the easy payment system of long-term and low interest rates, and the second is the loan scheme. The construction programmes are as follows:

- i. Joint pollution abatement facilities of plural enterprises.
- ii. Joint industrial building with joint pollution abatement facilities and equipment.
- iii. Industrial estates for relocation of the polluting industry.
- iv. Green-belt buffer zone facility.

In the 1982 fiscal year, ¥78 billion worth of projects were contracted and ¥64 billion were executed; construction projects amounted to ¥25.7 billion and loan scheme amounted to ¥38.3 billion; the Financial Investment and Loan Scheme provided ¥40.1 billion and the Corporation controlled ¥23.9 billion as its own capital fund.

5.3.4 Special Financial Measures for Lake Environment Conservation

The Law of Special Measures for Comprehensive Development of Biwako (Lake Biwa) 1972 provided special higher rates of various national subsidies in relation to the water conservation programmes by article 2-2 and article 8. The Law of the Special Measures for Water Source Area (1973) also provided similar higher subsidy rates in relation to the water conservation programmes in designated lakes. The pollution control programmes in Kasumigaura (Lake) basin are supported by this Law. The area around the two lakes are not designated as the areal environmental pollution control planning provided by article 19 of the Basic Law for Environmental Pollution Control Measures 1967, 1970.

5.3.5 Tax Incentives

The 1957 Law of Special Measures for Taxation provides time-limited tax favours of the special depreciation of the designated pollution control facilities and equipments, especially those of small- and middle-scale enterprises. The cost of preparation of funds for mining hazards prevention is discounted as a loss. The special discount of income tax on land transfers in the industrial plant relocation project by small- and middle-scale enterprises is also provided by the Law. The Law also provides tax favours for income attributed to the transfer of property by those legal provisions, related to the ancient capital environmental protection programme, aviation noise defense works in areas surrounding airports and Defense Air Force Bases, and also of cultural property protection and nature conservation, national park and security forest. The Registry Tax in case of property acquisition for the plant relocation project by small- and middle-scale enterprise is also discounted by the Law. All these tax favour measures are time-limited, provided under the laws of

Income Tax and Legal Person Tax. The Local Tax Law also provides special tax favours of Business Tax of the quasi-governmental corporation, and Fixed Assets Tax favours for properties gained through the projects of Environmental Pollution Control Abatement Corporation. Those tax favours are time-limited measures provided by prefectural tax. The Local Tax Law also provides tax favours for fixed assets tax exemption for designated cases in specially designated protection areas of the National Park Law. The Local Tax Law also provides tax exemption of special land ownership tax in case of the land space exclusively for pollution abatement facilities. Those tax favours are provided as time-limited measures by municipal tax. In the case of encouragement for earlier sales of less-polluting cars, the stringent autoexhaust standards were satisfied earlier than the designated time for enforcement, and special tax discount measures were provided by the Local Tax Law in automobile acquisition tax by a prefecture by the fiscal year 1977. However, many of these tax favours will be abolished under the tax policy revision which embodies stringent financial recovery programmes for the 1984 fiscal year. The expansion of desulfurization programmes through the import of low-sulfur crude oil, development of desulfurization facilities in refineries and stack gas were accelerated through tax favour measures by 1978 fiscal year. The change in enforcement schedules for automobile exhaust gas emission standards from 1975 to 1978 was also influenced by those tax favour measures taken in fiscal year 1977.

5.3.6 The Resource Finance Tax Measures

The cost for road construction and also for traffic noise abatement are financed by the revenue from gasoline tax. Aviation noise alleviation work in the surrounding areas of airports is financed by the revenue from Aviation Fuel Tax. Two-thirteenths of the revenue from Aviation Fuel Tax is also allocated to the municipal governments concerned by the Aviation Fuel Tax Transfer Law.

5.3.7 Financial Measures for Compensation

Compensation for property right and loss of income to fishermen and rural residents in cases of land reclamation of public water zone, and

relocation for dam construction have been practiced for a long time. However, compensation for damages caused by environmental pollution are rather recent issues, having only taken place during the past decade. The basic and essential difficulties are deeply rooted in the legal issues of cause-effect relationships and of civil liability. The conclusion of the investigation into Itai-itai disease by the Ministry of Health and Welfare in 1968 facilitated legislation of the Special Law of Relief of Pollution Related Disease Patients (1969). A series of court verdicts in relation to pollution-related disease damage after 1971 accelerated the legislation of strict liability as the provisions of the Air Pollution Control Law and also the Water Pollution Control Law in 1972. The court verdict concerning the case of Yokkaichi air pollution dispute provided a legal evaluation scheme for loss of earnings of patients. The pollution related Health Damage Compensation Law of 1973 was enacted, based on the strict liability legislation of 1972 and the precedent of the Yokkaichi court verdicts in relation to legal judgement of cause-effect relationship between pollution and diseases, as well as the evaluation of loss of earnings. The pollution burden levy system provided by articles 52, 53, and 54 of the Law is a type of resource finance charge system. The Law provides two categories of diseases eligible for compensation benefit. Those are firstly nonspecific pulmonary diseases in relation to health damage caused by air pollution, and secondly, specific diseases relating to health damage caused by toxic pollution of air and/or water. The designation of compensation areas is based on the criteria of pollution grades in the past and the grade of prevalence of chronic bronchitis symptoms in the event of air pollution. In the case of specific diseases, the affected area by specified pollution incident is designated based on the results of extensive investigation of pollution and health effects of the pollution incident is designated based on the results of extensive investigation of pollution and health effects of the pollution incident concerned. Prefectural government, within the jurisdiction of designated areas, is legally requested to establish a presidential committee for certification of patients in relation to designated diseases, followed by an evaluation of the disability of the patients. Compensation takes the form of medical care costs and disability benefits according to the severity of disease. The fee scale for medical care and the disability payment scale are provided under the

Law. The total costs for payment of those benefits is calculated in advance for the next fiscal year. As far as specific diseases are concerned, the responsible industry must bear all the costs of these benefits. The pollution burden levy is the instrument for financing 80 per cent of the costs of all benefits in relation to patients with nonspecific diseases, certified in designated areas. The pollution burden levy is graded into four classes in accordance with designated areas. The pollution burden levy is also applied outside of designated areas on a nationwide basis with a flat rate. The maximum levy rate is ¥2,559.19 per cm^3 of SO_2 emission, and lowest levy rate in designated areas is ¥942.86 per cm^3 of SO_2 emission. The levy rate outside of the designated area is ¥149.66 per cm^3 of SO_2 emission. Those SO_2 emission is the total amount of emission per year, which is estimated and notified by those owners of emission sources to the Association of Pollution Related Health Damage Compensation through the network of the Local Chambers of Commerce. Twenty per cent of the costs of all benefit is shared by the Association of Pollution Related Health Damage Compensation. The national government provides the grant to the Association out of revenue from the Automobile Weight Tax. This is based on the calculation of pollutants emission from stationary sources and mobile sources on a nationwide basis. So far as the calculation of pollutants emission is concerned, both SO_x and NO_x are calculated by using an emission inventory. However, the levy system for stationary sources is based on the amount of emission of SO_x notified by the owners of stationary sources. The total number of certified patients of specific diseases (Minamata Disease Itai-itai Disease and Chronic Arsenic Poisoning) amounted to 2,067. The estimated cost of compensation benefits for certified patients related to air pollution is ¥89 billion in fiscal year 1983. The 1950 Mining Enterprise Law includes the provision of nonfault liability in article 109. Article 117 provides the clause for the security deposit as insurance against the risk of compensation payment. In the case of coal-mines ¥20 per ton is requested as a deposit, and for other ores, 1 per cent of the price of extracted ores. In the case of the nonexistence or unavailability of liable miner, victims of mining hazards can claim the compensation payment from the deposit of security at the Regional Bureau of MITI. The 1975 Oil Pollution Damage Security Law provides liability of oil pollution damage compensation under article 3. Japanese oil tankers exceeding 2,000 tons, are legally forced to contract for security against compensation

payment. The undertaker of specified petroleum by article 28 must contribute to the International Fund as specified by article 10 of the 1969 Treaty of International Fund. This is a kind of international institutional mechanism for compensation for oil pollution damage. The Law of Land Reclamation in Public Water Zone 1921 includes article 6 for compensation for loss of fishery rights in water zones by the licensed person of land reclamation by article 2.

The 1951 Land Expropriation Law provides liability for compensation (article 69), payment (article 70) and the amount of compensation (article 71), etc. Compensation under these two laws has been practiced for many years. Property rights are protected by article 29 and 31 of the Japanese Constitution. Legal provision in respect of private property rights and to coordinate with the public interest can be found in article 3 of the 1957 National Park Law, Nature Conservation Law 1972, and also article 70-2 of Cultural Property Protection Law. Compensation for loss caused by the specified legal actions is also requested under article 33 of the Nature Conservation Law and article 35 of the National Park Law. Legal compensation for loss by Cultural Property Right Protection Law is limited in case of damage caused on the occasion of requested exhibition and disclosure to the general public. The 1975 Law of Special Measures for Preservation of Historical Environs and Development of Living Environment in Asuka Village represents a milestone development. The Law establishes the Asuka Village Development Fund under article 8 which provides the financial resources for the necessary programmes. The national government provides ¥2.4 billion under the same article. Special city planning is requested under article 3 to include preservation of historical environs and the formulation of the basic development policy is requested under article 4. Special higher rates of subsidies for basic infrastructure development programmes are provided under article 5.

In 1976, the Environment Agency started a subsidy programme for the purchase of private land endowed with natural scenery of high value by prefectural grant-bond. The subsidy rates are from 1/10 to 5/10, mostly over 8/10. The eligible land is to be in the special designated district of national parks or nationally designated parks or special protection

districts for birds and animals. The total amounted to 1,949.22 ha costing ¥3.9 billion by the end of fiscal year 1982.

5.3.8 Forest Conservation Fund

The Japanese forest industry is now in a distressing situation due to the decline of lumber demand and prices due to the impact of imported cheaper lumber. National Forestry Agency has financial burden of accumulated deficit amounting to ¥446.9 billion on its special account in fiscal year 1982. Because of excess logging in the past, the low level of logging will continue more than 10 years into the future. As a consequence, forestry management has been hard hit. This is also unfavourable for the water conservation capacity of mountain regions, which are important water source areas for urban, industrial, and agricultural regions downstream. Meanwhile, the global problem of deforestation of tropical forests has become a subject of growing national concern. Since Japan is the leading nation in the import of lumber from tropical countries, the improvement of domestic forest management and cooperation and assistance for forestry development abroad have become important directions for environmental policy. The National Forest Agency has been trying to encourage public participation for forest management through public sharing system for the harvest of forest products through the payment of membership fees. Some local governments have also been trying to establish forest funds and appealed to the public for contributions for future forest development. Special merits for those sharing the fund have been recently advocated. It is also informed that a private owner of forest donates her forest property and private money for establishment of a legal person for nature conservation. The legal person in such case is classified as the organization for public interest. The Environment Agency issued the report of the working committee for "National Trust" development in Japan. In this paper, the Environment Agency recommended the initiation of organizational efforts at the local level as being desirable at the present stage. Some financial support from local governments is to be expected. The needs of national efforts for the provision of the special measures for favourable tax treatment are also very much emphasized. The Environment Agency appealed to call the organization as "People's Environmental Fund." Those

types of public participation and public sharing for forest development and green conservation have become gradually growing. Same types of approach has been also growing for the preservation of the environs of the architectural compounds with important cultural value in several local community.

The Japan International Cooperation Agency has been operating technical cooperation and assistance in several countries for forestry development based on the bilateral agreement with host countries concerned. The Green Defense Fund was also established to promote a national campaign for green development and conservation both in domestic and abroad. Two big newspaper companies, Asahi and Yomiuri, have been advocating a green conservation campaign, Asahi supports forest problems while Yomiuri supports the problem of urban greenery. Green development in urban areas is also promoted by programmes of the Ministry of Construction. The programmes of the urban park, the roadside green belt and green buffer zone development in surrounding area of industrial complex as a public park have been popular for decades. The Environmental Pollution Abatement Corporation has the programme of green belt buffer zone development as a city planning facility with cost sharing rule between municipal government and industrial enterprise. The Law of Cost Bearing by Enterprise for Public Works for Environmental Pollution provides the rule of cost sharing in the project. The 1974 Industrial Siting Law provides the requirements of green space for new industrial plant development. Based on the requirements of article 4-1, open greenery should constitute more than 20 per cent of total plant siting area in any new industrial plant.

5.4 Basic Common Principles in Financing Environmental Administration

The most traditional well-established principles are firstly "causative agent should pay for the damage or loss for which he is responsible," and secondly "beneficiary should pay for the benefit he received." The third principle is in relation to the problem of social cost sharing. The problems of environmental degradation, pollution, and destruction have been external side effects of economic activities both private and public. That is called external diseconomy. How to internalize those

externalities is the crucial issue for environmental administration. Legal enforcement is the direct approach, and economic instrumentation is the indirect approach. In the case of an absence of both approaches, the social and public pressure approaches, such as mass movements of the fishermen's union, farmers' union and victims groups, have taken place in the past. In the history of Japanese environmental policy development, anti-pollution action forced the internalization of the external side effects of industrial and governmental activities. The court verdict of compensation payment is a kind of integrated approach between social persuasion and legal instrumentation. However, it is important that the court's legal action is always the retrospective approach. In the case of the Minamata incident in Kumamoto Prefecture, the Chisso Company has already paid more than ¥60 billion in compensation to victims and payment is expected to increase well into the future. If Chisso had spent ¥30 or ¥50 million in the first place for an industrial effluent treatment plant before 1955, it could have saved compensation amounting to more than ¥60 billion. The Law of Cost Bearing by Enterprise for Public Environmental Pollution Abatement Work is based on the principle of sharing the social cost. The Pollution Burden Levy System for enterprises outside the designated area for compensation is also based on the principle of sharing the social cost in undetermined cause-effect relations and also economic interdependence of industries in Japanese territory. The fourth principle, which was advocated and recommended by OECD, is the "Polluters-Pay-Principle." This is a kind of economic principle embodied in a political slogan. When environmental pollution is caused by production and consumption, pollution control costs should be integrated into the cost of production and consumption; this is the idea expressed in the OECD principle. This is not a legal principle, nor moral and ethical principle. However, Japanese policy implementation for financing environmental costs in relation to internalization of the external diseconomy has legal implication with some moral tone.

6. Discussion

6.1 OECD Environmental Policy Review

The OECD Environment Committee summarized that Japan has won many pollution abatement battles, but as yet has not won the war for environmental quality. It is to be noted that OECD environmental policy review was focused on the policy in the stage of drastic environmental policy change with the limited scope of environmental pollution control, particularly air pollution and toxic chemicals control. The valuable contribution of the Japanese experience through OECD environmental policy review can be found in the following sentence; "there is no inherent contradiction between economic growth and environmental quality, and it is possible to increase production while decreasing pollution -- provided appropriate mechanisms are developed." What are the appropriate mechanisms? OECD has stressed the institutional mechanisms of "the setting of ambient standards by the national government, coupled with the setting of emission standards by local governments through direct and often detailed interference in the economic operation of enterprises." However, OECD has failed to understand the extraordinary efforts of Japanese industrial enterprises through hard competition in marketing which has been accompanied by a drastic change in environmental policy. The achievement of compliance with strict pollution control standards has been coupled with the maximum efforts of rationalization of production costs designed firstly, to overcome the dollar shock, and secondly to achieve energy-savings to compensate for the oil crisis. The management efforts coupled with research and development into control technology should be remembered as the keys to success on the side of industrial enterprises. It is also stated in the OECD environmental policy review that pollution abatement costs seem to have been particularly high, higher than in other countries. In 1975, anti-pollution expenditure (investments, plus operating costs) amounted to about 3 per cent of GNP and the economic cost (depreciation of anti-pollution equipment, plus opportunity cost of capital, plus operating costs could be estimated to be somewhat below 2 per cent of GNP. But the OECD also concluded that the impact of such additional costs on the Japanese economy does not appear to have been significant. On the other hand,

OECD has characterized Japanese environmental policy as noneconomic, lacking in economic rationale on the part of legislatures and government and also with strong emotional tone. This is an interesting point to be examined. These are the integrated consequences among planning mechanisms of the government, direct and detailed interference in the economic operation of enterprises by local governments through negotiation and persuasion, vitality of Japanese industrial enterprises in market competition in the stormy social and political climate amid drastic policy changes.

6.2 Interministerial and Interdisciplinary Approach to Pollution Control

Interministerial conflict, often in the form of bureaucratic struggle and sectionalism, has always manifested itself in case of environmental pollution control. This had drawn criticism. While this is true, however, it is also to be noted that these conflicts and struggles are inevitable and occasionally give rise to clearer policy issues for final decision making. This illustrates the importance of the final decision maker at the political level. The best example is the case of the desulfurization plan by MITI which resulted from the setting of ambient air quality standard for SO_2 . Intensive interministerial struggle, between MHW and MITI, also including the economic and industrial establishment eventually resulted in a desirable outcome for the nation. This is also the product of article 9 of the Basic Law of Environmental Pollution Control Measures 1967. It is also to be remembered that the idea of a desulfurization policy had been generated at the recommendation of the Kurokawa Commission which investigated the case of Yokkaichi air pollution. This commission also investigated environmental impact assessment on the occasion of the Mishima-Numazu development dispute in 1964. The Kurokawa Commission is considered to be the first attempt of the interdisciplinary approach to environmental pollution control. Neither MHW nor MITI has any overall capacity to handle whole aspects of environmental pollution which had been dealt with by the Kurokawa Commission. The unification of the environmental administration could sometimes produce the weakness of an interministerial integrated approach to environmental policy development and implementation.

6.3 Politics, Administration, and Science

The historical development of environmental policy in Japan reveals that the conservation of the national heritage, i.e., historical and cultural properties, and natural landscape, etc., was initiated by the government from the earlier stages of the Meiji Restoration. (This is in a sense of given environmental policy from the top of the political power.) On the contrary, the government has always been reluctant, to effect the appropriate environmental pollution control policy for nearly 100 years. The case of the Ashio Mine dispute is a symbolic example. The industrial and mining pollution problem was, at first, a local issue. However, the prefectural governor, appointed by the Ministry of Interior before the end of World War II, left significant achievement of any effective pollution control measures. Two years after the promulgation of the new Constitution, in 1947, the first local ordinance for industrial pollution control was enacted by Tokyo Metropolitan government, based on the Constitution provision of local autonomy. The prefectural governor (capital) is no longer appointed by the national government, but is appointed through a general election. Local autonomy took the initiative for environmental policy development at each stage of the evolution of environmental policy. Local autonomy in Japan has yielded the following results. Local ordinances for pollution control, nature conservation and environmental impact assessments between local governments and enterprises with written agreement disclosed to the public; and, community development with holistic environmental approach. Meanwhile, the legislation of the Basic Law for Environmental Pollution Control Measures, the Law for Special Measures of Environmental Conservation in Seto-Inland Sea and fourteen other legislative actions in the special Diet session in 1970, represent the achievements of the government and the Diet. Progress of this legislation demanded and supported by the public has been exonerated by the electoral voting patterns.

By the late 1960s, the presentation of convincing scientific evidence of cause-effect relationships between pollution and disease has been strongly requested. The MHW was constantly faced with the question "how bad are we?" from industrialists and MITI. Without convincing evidence, no definite pollution control actions would have been taken. That means "science was

the tool of defense for polluters. Science also provided the excuse for the inaction of the government." Repeated outbreaks of Minamata disease is the most clear-cut example of this. However, after the drastic environmental policy change, science and technology provided advanced and effective pollution control technology. Science is therefore the tool of pollution problem solution. However, there has been another inevitable side effect; that is "without complete scientific evidence of safety, it means the evidence of danger" as the slogan of extreme environmental activist slogan. Science is a double-edged sword, in a sense. The OECD said "the Japanese experience in the field of pollution abatement lends support to the idea that to a large extent it is not technology that should constrain policy choice, but policy choice that should constrain technology."

At this stage of industrial pollution control, advanced modern technology was the most powerful measure for pollution abatement. However, at present, the needs of appropriate technology have been raised, as in the case of environmental conservation of lakes. Those available measures of domestic effluent disposal, and effective practices of agriculture and fishery for less-polluting activities for eutrophication control are the most pressing needs for progress in lake pollution control.

6.4 Feasibility of Transfer of Japanese Experience

The past Japanese experience in the field of environmental pollution control provides the important lesson for other countries. Particularly, those bitter experiences of pollution-related health damage should be carefully studied with an appropriate understanding of science against a historical background. It is important to know that environmental pollution can be prevented and abated to a reasonable extent by appropriate control measures. However, the problem of irreversible damage and stock pollution should be seriously taken into consideration at the prevention stage if possible. (Prevention is better than cure.) The curtailment of pollutant flow by technological control is quite feasible. However, in the case of pollution such as soil pollution by toxic metals and decayed bottom-sediments with persistent toxic substances such as mercury and PCBs, the elimination of stock pollutant is very difficult as well as expensive.

The stringent standards for air pollution and toxic substances in Japan have become inevitable and at the same time vital because of poor control arrangement in the past. The rapid expansion of huge complexes of industrial plants with heavy pollution potential in areas of uncontrolled land use, zoning and siting. Furthermore, millions of people have been effected by these huge pollution sources.

That is why we needed extremely stringent enforcement standards. We have experienced three stages, i.e., firstly when there was no pollution control, secondly, pollution control and thirdly, strict pollution control. Subsequently, we endured bitter experiences during the first stage, and then some success in the last decade. We know how much we must pay and also to what extent we could effectively gain from these experiences. We must have appropriate orientation on the occasion of transfer of the Japanese experience in those courses of particular situation in the past. Initially the land use and siting control is the most fundamental pollution control measures, followed by environmental impact assessment for appropriate and reasonable development planning. Necessary and a reasonable amount of stringency of enforcement standards should be formulated on the basis of these foregoing measures. Anyway, it is clear that prevention is cheaper than cure.

6.5 Public Awareness, Understanding, and Support

Without appropriate public awareness, understanding, and support, no progress in environmental policy and also no effective and stringent enforcement actions can be expected. The essential driving force for drastic environmental policy change was primarily rooted in the organized public actions against pollution in Mishima-Numazu. The achievement of stringent automobile pollution control had been overcome by competition among automobile makers and also the overwhelming national demand of non-polluting cars by customer, viz., the consumer. Recent trends of activation of nature conservation and historical property protection have been brought up through public participation with wider ranges. The direction towards the National Environmental Fund means public sharing and participation. However, it is also to be noted that public participation

is not necessarily an easy task in relation to environmental policy issues. A well-informed general public with active and appropriate environmental concerns are the key for environmental policy development. Adequately-disclosed information, a wide range of options and criteria with appropriate communication are essential. The present stage of Japanese environmental policy development has not yet reached this stage. The distressing process of environmental impact assessment legislation has clearly provided evidence of the immaturity of Japanese holistic environmental policy. International policy implication has added a new and wider element for public approach at present.

6.6 New Policy Stage at Present

OECD has focused the policy review in the drastic policy changing stage. This was at the stage of industrial pollution. Industrial pollution has now been placed under the strict control. We must continue this control indefinitely as long as the industrial pollution potential exists. This is the stage of environmental management. However, this management is not an easy task, and recent experiences in nature conservation and historical and cultural property protection administrations have revealed these difficulties along with the course of population increase, economic growth and national development.

It is very important to know that environmental problems have widened their scope to embrace holistic perception of human environment. Pollution problems at present are attributed to the daily life of population, agricultural and fishery practices and transport, etc. Furthermore, international issues of environmental policy have been gradually increasing. The role of Japan is also expanding in the international community and new issues of global scale environmental problems have extended the policy dimension, timespan and space distribution. The appropriate orientation of environmental policies in the light of sustainable economic growth with ecological interdependence across the globe constitutes the next group of policy issues.

7. Conclusion

Development of environmental policy in Japan has been examined in the context of Japanese experience since the Meiji Restoration in 1868. The preservation of historical and cultural property and conservation of natural environment of nature were institutionalized by the national government in the early stages of the Meiji Restoration. However, legislation for environmental pollution control was a distressing condition for many decades. Local governments took initiative for industrial pollution control legislation in the postwar days after 1945. It is important to know that real environmental pollution control efforts were motivated by the anti-pollution action of the resident's organization in Mishima-Numazu in 1963. Drastic environmental policy changes were facilitated by the Diet in 1970. This was in response to the overwhelming nationwide concern and demand by the public for a better human environment. This was also motivated by criticism from abroad against the pollution of Japan which was the worst in the world at that time. Crisis was overcome by stringent environmental measures taken since then. A normalized stage of environmental policy began after 1975. The important and characteristic institutional mechanisms for administration and finance of environmental administration have been worked out as the outcome of the crisis approach to environmental policy development. Numerous government policies have influenced the state and composition of the Japanese environment since the Meiji Restoration. The Environmental conservation issues have been externalities for those policies apart from particular cases of such sensitive issues as conservation of the national heritage. However, those externalities have been largely internalized since 1965, accelerated by the drastic environmental policy change. At present, holistic approach to human environmental quality is the common and popular concern. Meanwhile, international issues of environmental policy have been increasing. Anticipatory environmental policy approach has been stressed for decades. The institutional mechanisms for environmental impact assessment are currently typical policy issues. Present institutional mechanisms of administration and finance are the direct outcome and consequence of those historical developments of environmental problems and counter policy approaches. New development and readjustment of environmental policies to fit the national and global needs for sustainable

growth in economic together with ecological interdependence are now the important challenges facing Japanese environmental policymakers. Transferability of Japanese experience should be carefully examined. First must come an appropriate orientation of the given national situation, followed by a comparative understanding of the historical background and particular environmental conditions of the Japanese experience, so that Japanese mistakes and bitter experiences in the past should not be repeated again in other countries. The success of Japanese environmental policy is not simply the outcome of stringent standards and advanced technological control, but a nationwide concern and demands for a livable human environment by the public wedded with the extraordinary efforts of Japanese industrial enterprises for pollution abatement after 1970. This is a frank presentation of the Japanese experience. It is strongly to be hoped that our experience will provide some effective suggestions and lessons for other countries.

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**1º Simpósio Brasil-Japão sobre
Saneamento Ambiental e
Controle de Poluição**

ブラジル・日本

1987

Table 10 Growth, Development and Environment in Japanese History Since Meiji Restoration 1868

Year	Age, Character & Population	Economic Social Political Remark.	Environmental Issue.
1868	Meiji Restoration	Catch Up	Urban Nuisance. Epidemic Control.
1888	34 × 10 ⁶ '72	Western, Modern State.	National Heritage Protection. Property Right. (Land, Water Use, Fishery)
1889	Imperial Congress.	Modernization of Industry.	Mine Disputes (Ashio, etc.)
1930	39 × 10 ⁶ '89	Wealthy State.	Legislation (River, Forest, Fishery, Land, Filth, Water, Sewer, City Plan, etc.)
1931	War, Mobilization, Invasion.	Strong Nation. Population & Resource Interest.	Urban Hygiene, National Park Law
1945	65 × 10 ⁶ '31		'31. Rural Water Work. Parasite, Strict Liability (Mine Enterprise)
1946	Surrender, Postwar Chaos, Reconstruction	SCAP Order. Constitution. Democracy.	Tokyo Metropolitan Ordinance for Industrial Pollution Control. Special City Plan. CD Control, DOT.
1949	73 × 10 ⁶ '46	Poverty, Hunger.	
1950	Economic Recovery, Peace Treaty.	National Development Law. (Food, Energy, Disaster)	Public Cleansing Law
1954	83 × 10 ⁶ '50		Nightsoil Digestion Plant Construction Standard Law. MHW Pollution Survey.
1955	Economic Growth	Energy Shift.	Minamata, Itai-itai, Yokkaichi
1959	89 × 10 ⁶ '55	Urban Migration. New Local Government.	Pollution Damages. Edo River Crash. Water Pollution Control Law. Water Related Laws.
1960	Regional Industrial Development.	Industrial Complex. Consumption	Rural Community Decline. Anti-pollution Organized Action (Mishima, Numazu)
1964	93 × 10 ⁶ '60	Motorization..	Assessment & Agreement (YOKOHAMA)
1965	Social Development	Socialist Local Power. Archipelago Reform Plan.	Basic Law, Control Legislation (Air, Noise, Relief) MHW Conclusion.
1969	98 × 10 ⁶ '65		SO ₂ Standard, Low S Plan by MITI.
1970	Special Congress. Court Verdict. Stormy Climate.	Crisis Situation. \$ Shock	Drastic Policy Change. Environment Agency.
1974	103 × 10 ⁶ '70	'71. Oil Shock '73. GNP-0.3%	Nature Conservation Law. National Land Use Plan Law '74, etc. Health Damage Compensation Law '73
1975	Crisis over.. Worldwide Recession.	Low Economic Growth. Trade Friction. Energy, Resource	Amenity, Human Habitation, Energy & Resource Saving. Auto-exhaust Control, Success. (NOx '78)
1979	111 × 10 ⁶ '75		
1980	World Issues. Administrative Reform.	New, High Technology. Structural Change. World Responsibility. Quality Issue.	Transport, Lake, Wascas, Green Issues. (Public, Agriculture, Fishery etc.) Cabinet Resolution (Env. Impact Assessment) Global Environment.
1984	119 × 10 ⁶ '84		

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第2-2-9図 人口大都市集中と所得格差、青年人口

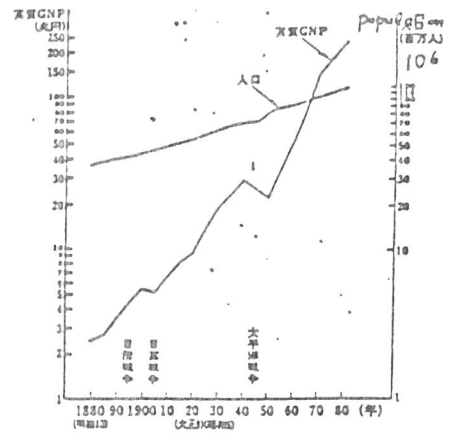
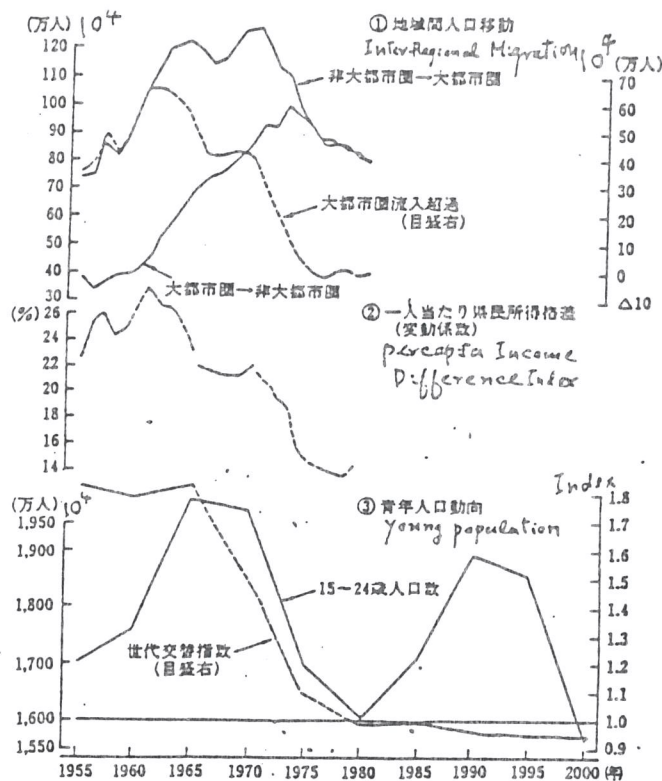
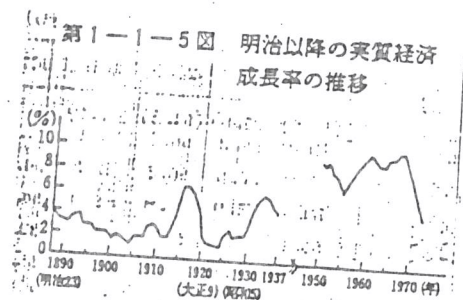


Chart 2; Growth of Population and GNP Since Meiji Restoration



Chartt I; Urban Concentration of Population, Per Capital Income Difference and Young Population(15-24)

Chart 3; Trend of Real GNP Growth Since Meiji Restoration

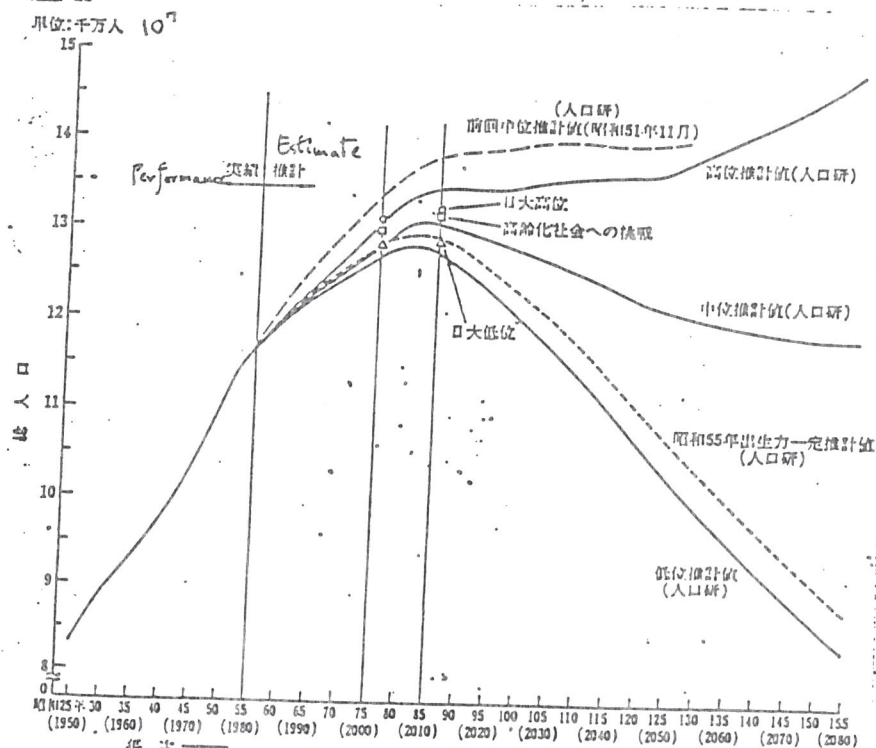


図 2-7 各機関の将来人口比較

Chartt 4; Prediction of Future Population

Environment and Development (I)

	Population	Resource	Development	Environment
1945 S NP: 0.47 x 1012 Y.	71 x 10 ⁶ Repatriation From Abroad. Chaos; B.R. 34.3 N.I.R. 19.7 I.M.R. 76.7	Foods. UNICEF Aids. Land Reform. Land Improve- ment.	Recovery from War Disaster. Special City Planning. Refugee Settlement Housing. Infrastructure Network for Public Health, Social Welfare, Agricultural Extension, Social Education. Urban Land Reorga- nisation. Fishery; Harbour.	Basic Sanitation, Epidemic Control, Flood, Insect & Rodent Control. Local Ordinance for Industrial Pollution Cont- rol (Tokyo Capital) Mining Safety Law. Pesticide Regulation.
1950 S GNP: 3.9 x 1012 Y.	83 x 10 ⁶ Urbanisation, B.R. 28.1 N.I.R. 17.2 I.M.R. 60.1	Energy: Coal Mining. Water Resources (Dam, Hydropower Generation.) Electricity Source. Aquatic Resou- rce.	National Comprehensive Deve- lopment Law; (Foods-Energy- Flood Control), Forestry; Fishery Port, Remote Island, Road, Highway; Construction Standard Law. Revival of Heavy Industry. Life Improvement Program. Chemical Fertiliser.	National Park to Natural Park. Public Cleansing Law (Nightsoil Disposal, Urban Incinerator) Poisonous Substance Regulation. Cultural Property Pro- tection Law.
1955 S P: 1.7 x 1012 Y.	89 x 10 ⁶ Heavy Urban Con- centration. Overmigration from Rural Area. B.R. 19.4 N.I.R. 11.6 I.M.R. 39.8	Energy Shift: from Coal to Petroleum. Multipurpose Dam. Land Reclama- tion.	Capital Region Development. New Municipality Development. (Amalgamation of Small Village Town), Public Housing, Express Highway, Bullet Train system. Motorisation, Productivity Movement. Cattle Farm, Forest, Petroleum Refinery, Petrochemical, Detergent.	Ground Subsidence Con- trol by Industrial Water Work. Edo River Dispute. Laws for Water Conservat- ion, Trade Effluent Re- gulation, Water Work, Sewerage, Minamata, Itaiitai, Yokkaichi. Occupational Poisoning. Chemicals in Foods.
1960 S P: 2.6 x 1012 Y.	93 x 10 ⁶ Geographical Re- distribution of Population for Readjustment. B.R. 17.2 N.I.R. 9.6 I.M.R. 30.7	Water Resource. Increase of Petroleum Import. Land Resource for Settlement. Increase of Lumber Import. Land Reclamation on.	Income Up-lift. Regional Industrial Complex Development. (1st.) Basic Law for Agricultural Development. Management of Mountain & River for Flood Control. Coastal Fishery Development. Tonei, Meishin Expressway. Bullet Train. Hugh Oil Tanker.	Smoke etc Control Law. Basic Sanitation Facility Development. (Nightsoil Digestion, Urban Incinerat- or. Sewerage System) Pre-siting Study. Multu- disciplinary Study. Detergent, Solid Wastes. Ecological Degradation. Organised Action for Anti Pollution & Development.
1965 S NP: 7.0 x 1012 Y.	98 x 10 ⁶ Growing Social Concern on Industrial Pollut- ion. B.R. 18.6 N.I.R. 11.4 I.M.R. 18.5	Nuclear Power. LNG, Low Sulfur Fuel. Land Reclamation ion.	Automobile Transport Exceeds Railway Transport. New Residential Urban Area Development. Urban Renewal. New City Planning Law. Low Sulfur Fuels Supply Program. Japanese Archipelago Reform Plan. (2nd.)	Special Committee in Cong- ress, Pollution Abatement Corporation. Marine Oil Pollution Control (IMCO) Basic Law for Environment- al Pollution, Air Pollution Control Law, Noise Regulat- ion. Pollution of Cd, Hg; PCE, CO control by Idling Adjustment. Pollution Con- trol Agreement by Local Government. Special Relief Law for Pollution Related Patients. MHW Conclusion. Ancient Capital Environ.

Notes: B.R. ; Birth Rate per 1,000, N.I.R.; Natural Increase Rate per 1,000,
I.M.R.; Infant Mortality Rate per 1,000 Live Births.
Y: Japanese Year,

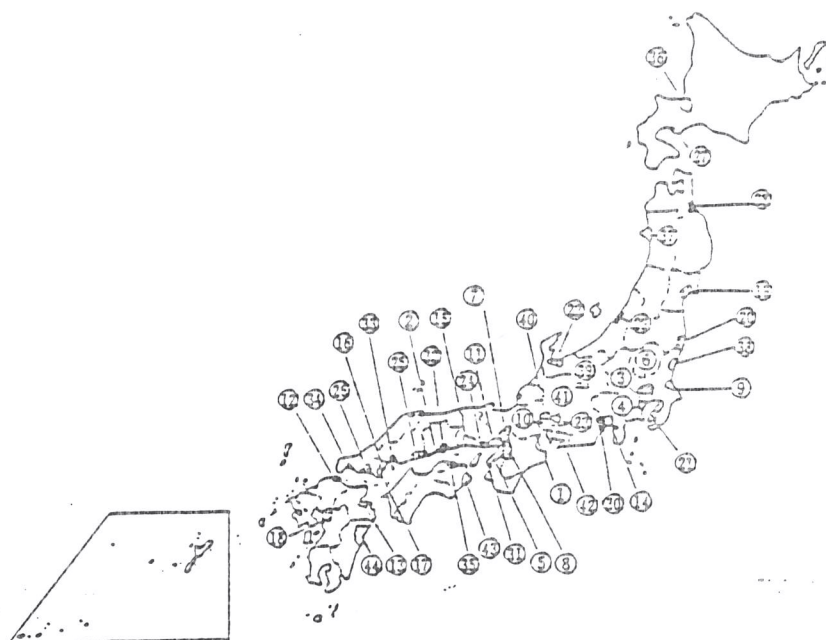
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Population		Resource	Development	Environment
1970 5 GNP:119 x	103 x 10 ⁶ Drastic Environmental Policy. B.R. 18.8 N.I.R. 11.8 I.M.R. 13.1	Peak Petroleum Import; then Oil Crisis. Natural Resource. National Land Resource. Land Reclamation. Water Resource. (Lake Biwa)	Japanese Archipelago Reform Plan (2nd.), Development Net-Work (Expressway, Bullet Train & Air Port), Relocation of Industry, Mountain Village Activation, Coastal Development, Oversea Investment & Development. International Trade.	Stormy Environmental Action. International Environmental Actions (UN, OECD, USA then UNEP), Photochemical Oxidant Episodes, Automobile Emission Control Standards. Social & Political Crisis. Pollution Control Headquarters, Headed by Prime Minister. Special Congress Session for 14 Legislation. Environment Agency. Four Court Sentences (Agano, Minamata, Itaitai, Yokkaichi), Strict Liability, Pollution Related Health Damage Compensation System. Cabinet Resolution for EIA. Assessment Legislation for Chemicals, Harbour, Land Reclamation. Pollution Control Manager System. Industrial Siting Law. Areal E.P. Control Plan. Aviation Noise, Bullet Train Noise, Panics by Hg, PCB & Cd Pollution. Nature Conservation Law, Seto Inland Sea Conservation Law.
1975 5 GNP:135 x	111 x 10 ⁶ Crisis is Over. B.R. 17.1 N.I.R. 10.8 I.M.R. 10.0	2nd Oil Crisis. Oil Ceiling by Summit Meeting. (Tokyo), Alternative Energy Plan. Ocean Resources. Endangered Wildlife.	Regional Development for Human Settlement (3rd.) Development for Quality of Life, Enhancement of Amenity, Agricultural Infrastructure Development, Coastal Fishery Development, Alternative Energy Development. Recycle of Waste Effluent.	Environmental Policy Review. NOx Control Review (WHO, UNEP, OECD), Econometric Impact Assessment for Long Term Environmental Conservation Plan & National Economic & Social Development Plan. Biological Surveillance for Toxic Chemicals. Eutrophication in Closed Water Zone. Total Mass Emission/Effluent Regulation (SOx, COD), Revision of Ambient Air Quality Standard of NO ₂ , Technology Review Approach to Automobile Pollution Control and NOx control. Nature Conservation, Green Development, Wild Animal Protection, Historic Scenery;
1980 5 GNP:191 x	116 x 10 ⁶ International Impact & Inter-Dependency. B.R. 13.6 N.I.R. 7.3 I.M.R. 7.5	Expansion of Coal & Nuclear Power Generation. Hereditary Gene Bank. Ocean Resource Issues. Endangered Wildlife.	Development & Creation of Amenity Town, Urban Green, Energy and Resource Saving, Value Added Industry, High Technology Industry. (IC, Mechatronics, New Materials, Bioengineering) Trade Friction. International Co-operation. Technopolice, Teleopia Projects. Village Activation Project.	Transport. & Environment. (Land Use, Building & Cargo Flow) National Trust Movement for Nature Conservation and Historical Property Protection, Deforestation & Forestry, WWF, Washington Treaty Implementation, Cabinet Resolution of EIA, Lake Eutrophication Control, Underground Water Pollution, Toxic Wastes & Chemicals, Supreme Court Sentence (Osaka International Air Port), NTE Measures.
1985 5 GNP:236 x	121 x 10 ⁶ International Harmony. B.R. 11.9 N.I.R. 6.3 I.M.R. 5.5	Ocean Resources. Endangered Wildlife. Rare Metals, Gene Bank.	New Hanshin International Air Port, Industrial Structural Change, Trade Friction, Currency Rate (Yen/\$) Teleopia, Technopolice Project. Economic Structural Change	Toxic Wastes, Toxic Chemicals, Conservation of Lake, Forest, Water Source Area, Domestic Effluent Measures. National Trust for Nature Conservation Environment Management Plan. IC Industry.

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Chart

Map of Designated Area for Environmental Pollution Control Plan by article 19, the Basic Law for Environmental Pollution Control Measures 1967.



36

		SOx	NOx
1st.	1.Yokkaichi	x	
	2.Mizushima	x	
	3.Tokyo	x	x
	4.Kanagawa	x	x
2nd.	5.Osaka	x	x
	6.Saitama	x	
	7.Kyoto	x	
	8.Nara Yamato R.		
3rd.	9.Kashima		
	10.Nagoya	x	
	11.East Hygo	x	
	12.Kitakyushu	x	
	13.Ooita		
4th.	14.Fuji	x	
	15.Harima South	x	
	16.Ootake	x	
	17.Iwakuni	x	
	18.Oomuta	x	

Note; SOx; Total Mass Emission Regulation Area (x)

NOx; Total Mass Emission Regulation Area (x)

Ube X only Ube,

		SOx	NOx
5th.	19.Sendai		
	20.Iwaki		
	21.Chiba Bay area	x	x
	22.Toyama, Takaoka.		
	23.Kinugasa, Nishimikawa		x
	24.Kobe.		x
6th.	25.Bingo.		x
	26.Shunan		x
	27.Muroran		
	28.Hachinoe		
	29.Niigata		
	30.Shizuoka, Shimizu		
	31.Wakayama		x
	32.Okayama, Bizen		x
	33.Hiroshima, Kure,		
	34.Shimonoseki, Ube		x
7th.	35.Kagawa		
	36.Sapporo		
	37.Akita		
	38.Hitachi		
	39.Matsumoto, Suwa,		
	40.Gifu, Oogaki		
	41.Tono		x
	42.Higashimikawa		
	43.Tokushima		
	44.Hyuga, Nobeoka		

Source; Annual Report of Environmental Quality. 1984FY
Presented to 102nd Congress
May 1985.

Table 14 Progress of Areal Environmental Pollution Control Plan.

Year	'71	'72	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	Area
1st. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	Yokkaichi Mizushima 2
2nd. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	Tokyo, Kanagawa, Osaka, Saitama, 6 Kyoto, Nara-Yama to River,
3rd. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	Kashima, Nagoya, East Ilygo, Oolta, 5 Kitakyshu,
4th. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	Fuji, Harima sou th, Otake, Iwa- kuni, Oomita, Sedal Bay, Iwaki, Chiba Bay area, Ioyama, Iakaoka, 1 Klugaura, West mlkawa, Kobe, Bingo, Shunan, Murotan, Iachl- noe, Nllgata, Shizuoka, Shml- zu, Wakayama, Oka-9 yama, Uizen, Ilro- shlma, Kure, Shi- monoseki, Ube, Kagawa,
5th. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	Sapporo, Akita, Iitachi, Matsuo, Suwa, Gifu, 9 Oogaki, Tonoo, Ilgashlmlkawa, Irokushlma, Ilyuga, Nobeoka,
6th. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	
7th. Area	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	xxxxxxxxxxxxxxxxxxxx	-----	-----	-----	-----	-----	
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	44

Note: ---- old plan, xxxxx present plan,

Source: Annual Report of Environmental Quality for 1984 FY. Presented to 102nd Congress, 1985 May.

Table 1, Scope and Approach in Environmental Planning and Management.

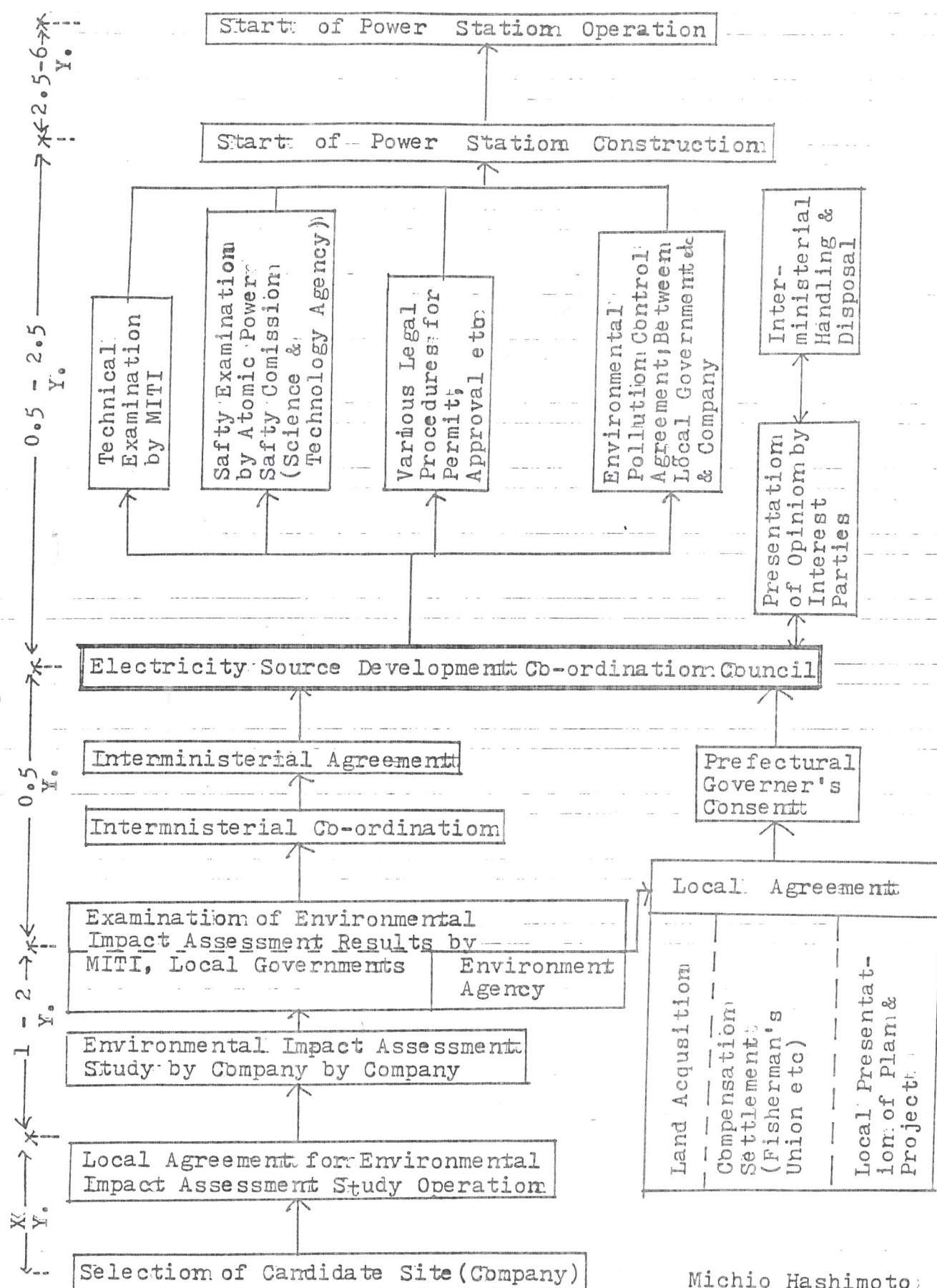
Approach	Scope	Basic Human Settlement (Living Environment)	Urban, Rural, Industrial Development	Environmental Conservation		
				Pollution Control	Nature Conservation	Cultural Property, Historic Environment
Orientation Problem Finding Resources Assessment Priority Setting Programme Making Implementation Evaluation & Feed Back						
Environmental Impact Assessment, Land Use, Siting, Building Regulation, Designation of Area, Water Zone, Source Facility, Property, Animal, Plant, Product, Substance etc for Control. Standard Setting for Enforcement (Emission, Effluent, Product, Design) Environmental Quality, Wastes Content. Enforcement, Protection, Monitoring, Surveillance, Laboratory Examination. Investigation. Infrastructure (Public Facility, Public Service) Development. Environmental Public Work. Arbitration of Dispute. Compensation of Damage. Cost Bearing System, (Fee, Charge, Tax, Levy,)						

Table 2: Main Issues of Conflict in Environmental Planning and Management

Environment	Objectives, Goals, & Priority.	Criteria, Guides, Standard.	Resource Allocation.	Enforcement, Protection, Prohibition.	Cost Distribution & Bearing.	Distribution of Risk s & Benefits.
Development: Social-Economic Development Planning. National (Physical) Development Planning. National Land Use Planning. National Energy Planning. National Water Resource Development Planning.						
Social Infrastructure Development Plan (Investment) Road, Railway, Air Port, Harbour, Flood Control Facility, Cargo Flow Center, Park, Housing, Water Supply, Sewerage System, Sanitation Facility, Education Facility, Community Facility etc.						
Regional Development Plan. Water Resource, Land Resource, Industry, River Basin, Irrigation, Power, Agriculture, Forestry, Fishery, Transport, Telecommunication etc.						
Urban Development Rural Development Community Development						
Structure, Siting Planning, New Big Technology Development.						

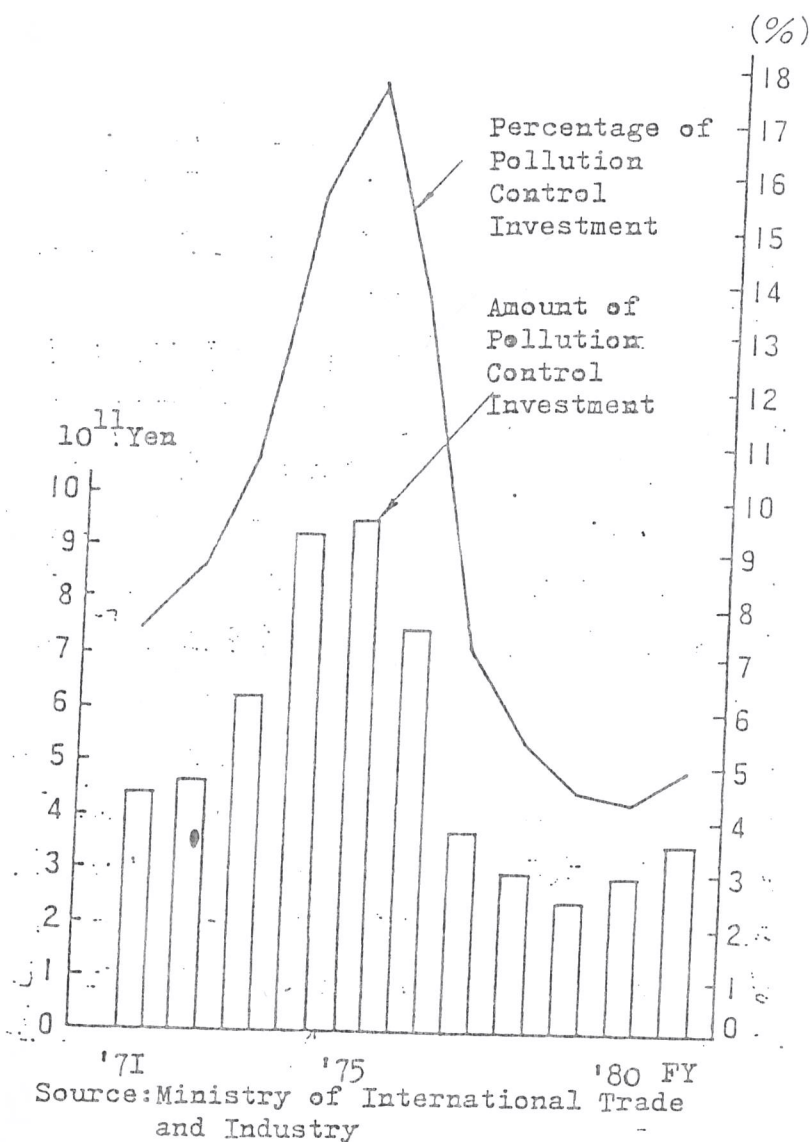
Chart 7

Electric Power Station Development Procedure (Environment Impact Assessment Process)



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Chart 26 Annual Trends of Pollution Control
Investment and its Percentage to
Total Investment by Private Industry



**1º Simpósio Brasil-Japão sobre
Saneamento Ambiental e
Controle de Poluição**

**ブラジル
・
日本**

1987

I SIMPÓSIO INTERNACIONAL DE MEIO AMBIENTE BRASIL-JAPÃO

SÃO PAULO - 25 A 27/11/87

ATUAÇÃO DA CETESB NO CONTROLE DA POLUIÇÃO

HISTÓRICO

A CETESB - Companhia de Tecnologia de Saneamento Ambiental, órgão da Administração Indireta do Estado, vinculado à Secretaria de Estado do Meio Ambiente, é uma sociedade por ações de capital misto, responsável pelo exercício do controle da qualidade do meio ambiente - água, ar e solo - em todo o Estado de São Paulo e pelas funções de pesquisa e serviços científicos e tecnológicos.

A Instituição CETESB é, hoje, o resultado da fusão do antigo Centro Tecnológico de Saneamento Básico e da Diretoria de Controle de Poluição das Águas, pertencentes ao Fomento Estadual de Saneamento Básico - FESB, através da Lei Estadual nº 118/73. A competência da Companhia foi ampliada pela incorporação das atribuições da Diretoria de Controle da Poluição do Ar, pertencente à antiga Superintendência de Saneamento Ambiental - SUSAM, através do Decreto nº 5993/75.

OBJETIVOS

No aprimoramento de suas funções e atribuições, a CETESB, em seu processo de reformulação, se propôs a assumir a missão institucional de "Promover o Desenvolvimento Ambiental Integrado do Estado de São Paulo", visando a permanente compatibilização entre a atividade sócio-econômica e cultural, as necessidades ambientais e requisitos de saúde da comunidade, as potencialidades e limitações do meio físico e as características vitais da flora e da fauna.

Dentro deste propósito, destacam-se como prioritários os seguintes objetivos:

- reduzir a poluição ambiental de Cubatão e estimular ações governamentais e privadas, no sentido de reorientar e disciplinar a ocupação daquela região;
- agir e estimular ações no sentido da recuperação das encostas da Serra do Mar, na região de Cubatão, ameaçadas de desestabilização, devido aos danos causados pela poluição do Complexo Industrial da região;
- concentrar esforços no sentido da redução da poluição ambiental na Região Metropolitana de São Paulo;
- promover o tratamento de esgotos domésticos e industriais na Bacia do Rio Jundiá, através de ação cooperativa entre Municípios, Indústrias e Governo Estadual;
- desenvolver ação integrada e concentrada, no sentido de reduzir, significativamente, a poluição ambiental na Bacia do Rio Piracicaba;
- estabelecer regras operacionais de manejo dos recursos hídricos da região do Alto e Médio Tietê Superior, com vistas atenuação da poluição da Represa Billings e do Rio Tietê, até que o problema dos esgotos da Região Metropolitana de São Paulo seja totalmente resolvido;
- promover o disciplinamento do uso do solo na Bacia do Rio Paraíba do Sul, com vistas à prevenção do agravamento da poluição ambiental da região;
- assistir os municípios não integrados ao PLANASA, no sentido da superação dos problemas emergenciais de abastecimento de água e de esgoto sanitário, com ênfase na melhoria da qualidade da água destinada à população.

AS AÇÕES DE CONTROLE

Dentro do Projeto de Reformulação da CETESB, desenvolvido a partir de 1983, através do chamado PPP - Planos, Programas e Projetos, a ação de controle da poluição ambiental da CETESB foi centralizada na orientação e descentralizada na execução. Como exemplo, pode-se citar a criação, na Região Metropolitana de São Paulo, de 9 Gerências Regionais Descentralizadas, facilitando a ação de fiscalização e controle na região correspondente, podendo assim, atender mais eficazmente os reclamos da população e ainda a colaborar para uma boa imagem da Companhia. Neste mesmo sentido, no Interior do Estado, foram criadas novas unidades regionais e elevando-se as mais importantes a nível de Superintendência, com ampla autonomia para decisões.

O PROCOP - Programa de Controle da Poluição foi desenvolvido e desburocratizado no sentido de utilizar este sistema visando, além do desenvolvimento de pesquisas, estudos e treinamentos técnicos, o financiamento para a aquisição e instalação de equipamentos de controle para qualquer tipo de poluente, sendo aplicados, até o momento, cerca de US\$ 46 milhões em contratos de financiamento.

Outro fator que merece destaque foi a criação de canais diretos de comunicação com a população, trazendo a comunidade a participar e a contribuir nos processos de decisão, através de levantamentos comunitários, reuniões de debates e elaboração de informações em nível acessível à população em geral.

A sistemática de licenciamento teve seus procedimentos melhorados especialmente no tocante às pequenas e micro-empresas. Através do Decreto nº 22.032/84, cerca de 40% das atividades licenciáveis ficaram isentas do licenciamento. Posteriormente, as micro-empresas, pelo seu significativo aspecto social e por serem, em geral, de baixo potencial poluidor, foram dispensadas do pagamento do preço das licenças e, recentemente, isentas das licenças da CETESB.

Outro fato relevante, consiste na abertura da CETESB à classe científica, Universidades e instituições de pesquisa. A atual administração, especialmente ao nível de pesquisa e desenvolvimento de tecnologia, vem fomentando o intercâmbio com as Universidades, para proporcionar a participação da comunidade científica nos programas de pesquisa e desenvolvimento da CETESB.

Visando uma atuação preventiva mais eficaz, a CETESB vem desenvolvendo uma linha de ocupação racional do solo, através de um trabalho de planejamento territorial, no âmbito das áreas de proteção ambiental e em bacias hidrográficas saturadas.

Partindo do princípio que preservação do meio ambiente é um tema que cada vez se evidencia, a CETESB vem desenvolvendo projetos de Educação Ambiental já a nível de escolaridade de 1º grau, produzindo e criando materiais didáticos para a população em geral. Por outro lado, a publicação de material técnico e a administração de cursos especializados, vem tendo toda a atenção para o desenvolvimento de uma nova classe de profissionais especialistas em meio ambiente.

RESULTADOS OBTIDOS

Contando com um firme respaldo político do Governo do Estado e com o empenho extraordinário de seu corpo técnico-científico, as ações de controle da CETESB, com base no Decreto nº 8468/76, que regulamentou a Lei nº 997/76, atuando especificamente em ações de caráter corretivo para fontes existentes e preventivamente para novas fontes de poluição, resultaram, nos últimos anos, em conquistas notáveis, das quais podemos destacar, neste momento:

- Programa de Controle da Poluição em Cubatão

Iniciado em 1983, o trabalho inicialmente identificou 320 principais fontes de poluição industrial, das quais 230 do ar, 44 das águas e 46 do solo, responsáveis pela emissão de 236,6 t/dia de material particulado na atmosfera, além de uma carga expressiva de efluentes líquidos, lançada na Bacia do Rio Cubatão e no Estuário de Santos, e de resíduos sólidos industriais, dispostos inadequadamente em diversos pontos do Município.

Até a presente data, o quadro a seguir mostra a evolução do Programa.

MATERIAL PARTICULADO

POLUENTE	EMIÇÃO INICIAL kg/d	REDUÇÃO		EMIÇÃO DE JULHO/87 kg/d	EMIÇÃO PRE- VISTA APÓS O PLANO DE CON- TROLE-kg/d	REDUÇÃO A SER OBTIDA ATÉ O FI- NAL DO PLA- NO-kg/d
		kg/d	%			
material par- ticulado	236.000	205.952	87,3	30.658	20.800	5.658
fluoretos	2.620	2.404	92	216	200	16
amônia	8.736	6.260	71,7	2.476	205	2.271
NH ₃	61.065	8.806	14,5	52.249	47.561	4.688
compostos or- gânicos volá- teis	90.000	65.700	73	24.300	11.970	12.330
SO ₂ TOTAL	78.353	28.829	37	49.524	49.524	-

POLUIÇÃO DAS ÁGUAS

POLUENTE	EMIÇÃO INICIAL kg/d	REDUÇÃO		EMIÇÃO DE JULHO/87 kg/d	EMIÇÃO PRE- VISTA APÓS O PLANO DE CON- TROLE-kg/d	REDUÇÃO A SER OBTIDA ATÉ O FI- NAL DO PLA- NO-kg/d
		kg/d	%			
efluentes li- quidos carga orgânica BOD	57.000	52.000	91	5.000	3.500	1.500
resíduos se- dimentáveis	580 m ³	450 m ³	68	188 m ³	60 m ³	128 m ³
metais pesa- dos	4.000	3.800	97	120	120	-
fenóis	73,5	4,5	6	60	15	54
fluoretos	2.800	2.500	89	300	100	200

* A unidade neste caso é m³/dia

RESÍDUOS SÓLIDOS

RESÍDUO	EMIÇÃO INICIAL t/dia	REDUÇÃO		EMIÇÃO ATUAL t/dia	EMIÇÃO PRE- VISTA DEZ/87 t/dia
		t/dia	%		
Urbano	28,6	28,6	100	0	0
Hospitalar	0,01	0	0	0,01	0
Industrial	2.425	1.294	53	1.131	0

- Programa de Controle de Dióxido de Enxofre

Objetivando reduzir em 80% a emissão industrial de SO_2 e considerando que 74% das emissões de SO_2 são provenientes de processos de combustão de óleos com alto teor de enxofre, foram incluídas, neste Programa, 363 indústrias que consumiam um total superior a 500 t/ano. A estratégia para controlar a emissão de SO_2 foi baseada na exigência de uso de tecnologias de controle que limitem a emissão de SO_2 a 20 kg por tonelada de óleo ATE queimado.

Os resultados deste Programa ficam evidentes na tabela das reduções obtidas.

TABELA - DESENVOLVIMENTO DO PROGRAMA DE CONTROLE DE DIÓXIDO DE ENXOFRE NA REGIÃO METROPOLITANA DE SÃO PAULO, NO PERÍODO DE 1983 A 1986

PARÂMETRO	DATA	ABRIL ¹ 83	ABRIL 84	DEZ 84	DEZ 85	JUL ² 86
Emissão de SO_2 para a atmosfera (t/ano)		160.558	88.897	85.579	48.597	30.000
Atendimento à meta da CETESB*		0	55,8%	58,4%	87,2%	100%

(*) Emissão de 32.112 t/ano de SO_2 até DEZ de 1985.

(1) Valor de Referência.

(2) Valor estimado, baseado na redução do teor de enxofre nos óleos ATE de 2% do 2º semestre de 1985 para 1,2% no 1º semestre de 1986.

A qualidade do ar, na RMSP, monitorada por uma rede automática de amostragem, composta por 22 estações, vista na tabela a seguir, expressa por si só a melhoria da qualidade do ar, resultante das ações de controle do Programa.

TABELA - MÉDIAS ANUAIS DE DIÓXIDO DE ENXOFRE NA REGIÃO
METROPOLITANA DE SÃO PAULO - REDE AUTOMÁTICA
(g/m³)

ESTAÇÃO	1981	1982	1983	1984	1985
Capuava	172*	123*	133*	133*	133*
Cambuci	141*	150*	120*	76	50
Lapa	122*	142*	101*	64	38
Congonhas	99*	111*	86*	64	44
D. Pedro II	107*	98*	82*	72	42
São Caetano do Sul	100*	99*	89*	64	45
Mooca	96*	97*	73	65	30
Cerqueira César	87*	96*	72	52	33
Osasco	71	74	59	41	20
Santo André	70	60	47	42	22
Guarulhos	70	64	43	28	24
São Bernardo do Campo	58	52	51	37	-
Diadema	53	57	49	28	21
Santo Amaro	56	55	50	28	14
Ibirapuera	54	52	37	30	14
Vila Paulicéia	50	46	39	31	20
Santana	67	68	50	28	17
Vila Formosa	44	45	36	19	19
Penha	39	46	24	23	15
Mauá	41	39	26	23	18
Taboão da Serra	35	31	31	24	16
São Miguel Paulista	31	34	26	24	13
Nossa Senhora do O	33	32	23	18	12

(*) Médias acima do padrão anual de 80 g/m³.

- Programa de Controle de Material Particulado

Neste Programa foram incluídas 162 indústrias da RMSP, responsáveis por uma emissão de 1.555 t/dia, em 1979, de material particulado. Em dezembro de 1985, a meta para uma emissão residual de 128 t/dia foi atingida. A evolução deste Programa pode ser vista a seguir.

TABELA - DESENVOLVIMENTO DO PROGRAMA DE CONTROLE DE MATERIAL PARTICULADO NA REGIÃO METROPOLITANA DE SÃO PAULO NO PERÍODO DE 1982 A 1985

PARÂMETRO	DATA OUT ¹ 82	ABRIL 83	OUT 83	DEZ 84	DEZ 85
Emissão de material particulado para a atmosfera (t/ano)	84.728	70.493	59.588	50.387	46.978
Atendimento à meta da CETESB*	0	38%	67,1%	91,7%	100%

(*) Emissão de 47.275 t/ano de material particulado até DEZ de 1985.

(1) Valor de Referência.

- Ação Integrada de Controle da Poluição da Bacia do Piracicaba

As medidas de recuperação da Bacia iniciaram-se com a "Operação Estiagem", em 1984, integrando esforços da CETESB, DAEE e CPFL, que consiste na manutenção de uma vazão mínima diária superior a 70 m³/s, prevenindo a anaerobiose nas águas do rio. Paralelamente, através do controle de 358 fontes de poluição industrial, conseguiu-se que a carga remanescente fosse reduzida para 77,2 t DBO/dia, o que representa 95% de redução em relação a uma carga potencial de 1.439 t DBO/dia. Persiste, no entanto, a poluição causada pelos esgotos domésticos com cerca de 80 t DBO/dia, visto a inexistência de sistemas de tratamento de esgotos operados pelos municípios da região.

COMENTÁRIOS FINAIS

Não caberia nesta oportunidade que se alongasse esta apresentação, uma vez que o detalhamento das ações de controle da CETESB serão pauta de exposições específicas no transcorrer deste Simpósio.

No entanto, ressalte-se, nesta oportunidade, que sob o ponto de vista dos benefícios sociais, sanitários e ecológicos produzidos, a CETESB é, hoje, uma empresa que já possui um expressivo crédito a seu favor, representado por benefícios que proporcionam direta e indiretamente a comunidade. Para chegar a este estágio de confiança junto à sociedade, um árduo trabalho foi desenvolvido, baseado:

- numa sólida consciência da CETESB a respeito de sua real responsabilidade perante à sociedade; e
- numa ampla campanha educativa visando atingir e esclarecer a todas as faixas de população.

Registro fundamental que se faz necessário, diz respeito ao corpo técnico da Companhia, que mesmo trabalhando com restrições de recursos humanos, financeiros e materiais, tem se mostrado sempre apto a desempenhar sua nobre missão de defesa do meio ambiente.

Finalmente, manifesto a satisfação da realização deste Simpósio, envolvendo a Secretaria do Meio Ambiente e CETESB em conjunto com a JICA-Japan International Cooperation Agency e ABJICA-Associação dos Bolsistas de JICA-SP, neste encontro de intercâmbio de informações que, por certo, oferecerá subsídios para uma constante e atualizada política de preservação ambiental.



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Secretaria do Meio Ambiente

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