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**THE USE OF UNILATERAL AGREEMENTS IN JAPAN
VOLUNTARY ACTION PLANS OF INDUSTRIES AGAINST
GLOBAL WARMING**

This report was prepared by Mr. Hidefumi Imura, professor at the Institute of Environmental Systems, Kyushu University (Japan), in the context of the OECD survey on the use of voluntary approaches in environmental policy.

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**THE USE OF UNILATERAL AGREEMENTS IN JAPAN
VOLUNTARY ACTION PLANS OF INDUSTRIES
AGAINST GLOBAL WARMING**

by
Hidefumi Imura¹

1. Nature, objective and content of Voluntary Action Plans

1.1 Introduction

This case study is on the Keidanren Voluntary Action Plan. In the 1990s, Japanese industries opted for voluntary approach to take measures responding to the growing public concerns about global warming, waste disposal, environment management, and environmental conservation in overseas business activities. Voluntary action plans were presented by a number of industries, and these industry-wise plans were integrated in the Keidanren (Japan Federation of Economic Organizations) Voluntary Action Plan on the Environment.

Japan's environmental policy underwent two major reforms, responding to the changing economic conditions and environmental realms of the country. The first reform was made in the 1960s to initiate modern legal and administrative systems for controlling environmental pollution and preserving the natural environment. At that time, most environmental problems were local in nature, and it was local governments that had to take immediate actions against the problems. Local governments prepared their ordinances and regulatory standards, then they were followed by national legislation. They also initiated a unique Japanese approach based on agreements between local public authorities and private firms. About twenty thousands such agreements were counted in the late 1970s, and the number increased to more than thirty thousands in 1997, covering various local problems such as air and water pollution, noise, preservation of greenery, chemical hazards, etc. The review of the agreements is made in a parallel report on the Survey of Voluntary Approach in Japan.

The second wave of environmental policy reform was in the early 1990s, synchronous with the movement before and after the United Nations Conference on Development and Environment (UNCED) held in Rio de Janeiro in 1992. Major concerns of Japan's environmental policy shifted from local pollution problems to global ones such as climatic change and tropical rain forests, and recycling and waste reduction attract growing attention of businesses and citizens. In this new paradigm of environmental policy, traditional "command and control" approach was perceived to be inefficient, and greater emphasis is placed on "voluntary actions" of various stakeholders and enhancement of partnerships and collaboration of government, businesses and citizens. The Basic Environmental Law was

¹ The author is professor at the Institute of Environmental Systems, Faculty of Engineering, Kyushu University

enacted in November 1993 in order to incorporate these new conditions into the national environmental policies and renovate the old legislative framework.

The Law embraces all Japanese Environmental regulatory administration, and states the need to move into a society in which economic development placed small loads on environment while changing people's behavioural patterns and lifestyles. It spells out the nation's responsibilities for promoting international efforts to cope with global environmental issues such as global warming, ozone layer depletion, marine pollution and decreasing biological diversity. It states that the national and local governments, business firms, and citizens should make co-operative efforts to protect the environment through fair burden sharing. It encourages environmental activities by business firms, citizens and NGOs to cope with new problems such as climatic change and waste recycling for which traditional regulatory instruments prove ineffective.

In response to this movement, Japanese industries adopted a new approach based on voluntary action plans. These are collective plans prepared by relevant trade associations whose role is to promote concerted actions of member firms while representing their business interests. *Keidanren*, Japan Federation of Economic Organizations, integrates all these plans in its voluntary action plan. The plans are expected to play a key role for Japan to achieve the reduction target of CO₂ and other greenhouse gases which was agreed upon at the COP3 in Kyoto. This report, therefore, gives its major emphasis to the role of voluntary action plans in global climate policy.

1.2 *Keidanren Voluntary Action Plan on the Environment*

1.2.1 *Nature*

Keidanren (Japan Federation of Economic Organizations) is the most powerful and influential business association in Japan. It represents overall interests and opinions of Japanese business society, its member corporations and trade associations. Keidanren Voluntary Action Plan on the Environment embraces unilateral commitments of its member associations.

Keidanren, represents Japan's business interests with which are affiliated the nation-wide organisations of each industry. The Federation, as industry's representative, negotiates with national and local governments regarding policies that affect them, such as energy, regional development and pollution control measures. The Federation puts together the opinions of its members and presents them to the government. The national organisations of each industry have developed basic measures and technology to cope with pollution under the guidance of the MITI. Decisions as to how far industry should take pollution control measures consider the trend of public opinion, legal sanctions, technical feasibility and costs. Individual industrial groups decide on their own policy recommendations in light of these factors, which vary according to location. Following deliberations some enterprises are subjected to strict effluent controls to meet the environmental standards. In the case of industries mainly made up of large companies, nation-wide organisations like the above negotiate with the MITI and others while at the same time coordinating with local governments. This helps avoid cases in which acceptance of strict standards in high pollution areas might otherwise be used as a precedent for the establishment of similar high standards in other parts of the county. [The World Bank: Japan's Experience in Urban Environmental Management, 1994]

Keidanren is a private and non-profit economic organization which represents virtually all branches of economic activities in Japan. Keidanren maintains close contact with both public and private

sectors at home and abroad. It endeavors to find practical solutions to economic problems, representing the position of Japanese industries. It has strong influential power not only to its members but also to the government and political parties. Its membership stood at 970 corporations and 123 association members, as of October 1994. The corporate members are leading Japanese enterprises and 53 foreign companies operating in Japan. The association members include trade associations and regional economic organizations.

In 1991, Keidanren published its Global Environment Charter, proclaiming that "grappling with environmental problems is essential to corporate existence and activities." The Charter committed Keidanren to seek positive and voluntary methods for promoting environmental conservation. Furthermore, in July of 1996, Keidanren published its Appeal on the Environment, which sought to encourage industrial circles to deal with environmental challenges more concretely through measures to counteract global warming and by creating a recycle-based society.

In addition, Keidanren issued a call to the Japanese business community to organize Keidanren Voluntary Action Plan on the Environment based on the Appeal. In response to this call, a number of industries and industrial associations drafted their voluntary action plans.

Box 1. Message of Keidanren on Its Voluntary Action Plan

Industry as a whole in Japan has made significant strides to date in the promotion of recycling and restraining the discharge of waste. The end result is the gradual development of a recycle-based, energy-saving society acting as a countermeasure to the global warming phenomenon. For example, if we consider CO₂ emissions per unit of Gross Domestic Product (GDP) worldwide in 1994 (expressed in tons of carbon per \$1 million of GDP), Japan's rate of

123 ranked along with France's rate of 121 as one of the lowest in the world. The comparable rate for Canada was 321, for the United States 306, for Britain 221, and for Germany 179.

Concerning specifically the status of CO₂ emissions in Japan, although emissions from households and transportation-related services have nearly doubled in the past two decades, those from the industrial sector have remained essentially unchanged despite the economy almost doubling in size. Moreover, Japan's rate of recycling, which is one indicator of the emergence of a recycle-based society, is of a relatively high level. In short, many industries are already in a position where they have little room for additional improvements but have continued drafting voluntary action plans when possible. Keidanren appreciates their bold efforts.

At this point it is worth noting that Keidanren does not intend the drafting of voluntary action plans to be the end of its own efforts. Indeed, Keidanren intends to periodically review each of the before mentioned action plans including their implementation and results. As an organization, we are committed to putting every effort into realizing a more healthy and vibrant global environment starting right here in Japan.

However, unless we all join hands and strive to grapple head on with the challenges facing the global environment, our efforts will almost certainly fail. Therefore, we hope that consumers, citizens, and municipalities will join our efforts and adopt their own voluntary measures. Only when such is done and our counterparts across the globe begin to head our example can we be secure in that we are doing everything possible to face the challenges confronting our environment today, and in the future.

1.2.2 Participating Industries and Organizations

The decision making structure in the private sector with regard to environment takes place at two levels: one at the individual enterprise level and the other at the industrial group level. The group is an association of enterprises which have certain interests in common. i.e., participating in the same trade at the national level, or located in the same geographical area. Such groups have been of considerable importance in bringing about the cooperation of industry in the attainment of environmental objectives. When, in the early 1970s, as a result of social and legal pressure, Japanese industrial leaders were forced to take action to improve the environment, industrial associations played a central role by agreeing on the environmental protection measures that their members should take. The economic risk to any particular firm of taking costly measures was therefore reduced, since all member firms agreed to take the same kind of pollution control measures. This arrangement, which continues to day, ensures that investment in pollution control affects firms' competitiveness more or less equally [The World Bank: Japan's Experience in Urban Environmental Management, 1994]

In December 1996, Keidanren presented the Industry-Wise Voluntary Action Plans for 29 industries (represented by 131 organizations), which were drafted in response to Keidanren's Appeal on the Environment. Keidanren Voluntary Action Plan on the Environment includes eight additional industries, bringing the final number of participants in the voluntary plans up to 37 industries and 137 organizations from manufacturing and energy to distribution, transportation, finance, construction, and foreign trade.

The participating industries are as follows:

1. Mining (Japan Mining Industry Association)
2. Limestone mining industry (Limestone Association of Japan)
3. Coal (Japan Coal Association)
4. Construction (Japan Federation of Construction Contractors, others)
5. Housing (Japan Federation of Housing Organizations)
6. Sugar Refining (Japan Sugar Refiners' Association)
7. Beer Brewing (Brewers Association of Japan)
8. Paper manufacturing (Federation of Paper Manufacturers in Japan)
9. Chemical (Japan Chemical Industry Association)
10. Pharmaceutical (Federation of Pharmaceutical Manufacturers' Associations of Japan, Japan Pharmaceutical Manufacturers Association)
11. Petroleum (Petroleum Association of Japan)
12. Rubber (The Japan Rubber Manufacturers Association)
13. Flat Glass (Flat Glass Association of Japan)
14. Cement (Cement Association of Japan)
15. Steel (Japan Iron and Steel Federation)
16. Aluminum (Japan Aluminum Federation)
17. Brass (Japan Brass Makers Association)
18. Electric Cable (Japan Electric Wire and Cable Makers' Association)
19. Industrial Machinery (The Japan Society of Industrial Machinery Manufacturers)
20. Electronics (Electronic Industries Association of Japan, others)
21. Electric Machinery (Japan Electrical Manufacturers' Association)
22. Automobile (Japan Automobile Manufacturers Association)
23. Automobile Parts (Japan Auto Parts Industries Association)
24. Rolling Stock (Japan Association of Rolling Stock Industries)
25. Shipbuilding (The Shipbuilders' Association of Japan)
26. Optical Instruments (Japan Optical Industry Association, others)
27. Foreign Trade (Japan Foreign Trade Council)
28. Department Store (Japan Department Stores Association)
29. Chain Stores (Japan Chain Stores Association)
30. Non-Life Insurance (The Marine and Fire Insurance Association of Japan)
31. Real Estate (The Real Estate Companies Association in Japan)
32. Railway (Japan Non-Government Railways Association)
33. Shipping (Japanese Shipowners' Association)
34. Transportation (Japan Trucking Association)
35. Electric Power (Federation of Electric Power Companies)
36. Gas (Japan Gas Association)
37. Aviation (Three-Airlines Liaison Committee on Environmental Problems)
38. Other (East Japan Railway Co.)

1.2.3 *Characteristics*

Keidanren describes the characteristics of its Voluntary Action Plan as follows.

- a) Voluntary effort based on the discretion of the participating industries: the first characteristic is that it is an entirely voluntary effort in which each industry has used its own discretion free from compulsion by any government or regulatory body. This effort has resulted in the adoption of plans which industries considers to be optimum under present economic and political conditions and their commitment to doing all that they can.
- b) Wide range of participating industries: participants of the plan are not limited to the sectors of manufacturing and energy but cover an extremely wide range of industries including distribution, transportation, construction, foreign trade, non-life insurance, and more. We are hardly aware of any other case in which non-manufacturing industries are participating in such voluntary action plans.
- c) Quantitative targets: many of the participating industries have established quantitative targets for the measures that they have adopted in combating the challenges of global warming and waste disposal.
- d) Annual review process: this action plan is subject to an annual review process, the results of which are to be made public (the first review is scheduled for the summer of 1998). Through the carrying out such periodic reviews, a mechanism will be put in place to ensure that industrial circles will continue to improve the measures that they adopt in protecting the environment.

1.2.4 *Objective and content*

Major objectives of voluntary action plans are fourfold: measures to combat global warming, waste disposal measures, environmental management system (e.g., good practices based on the purport of ISO14000 series) and environmental conservation in overseas business activities. Priority of measures differ between industries: energy consuming manufacturing industries place emphasis on energy saving and CO2 emission reduction while service industries stress their activities for reduction and recycling of wastes. Among these objectives, however, measures to combat global warming attract the most acute interest as they are the commitments of Japanese industries to achieve the reduction of greenhouse gases.

a) **Measures to Combat Global Warming**

Many industrial circles have established concrete objectives, including a completion target date of 2010, as part of their voluntary plans. Eighteen industries have spelled out these objectives in terms of improvements in the level of energy input per unit of output or CO2 emission per unit of output; fourteen industries have defined their targets in terms of reduction in the total amount of energy used or CO2 emitted, and eight industries have established energy conservation measures that seek to lower energy consumption during the stage in which services are provided or products are used. The targets and measures included in the plans of different industries are demonstrated in **Tables 1- 4**.

In terms of specific measures, many industries have placed their primary emphasis on improving the efficiency of energy use. These measures include the formulating of careful and detailed innovations relating to operations control, including energy conservation in offices; making improvements in equipment and processes; and engaging in and implementing the developments from technological research. Other industries cite the effective use of heat exhaust, electricity generation using waste material, co-generation, adopting new forms of energy, and the changing of fuels. In the electric power

industry, the increased use of nuclear power has been cited as well as the enhancement of its functions and performance. Other industries note the importance of reassessing products from the design stage, as called for by the Life Cycle Assessment(LCA); contributing to energy conservation through international cooperation; and the promotion of reforestation.

b) Waste Disposal Measures

Six industries have adopted the approach of cutting down the amounts of waste produced; seventeen have said they will aim to improve rates of recycling and increase the amount of material recycled; ten have cited as their goal the reduction of quantities of waste that have to be dealt with at the final stage of disposal; and six have cited as their target improvements in rates of final disposal. Many of the industries have set 2010 as their target date by which they plan to meet these goals as illustrated in **Table 5**.

These range over a wide variety of areas: limiting the quantities of waste produced, through improvements in production processes; raising the rates of recycling for by-products and waste material by using these as material for improvement of road bed or as mixing material for cement; technological development aimed at expanding uses for recycled products, or raising the rate of comprehensive recycling through strengthening coordination with other industries; creating products that impose minimal environmental burdens, by adopting the tenets of LCA, or creating easily recyclable products; and in offices, collecting waste in separate categories, adding green to the environment, encouraging the trend away from use of paper, etc.

c) Environmental Management

It is recommended that Japanese industries, manufacturing or non-manufacturing, should utilize the ISO environmental management and auditing standards as an effective means of environmental improvement. Many industries committed the prompt introduction and implementation of environmental management systems in conformity with the ISO 14000 standards..

d) Environmental Conservation in Overseas Business Activities

As international business activities by Japanese enterprises are expanding, it is recommended that Japanese industries should give closer attention to the environment in stepping up and diversifying business activities overseas. Incorporated in its Global Environment Charter, Keidanren already published the "Ten-Point-Environmental Guidelines for the Japanese Enterprises Operating Abroad", and many industries committed to observe the guidelines.

Box 2. Keidanren Voluntary Action Plan on the Environment: Measures in Four Urgent Issues

1. Measures to Cope with Global Warming

Making it a basic policy to review the "throw-away economy," structure a recycle-based society and improve energy efficiency and carbon utilization efficiency, we aim to maintain the world's paramount level of environmental technology. We also aim to improve energy utilization efficiency on a global scale through transfer of appropriate technology to developing countries.

Concrete Methods

- 1 Preparing industry-wise voluntary action plans incorporating definite goals and steps toward enhancement of energy efficiency, and periodically reviewing the progress of such actions;
- 2 Recovery and utilization of heat exhausted from cities and industries, reduction of natural energy costs, improvement of utilization efficiency of fossil fuels through co-generation and compound generation, and the safe, effective utilization of atomic energy;
- 3 Improvement of energy efficiency through inter-industry collaboration based on the life-cycle assessment (LCA) concept;
- 4 Improve transport efficiency;
- 5 Cooperation in coping with global warming in the residential and commercial sector through development of energy-saving products;
- 6 Positive participation in "activities implemented jointly" to transfer technology to developing countries in close cooperation with the government; and
- 7 Promotion of forest protection and afforestation projects in developing countries through business corporations themselves and the Keidanren Nature Conservation Fund.

2. Structuring of Recycle-Based Society

In order to review the throw-away-type economic community where resources are liable to be wasted and convert it into a recycle-based society, we will work on "cleaner production," designed to attain optimum efficiency in all the processes from product design to disposal. At the same time, we will revise the conventional concept of "garbage" and treat waste as a valuable resource, transcending the boundaries of individual industries. We will thus address recycling as the most important task in corporate management and make a systematic approach toward reduction of waste and recycling.

Concrete Methods

- 1 Controlling the incidence of waste and re-utilizing it from the viewpoint of life-cycle assessment (LCA) and developing products with full consideration given to the degree of recyclability and disposability (e.g. review of the frequency of product restyling);
- 2 Disposal of waste products by appropriate methods;
- 3 Structuring systems for recovery and disposal of waste products;
- 4 Use of waste products as raw materials by developing waste disposal technology through inter-industry collaboration;
- 5 Simplification of packaging and promotion of recycling; and
- 6 Positive introduction of products with lesser environmental load and recyclable products.

3. Restructuring of Environmental Management System & Environmental Auditing

We will structure an environmental management system in an effort to address the environmental problem voluntarily, ensure its continuous improvement and perform internal auditing to confirm that the system will steadily work. Keidanren has positively participated in the formulation of the ISO environmental management and auditing standards, scheduled to come into effect this fall. It is recommended that Japanese industries,

manufacturing or non-manufacturing, should utilize the standards as an effective means of environmental improvement.

Concrete Methods

- 1 Prompt introduction of environmental management and auditing systems into corporations (e.g. appointment of an executive in charge of environmental problems, creation of an environmental department and enforcement of internal auditing);
- 2 Implementation of environmental management and auditing in conformity with the ISO standards or taking steps that correspond thereto, and
- 3 Playing an active role in the making of environmental labeling, assessment of environmental performance and LCA international standards under ISO.

4. Environmental Considerations in Evolving Overseas Projects

International business activities by Japanese enterprises, such as overseas production and developmental imports, are rapidly spreading from the manufacturing industry to banking, physical distribution and service sectors. We will give closer attention to the environment in stepping up and diversifying business activities overseas, as well as observe the "Ten-Point-Environmental Guidelines for the Japanese Enterprises Operating Abroad" incorporated in the Keidanren Global Environment Charter.

In conclusion, we reaffirm the importance and urgency of every industrialist being a "global citizen," and express also as citizens our determination to innovate our lifestyle toward the goal of "sustainable development."

2. Legal context

Voluntary action plans of Japanese industries have no legal basis, and they are free from any kind of sanctions. No laws explicitly prescribe the roles of the plans. However, new laws such as Basic Environmental Law and Energy Conservation Law ask industries to take voluntary actions based on their initiatives. Voluntary action plans were the approach adopted by Japanese industries to take actions in conformity with the spirit of these new laws while demonstrating their environmental efforts and making their good image.

2.1 Basic Environmental Law

Voluntary action plans were thought of in accordance with the idea of the Basic Environmental Law, and the enactment of the law in November 1993 facilitated the effort of industries to prepare the plans.

The basic law was framed around the October 1992 proposal of two advisory councils to the Environment Agency, the Central Council for Pollution Control and the Central Council for Natural Environmental Preservation. The proposal concluded that the existing laws were insufficient in helping to resolve modern problems which are global in nature. It stated that regulatory measures would no longer be sufficient for a new environmental policy and that "voluntary, economic measures" should be considered instead. This statement was made with a view to encouraging voluntary action by businesses and citizens and promoting economic measures such as environmental charges and taxes that would help bring about reduced carbon dioxide emissions.

The law requires the national government to lay out the Basic Environmental Plan articulating its long-term environmental policy and direction. The law formalizes various measures which are new in

Japan's national environmental policy. In particular, it spells out the need of building up a society in which all stakeholders, including the national government, local governments, business firms, citizens, and private organizations participate voluntarily and actively in environmental conservation activities while cooperating each other and sharing responsibility in a fair manner.

In accordance with the new Basic Law, the Cabinet decided upon the Basic Environmental Plan in December 1994, putting forward the basic directions of the national environmental policy. The Plan sets long-term objectives for environmental policy through to the middle of the 21st century. It also provides the basis for governmental policies to be adopted in the early period of the next century, and sets out activities to be carried out by local governments, private corporations, non-governmental organizations and citizens. The Basic Plan stipulates the targets of future environmental policies. Most of the targets are the same as the standards set by the related law or the targets set in the relevant government plans or programs. The Plan includes measures for limiting CO₂ emissions, recycling of resources, international cooperation, etc. which are beyond the scope of the old regulatory laws.

Thus the Basic Environmental Law and the Basic Environmental Plan provide the policy framework of the national environmental policy, but they do not have compulsory power to regulate industrial activities which are causing problems. Instead, the law encourages all stakeholders to take actions based on their voluntary decisions. In this context, voluntary action plans of industries were thought to be an indispensable action to support the national environmental policy. Moreover, there is a strong motivation from the interest of industries which wish to minimize government interventions in their activities. When the new law was drafted, industries insisted that regulatory measures would not be effective to cope with new issues such as global warming. They proclaimed that industries had made the best efforts for protecting the environment and they would continue to make these efforts. Voluntary action plans were necessary to demonstrate the attitudes of industries seriously coping with environmental problems.

2.2 *The Draft Global Warming Law*

In October 1991, the Japanese government published an Action Program to Arrest Global Warming. It set forth the goal to stabilize carbon dioxide and methane emissions at 1990 levels by 2000. The target on carbon dioxide emissions is prescribed in terms of per capita and total emissions. In order to achieve this goal, the Environmental Agency assessed various technologies to be developed and introduced in industry, transportation, electric utilities, and residential /commercial sectors. It also is undertaking studies on policy instruments, such as a carbon tax and their economic implications. MITI is promoting various energy conservation measures as well as development of new energy sources, and a number of prefectures and municipalities started projects to assess and promote measures for stabilizing global warming.

In spite of these actions, the emissions of greenhouse gases in Japan increased: the national total emission of CO₂ in 1997 increased to 108 percent of that in 1990. According to the Kyoto Protocol to the UNFCCC, Japan shall pursue the limitation or reduction of greenhouse gases to 94 percent the level of 1990 by the year of around 2010. There is an opinion that some strong measures such as energy consumption regulation are necessary for Japan to achieve the internationally agreed reduction targets, while industries hold the view that both new regulation and introduction of a carbon tax should be avoided to ensure efficient business activities. In May 1998, Environment Agency submitted the Draft Law for Promoting Measures to Arrest the Global Warming to the Diet. The content of the Draft Law was weakened through the negotiation with other Ministries such as MITI (Ministry of International Trade and Industry). MITI supported by industries insisted that the law should not regulate industrial activities,

while MITI itself would like to strengthen its Energy Conservation Law. The Law was passed by the Diet in October 1998.

The Draft Law stipulates the framework of measures, generally stating the responsibilities of various stakeholders and asking prefectures to prepare regional plans concerning the measures to reduce the emissions of CO₂ and other greenhouse gases. It also asks enterprises, individually or collectively, to prepare and publish their plans concerning the measures to reduce the emissions of CO₂ and other greenhouse gases. There is no explicit legal connection between the Draft Law and voluntary action plans of industries, but voluntary action plans may be given a quasi-legal status if they are linked to the plans required by the new law.

Box 3. Targets under the Action Program to Arrest Global Warming (October 1990)

The targets for the limitation of greenhouse gas emissions shall be set as follows.

The Government, based on the common efforts of major industrialized countries to limit CO₂ emissions, establishes the following target for the stabilization of Japan's CO₂ emissions.

- The emission of CO₂ should be stabilized on a per capita basis in the year 2000 and beyond at about the same level as in 1990, by steadily implementing a wide range of measures under this Action Program, as they become feasible, through the utmost efforts by both the government and private sectors.
- Efforts should also be made, along with the measures above, to stabilize the total amount of CO₂ emission in the year 2000 and beyond at about the same level as in 1990, through progress in the development of innovative technologies, etc., including those related to solar, hydrogen and other new energies as well as fixation of CO₂ at the pace and in the scale greater than currently predicted.

2.3 *Energy Conservation Law*

Energy conservation is essential for reducing the emission of CO₂. However, regulating industries for their energy consumption generally causes significant impacts upon national economy. In the arena of Japan's energy and environmental policy, there is an eternal triangle of Environment Agency, Ministry of International Trade and Industry (MITI) and industries. The coalition of MITI and industries frequently works to oppose Environment Agency which tries to enforce stronger environmental measures. At the same time, Japanese industries wish to be free from excessive interventions by MITI although they have largely benefited by MITI's industrial policies and some of them still like MITI to protect their interests.

MITI resisted against the initiatives of Environment Agency to present the Global Warming Law, while it submitted the Draft Law to Revise the Energy Conservation Law to strengthen the efforts of industries to conserve energy. As is the case of the Draft Global Warming Law, Energy Conservation Law does not have any clause to stipulate the linkage between the law and the voluntary action plans of industries. However, MITI's industrial policies are based on its traditional administrative guidance. Based on its laws, MITI has special committees to implement its industrial policies. In April 1998, it

established a joint Committee of its four committees to examine the performance of industries with respect to the implementation of their voluntary action plans: Comprehensive Energy Investigation Committee, Industrial Structure Committee, Industrial Technology Committee and Chemicals Assessment Committee. Thus Energy Conservation Law does not give any legal status to voluntary action plans, but the law can be used as a tool to exert MITI's control over industries through its administrative guidance.

On the basis of the Energy Conservation Law, MITI enforced energy conservation standards requiring factories and businesses to make an effort to conserve energy. The old law, however, was not strong enough to control business activities. Then global warming issues brought about a new national need for providing stronger incentives to encourage energy conservation efforts in various sectors. In March 1993, a couple of laws, i.e., the "Energy Supply and Demand Structure Advancement Law" and the "Energy Conservation and Recycling Support Law," were enacted.

The first law laid down the amendments of three energy-related laws. Among others, the Energy Conservation Law was amended and the old energy conservation targets were divided into seven areas including the recovery of discharged heat, prevention of electric current losses, and effective combustion of fuel. The standards define detailed steps that businesses are required to follow, including the mixture of fuel and air and boiler exhaust heat temperatures. MITI encourages and guides businesses to follow the reinforced regulations. Those failing to meet the lowest targets would be penalized while those clearing new, stricter targets would be given tax incentives and other financial benefit. MITI asked some 3,200 key energy consuming factories and businesses, which were designated as "special business entities," to take part in its effort and report fuel and electricity consumption to MITI. If the ministry determines that the energy conservation efforts of designated factories and businesses are inadequate, it could order them to comply with MITI's conservation targets. To enforce compliance, the ministry would be able to publish the names of firms that fail to report the information and impose other sanctions.

Energy Conservation and Recycling Support Law, which aims to facilitate the enforcement of the Energy Conservation Law and promote the recycling of material, calls for creating a low-interest loan and interest-rate subsidiary program. In another measure, a tax credit would be extended to factories that prepare conservation programs set by MITI. The factories would also be eligible for a 30 percent accelerated depreciation of assets. The law also provides energy conservation targets for buildings. Moreover, the same law calls for a loan and interest subsidiary program for businesses that introduce equipment and facilities for recycling products, develop environmental protection technology, and replace chlorofluorocarbons with less damaging alternatives.

In March 1998, MITI submitted the Draft Law to Revise the Energy Conservation Law to the Diet. It requires each factory or business facility to make its plan for rationalizing energy use by taking consideration of the reference guidelines to be prepared by MITI and other ministries concerned. It will also publish the energy conservation targets of automobiles and household electric appliances, and the names of "top runners", or the manufacturers that achieved the best performance of energy conservation will be made public in order to stimulate the competition in the race of technology development. These energy conservation targets will not be mandatory standards, but MITI can issue recommendations to manufacturers which are far behind the top runners.

In summary, the role of voluntary action plans are not legally defined, and they have no formalized process of external review and examination. They are implemented in close tie with administrative guidance by the government. MITI calls for industries to hear the implementation of their environmental measures. Based on Energy Conservation Law, MITI can request industries to report their achievement in energy conservation. The objective of the law, however, is restricted to energy conservation, and it does not allow MITI to control the emissions of CO₂, although energy conservation

and CO2 emission control have closely related to each other. Here, voluntary action plans of industries play a complementary role to the energy and industrial policies of MITI. MITI uses the plans as a tool for implementing its energy policy, while the reporting to MITI will give industries a good excuse for not making public reviews.

3. Policy context

3.1 Why was the VA introduced? Motives of public authorities

3.1.1 Regulatory reform context, deregulation

So far, what has been termed "political, administrative and business complex" has dominated the country. There is a criticism that common foundation of today's economic problems in Japan is the system of administrative guidance that control business activities while protecting the interests of special sectors. Bureaucratic structures that were organized to protect industries were effective for both the promotion and the control of industrial activities until the 1970s. Such administrative guidance played a positive role in transforming Japan into an economic giant as well as in taking environmental measures, but it has become outdated. There is a strong opinion that Japan should minimize the government role and rely more on market mechanisms in a move away from interventionist industrial policies. Need of the reform toward deregulation, consumer-oriented policies, and decentralization has been advocated, but not yet been successfully put into effect.

There might be different views about the extent to which the interventionist government policy such as regulation, standards and administrative guidance will prove effective in environmental policy and how it can be successfully applied to the management of the global environment. While acknowledging the need of government intervention for correcting market failures, there are stronger views that would favor the market-based measures. Many industries maintain a view that economic activities which are as much as possible free from government regulation, relying upon "invisible hands" of markets will provide an economically optimum allocation of resources. They advocate the minimization of government role and call for voluntary actions of businesses in national environmental measures. It is stated that industrial freedom was the major reason why Japanese industries adopted voluntary approach. In reality, however, voluntary plans are implemented in close tie with the administrative guidance of MITI.

3.1.2 Lack of effectiveness of other existing policy instruments

In the 1960s and 1970s, the major objective of Japan's environmental policy was to control industrial pollution which took place in the course of rapid economic development of the country. A number of laws were enacted and regulatory systems established, and this "command and control" system was successfully and effectively implemented to reduce the emission of air and water pollutants from factories and plants. In the 1980s and onwards, however, there were changes in the form and characteristics of environmental problems. Major pollution sources shifted from industry's production activities to people's daily life and consumption, and global environmental problems such as climatic change and ozone layer depletion became central policy issues. Traditional approach based on standards and regulation proved ineffective to solve the new type problems. The Basic Environmental Law therefore conceived the major environmental policy reform relying upon a shift from "command and control" to "voluntary actions" of various actors based on the spirit of participation and partnership. Use

of economic instruments is also discussed as a possible tool to achieve the reduction of CO2 emissions, but national consensus has not been built about their introduction. Industries favored the voluntary approach based on unilateral commitments in order to avoid government regulation while preventing the introduction of an energy / CO2 tax.

3.1.3 Go beyond existing goals

Energy Conservation Law can set energy conservation targets or criteria for factories, houses, cars machines, electric appliances, etc., but they are guidelines rather than strict regulations: it is difficult to find legal grounds to regulate energy consumption itself as it is closely related to our all activities and CO2 itself is not a harmful substance. Industries do not like to have restriction on their activities through energy use regulation while they are aware of the growing pressure demanding them to take some stronger actions for energy conservation and the reduction of CO2 emissions. Voluntary action plans will facilitate industries to take measures which are not required by law and to go beyond existing goals set by laws.

3.1.4 Foster private sector participation

The Basic Environmental Law states the importance of collaboration and participation of industries and all other stakeholders. There need be some effective mechanisms to foster the participation of private sectors. Voluntary action plans provide good incentives for member firms of Keidanren and other industrial associations to participate in voluntary environmental actions. Plans will provide a timely back up of environmental divisions of business firms to upgrade their power, helping them take a leading role inside their organizations. It should be noted that a wide range of industries including transportation, distribution, foreign trade and non-life insurance have presented their plans as shown in **Tables 6 and 7**

3.2 Motives of the private sector

3.2.1 Avoid public regulation and government intervention

Growing public concerns about the global environmental issues stimulated the decision of industries to take stronger environmental actions. In the early 1990s, pushed by stronger public opinion, or based on the willingness of their own, business leaders committed to take steps for global environmental protection. The Keidanren's general policy direction is in line with this movement. Keidanren advocates that each corporation is responsible for its own business activities, and that the ongoing reforms including deregulation and the easing of regulations should in turn allow corporations more freedom in business. It also presents its recognition that more freedom means more responsibility, while stressing the importance of self-disclosure and self-reassessment.

There is common understanding in the Japanese society that the Japanese-style management backed by government support and guidance has contributed to Japan's rapid economic growth in the post-war period, but now it has reached its limits. Today, there is a growing criticism against the traditional Japanese government system of administrative guidance that allows government ministries and agencies to use discretionary power to guide private sector activities. At the same time, it was also true that industries benefited by the protective industrial policy of the government. For the reform of Japan's

administrative systems towards deregulation and use of private sector initiatives, it is necessary for government to change its interventionist policy but also for industries to be self-reliant.

There is a conflict for leadership between the government and industries: private firms wish not only to avoid public regulation but also minimize government interventions which usually take the form of administrative guidance, while government ministries and agencies stick to retain their control over business activities. Voluntary action plans of industries were adopted to strike a balance of these two moves.

3.2.2 Avoid the criticism by NGOs and citizens

Against the industrial initiatives, there is a question raised by NGOs and citizens about whether capitalistic business activities can be really compatible with environmental protection. Industries had to clearly demonstrate their policies to cope with new environmental issues. Voluntary action plans were a good option for industries to make their good image and avoid the criticism by NGOs and citizens.

3.3 *Economic context*

Today's Japan is suffering from the procrastinating after-effects of bubble economy, and the reform of economic structures and government system has become a central policy issue. Enforcement of new environmental regulation and the use of economic instruments such as a carbon tax can not be accepted by industries in today's economic condition of the country, as they might cause impact on national economy. Businesses in general would like to avoid government regulation and intervention. Instead, they would prefer to take measures based on their own initiatives rather than under government control.

3.4 *Environment context*

Global environmental issues, especially global climatic change, became the central policy issue in the country. With respect to CO₂ emissions in Japan, emissions from the industrial sector have remained essentially unchanged despite the economy almost doubling in size, while emissions from households and transportation-related services have nearly doubled in the past two decades. Therefore, priority of the national global climate policy should be given to households and transportation sectors rather than to industry sector. It has been recognized that regulatory measures targeting industrial activities would not be an effective method to cope with these global issues.

3.5 *How do VAs operate vis a vis other policy instruments*

3.5.1 VA vs. administrative guidance

Administrative guidance is not based on laws but it has compulsory power in many cases. Private firms wish not only to avoid public regulation but also minimize government interventions which usually take the form of administrative guidance. Industries generally wish to avoid environmental regulation. In return to avoiding regulation, they have accepted administrative guidance requiring them to take measures which were beyond the existing regulation. Many pollution control agreements were the outcome of the administrative guidance rather than that of the pure initiatives of industries. It is stated

that voluntary plans were prepared in order to avoid government control, but voluntary plans and administrative guidance are complementary to each other. Using various tools of administrative guidance, government can be informed of the implementation of the plans. The voluntary action plans of industries are taken into account in the national plan of long-term energy demand and supply although they have no legal ground.

3.5.2 *VA and National and Local Environmental Plans*

Central and local governments recently presented a number of environmental plans. They include the Basic Environmental Plan of the central government and similar plans of local governments which were prepared in accordance with the Basic Environmental Law. In addition, there is a national action plan for stabilizing the global warming, setting forth the national targets regarding CO₂ and other greenhouse gases emissions, and some local governments also have similar plans: these plans so far had no legal basis although they will be given a legal status if the Draft Global Warming Law is passed by the Diet. These plans, however, are mere guidelines illustrating general policy directions and possible technical and other solutions, not having legally binding targets.

In order to implement the plans and achieve the goal, a wide variety of extensive and long-term measures to guide citizens and businesses are essential. Consultation and consensus-building among diverse sectors are especially needed, but such tasks are difficult to be carried out by a sole effort of the central government. Here, voluntary plans provide good impetus for member firms to participate in various environmental activities.

Although government can not officially intervene in implementation affairs of the plans, it carefully watches how plans are implemented. Government is especially concerned about the achievement of the goals as it is closely related to the long-term energy plan of the government: it is no exaggeration that the government plan to achieve the internationally committed reduction targets of GHGs is based on the presumption that voluntary plans of industries will be faithfully implemented. Thus the government has a good ground to intervene in the plans.

4. **Objectives of the Voluntary Action Plans**

Objectives of the voluntary action plans are measures to combat global warming, waste disposal measures, environmental management system and environmental conservation in overseas business activities. In particular, measures to combat global warming are playing increasingly important roles as they are the commitments of Japanese industries to achieve the reduction of greenhouse gases. Many industrial circles have established quantified objectives, including a completion target date of 2010, as part of their voluntary plans. Some industries, on the other hand, presented qualitative objectives which are very general.

Time frame and schedule of the plans conform to the international agreements such as Kyoto Protocol to the UNFCCC.

The objectives were decided by experts of relevant industrial associations and their member firms after assessing the available technologies at present and in the future. A characteristic of the voluntary action plans is that they are prepared based on a consensus of member firms. In some industries, there may be no significant difference in the technology level and financial capability among their member firms, while others may find significant difference among their members. A serious

question to be raised here is whether their objectives are decided taking into account the best available technologies, or they are leveled down to take into account the difficulties of weak firms. The lack of verification mechanism about the appropriateness of the targets is a common limitation of unilateral commitments.

5. Parties involved in the Voluntary Action Plans

5.1 *Private sector*

It is member associations of Keidanren that prepared the industry-wise action plans. Trade organizations include the Electric Power Industry Association which consists of the nine power companies which supply electric power throughout Japan, five of which account for 85% of all power supplied in the country. Others are the Japan Steel Association, in which five enterprises which produce two-thirds of all the crude steel take the lead; the Japan Automobile Industry Association, which includes the five enterprises which manufacture most of the vehicles as well as many suppliers of parts; and the Petrochemical Industry Association, which includes a large number of enterprises, many of which are members of this association. Other organizations include the Japan Paper Manufacturing Industry Association and Cement Industry Association.

Voluntary action plans were prepared by 37 Industry organizations. Members of industrial organizations are individual firms. Main members of Keidanren and their member organizations are larger companies, and they account for a dominant part (80-90 percent) of the total energy consumption in industry sector. Japan Iron and Steel Federation, for example, has about 70 member firms which account for 96-97 percent of the total energy consumption in iron and steel industry in Japan.

5.2 *Public authorities*

Voluntary action plans are unilateral commitments, having no participation of central government, nor regional and local governments. Although they have no legal basis, MITI may request industries to make a report on their implementation of plans as it is useful for MITI to enforce its Energy Conservation Law and other related laws. This is a traditional administrative guidance method of MITI.

If Environment Agency's Global Warming Law is passed by the National Assembly, voluntary action plans may have a quasi-legal status as the law requires businesses to prepare plans concerning the measures for reducing greenhouse gases.

5.3 *NGOs*

Any NGOs such as consumer groups, local residents and "green parties" participate in the plans. There is no mechanism to allow NGOs to participate in the verification.

6. Monitoring

Monitoring will be conducted by "self monitoring" and the reports are made public. There are criticism from consumer groups and green parties for that they can not participate in the review and verification. Therefore, Keidanren and its member organizations as well as their member corporations are

strengthening their effort to disseminate information about their environmental activities. Many organizations and corporations have published detailed reports explaining their environmental management systems and performance.

Japanese businesses generally do not like their activities reviewed by NGOs and citizens. Instead they rather prefer to receive reviews by public authorities such as MITI's Industrial Structure Committee. Industries are called to the committee to report their achievement in energy conservation and emission reduction of CO₂. This reporting mechanism may be used as verification schemes of voluntary action plans although it has no legal ground. By receiving reviews by government bodies, they can find a good excuse for not receiving reviews by NGOs and citizens. In Japan's traditional political culture, reviews by government bodies are considered something like public accreditation. Thus, there is a very peculiar relationship between industries and government: industries state that voluntary action plans are made by their own initiatives, but they prefer to receive reviews by government rather than by NGOs and citizens for verification of their plans, thereby allowing a room for government to intervene in the voluntary actions by industries.

7. Implementation issues

7.1 *Involvement of public and other stakeholders and transparency issues*

As the voluntary action plans are industry-wise collective plans based on group decisions, trade associations such as the Japan Iron and Steel Federation (JISF), Japan Chemical Industry Association, Federation of Electric Power Companies, etc. makes and implements the plans and conduct monitoring with participation of experts from member firms. The plans do not go for the environmental performance of individual member firms. The data to be made public are the total energy consumed or the specific energy consumption per unit production of that industrial sector. These macro data have been annually published by MITI, and there will not be a question about the transparency and reliability of these data. A larger question is how to verify the rationale of the self-determined targets and how to prove that industries have made their best effort to go beyond the business as usual scenario. Another question is the performance of individual firms.

The plans are made public. Many trade associations and corporations have published environmental reports as an effort to improve the transparency of their actions. These report generally include policy statements and detailed technical data explaining their programs and achievements.

By administrative guidance, implementation reports of the plans are submitted to the review by relevant government bodies although the plans have no legal status. This review scheme simply follows the traditional administrative guidance system in Japan.

7.2 *Business as usual scenario*

In its action plan, for example, the Japan Iron and Steel Federation (JISF) expresses its views that Japanese steelmakers have endeavored to develop and introduce useful technologies for energy saving, and have been remarkably successful; the results of these efforts are an improvement in energy efficiency by about 20% since the first oil crisis, and production of steel with the highest energy efficiency and lightest environmental load in the world. It also states little room is left for further energy saving, and the improvement that can be made comes at a higher cost than before. It lists up the major energy-saving

measures taken so far: (a) Introduction of highly efficient equipment and improvement of operational practices (automatic combustion control in coke ovens, improvement of heat transfer efficiency of reheating furnaces, etc.) ; (b) The elimination and concatenation of some production processes (continuous casting, continuous annealing, hot direct rolling, etc.) ; (c) Recovery of waste energy (coke dry quenching, blast furnace top pressure recovery; etc.).

With respect to future actions, JISF states that steelmakers will endeavor to save energy by further increasing the use of energy recovering equipment, improving the efficiency of production facilities, and accelerating the introduction of next-generation steelmaking technology, and that these actions are expected to result in an approximately 10% reduction in steelworks energy consumption by 2010 from the 1990 level, assuming steel output in 2010 remains at the current volume.

The above figures are precise, but it is almost impossible for ordinary citizens to verify their validity and appropriateness. It is difficult whether the plan does simply ratify existing technologies or foreseeable achievements that would have occurred anyway in a “business as usual” scenario. Many plans list up the possible technologies to be adopted, but there may be a question whether they are the best available technology or not. It was pointed out that the total energy consumption in 2010 obtained by the summing up of the industry-wise data will not meet the reduction target of the country.

7.3 *Considerations to SMEs*

Member corporations of Keidanren and its member organizations are larger enterprises in Japan, and SMEs are excluded from it. There are a greater number of SMEs, but major portion of energy consumption is accounted for large enterprises. How to promote environmental actions by SMEs is a question remained.

7.4 *Link to the Responsible Care activities*

In the case of chemical industries, voluntary action plan is closely related to its responsible care activities. The Japan Chemical Industry Association (JCIA) established the Japan Responsible Care Council (JRCC) in 1995. JRCC is promoting the RC activities in chemical industry in Japan, covering a wide range of issues such as environmental preservation, human safety, and health. RC activities include the four major objectives presented by Keidanren.

8. **Assessing the effectiveness of VAs**

8.1 *Environmental effectiveness*

After COP3 in Kyoto, greater importance is attached to the voluntary action plans of industries. They are regarded as the public commitments of Japanese industries to take serious steps for energy conservation and emission reduction of CO₂.

In most countries, a large portion of CO₂ is emitted from industrial facilities including electric power plants and manufacturing factories. In Japan, it is roughly estimated that a dominant part (80-90 percent) of CO₂ emission from those industrial facilities is accounted for about 3,000 specific plants and factories. Moreover, almost a half of industrial CO₂ emissions are from four major sectors: iron and steel, petrochemical, cement, and paper and pulp. Thus, if it is administratively feasible, regulation and

guidance to these larger plants and factories of specific industries would prove effective by inducing them to take stronger actions for energy conservation and CO₂ emission reduction. Japan's industrial pollution control policy has been based on a similar idea and approach, and it made a success in the control of traditional pollutants. New energy conservation program of MITI takes a similar approach. Thus Japan has used this method as a part of its industrial policy based on administrative guidance practices, reporting systems and human networks of government authorities and business officials.

Today, there is a strong voice requesting deregulation. Voluntary action plans are an alternative of administrative guidance. They are prepared by industries, but their actual implementation is monitored by MITI and other government departments using various tools of administrative guidance. In other words, effective implementation of the voluntary action plans are ensured by administrative guidance of the government.

8.2 *Economic efficiency*

Voluntary action plans have flexibility allowing industries to choose most economical ways to achieve the targets. As plans are made industry-wise, economic implications may differ among industries. However, it is a unanimous opinion that industries welcome this approach as it allows freedom and discretion of determining their own measures by assessing technical and financial implications. It is generally believed that voluntary approach will provide real cost savings in comparison to rigid regulation or administrative guidance.

8.3 *Administration and compliance costs*

Administration and compliance costs relate to the administrative and managerial cost burden imposed on the administrative bodies responsible for applying the instrument. A considerable amount of clerical and research works are imposed on Keidanren, its member firms and industrial organisations, but their cost is relatively small and most works are done as a part of their ordinary jobs.

8.4 *Wider economic effects*

Wider economic effects include, *inter alia*, impacts on the price level, income distribution, employment and trade. There is no data to detect these effects, although voluntary action plans are thought to have lesser economic effects than government regulation. Japanese industries proclaim that voluntary approach will have smaller economic impacts than economic instruments such as CO₂ tax, but it is difficult to prove their idea.

8.5 *Competitiveness implications*

The competitiveness implications of VAs may be of particular relevance: potential industry collusion on the domestic market; potential nontariff barriers to trade on the international market. An important characteristic of the voluntary action plans is that they are industry-wise plans prepared by relevant industrial associations. They are based on the consensus of member firms, and it seems unusual for them to set a very stringent target which some member firms feel difficult to achieve. Agreements may play a role of cartels to harmonise the level of environmental measures, giving disincentives for competition and stronger actions. They may even act to discourage the effort of strong firms with the

most advanced technologies, while protecting weak members. There need be some mechanisms to verify their performance and stimulate competition among member firms, but industries do not like to disclose information to the public. There is a risk that industry-wise collective plans may have negative effects on the competition among firms.

For energy conservation, MITI will publish the names of “top-runners”, i.e., companies which achieved the best energy conservation target. Voluntary action plans are not legally linked to Energy Conservation Law, but various administrative guidance tools are used to stimulate business to make more efforts towards more stringent targets.

In the case of steel and iron industry, about 70 companies account for the dominant part of its total energy consumption, and about five large companies dominate the market. There is no significant gap in technology these large companies have adopted, and all companies set almost the same reduction targets for energy consumption and CO₂ emission. They would take cooperative and collective actions to achieve the targets while keeping in mind the competitiveness with foreign companies. They think energy conservation efforts of Japanese iron and steel industry has been one of the best in the world and there do not remain many cost-effective technologies.

8.6 *Dynamic effects and innovation*

Dynamic effects and innovation: whether VAs will effectively stimulate innovation in pollution control technologies is an open question. VAs will stimulate innovation if they go beyond a “business as usual” scenario and if they induce private firms to cooperate in R&D programmes and share information [Lévêque (1996)]. The industry-wise targets are decided by consensus of member firms, and all member firms have collective responsibility to achieve the targets. If this system works in a positive way, it will encourage the cooperative efforts of firms for development and transfer of technology through information sharing. In an opposite case, however, it may guide all firms to take uniform measures just to follow a “business as usual” scenario which could be realised without special efforts.

8.7 *“Soft effects”*

“Soft effects” refer to various possible effects of policy instruments in terms of e.g. changes in attitudes and awareness, capacity building, and the generation and diffusion of information. Although difficult, if not impossible, to quantify, these effects are often quite relevant. The plans play a very important role for Japanese firms to be aware of the need for taking improved environmental actions. It caused changes in environmental awareness and attitudes of business firms. It also facilitated the dissemination of information which were possessed by industries.

8.8 *Viability and feasibility*

Viability and feasibility: According to Lévêque, “the biggest political threat to VAs arises when they lack credibility in the eyes of public opinion and NGOs”. Therefore the VA must be transparent and accountable vis à vis all stakeholders and the general public. This is exactly true with the voluntary action plans in Japan. They have little transparency to the general public. Some industries prepared public reports explaining the rationales of their plans and verifying their performance, but they are one-sided statements having no mechanisms to receive public comments.

9. Conclusions and general assessment

Japan's environmental policy is now in the time of reform. Its major trend is a shift from "command and control" to "voluntary actions". A number of policy instruments such as environmental plans of central and local governments, voluntary plans of industries, environmental education to consumers have come to play greater roles.

In certain areas such as the control of pollution and energy efficiency, regulation and standards are still an effective tool if they are properly designed and used in combination with economic instruments. Traditional methods of administrative guidance in industrial policy would also be effective as far as their targets are limited to pollution control and energy conservation in specific plants and factories. However, they must be made more transparent, and their limited applicability should be noted. To avoid the rigid application of regulation and strong administrative guidance by government, businesses are emphasizing the role of voluntary and self-regulatory attempts based on their own initiatives which are as much as possible free from government control. Voluntary approach is believed to be more cost efficient as they allow freedom of choice to industries. For their efforts, new mechanisms such as eco-audit or environmental management system with ISO 14000 have spread rapidly in various industrial sectors in Japan.

In the 1990s, Japanese industries adopted voluntary action plans, especially to cope with new issues such as global warming. The plans were intended to create new industrial initiatives free from government and avoid government regulation and introduction of economic instruments such as a CO₂ tax. However, they can not be implemented solely. Unilateral commitment approach has a weakness in its transparency and verification system. Therefore, the plans are used as a supplementary mechanism of traditional administrative guidance of the government. Government takes into account the industry-wise voluntary action plans in its long-term plans for energy demand and supply although the plans have no legal basis. In this respect, administrative guidance by government and voluntary action plans of industries play complementary roles.

By adopting voluntary approach, Japanese industries avoided new government regulation, but they have not completely succeeded in avoiding administrative guidance. In order to avoid government intervention, industries have to improve the transparency of their activities: they have to more communicate with NGOs and the public, making their information more open to the public. Many trade organizations and corporations have prepared environmental reports to publicize their environmental activities although there is very few cases in which public reviews by NGOs and citizens are made.

Table 1. Measures to cope with global warming: Energy Industries in Japan

Industry	Target	Measures
Coal (Japan Coal Association)	<ul style="list-style-type: none"> • The amount of recovery of methane gas generated in the process of extracting coal will be raised 44% in 2010. • Amount of electric power used will be reduced 57.5% by 2010. The amount of lumber used will be reduced 70.4%. (All figures are percentage of 1995 figures.) 	<ul style="list-style-type: none"> • Cut down use of electric power through structural adjustment and technological improvement. • Cut down use of lumber by improving extraction method and mine shaft maintenance. • Restrict release of methane gas into the atmosphere and use the recovered methane gas as a resource.
Petroleum (Petroleum Association of Japan)	<ul style="list-style-type: none"> • The energy saving targets for FY 2010 compared to the levels in FY 1990 are as follows: • Reduction of oil refinery compensating energy unit requirements by 10% • Reduction of the amount of fuel used for transportation on both land and sea by 9% • Reduction of the amount of oil consumed by 1 million kiloliters per year through increased use of co-generation • Study of the possibility of further reducing the annual rate by 1%. 	<ul style="list-style-type: none"> • Recovery of low-temperature waste heat • Effective use of low-pressure steam • Development of advanced catalyzers • Development of desulfurization using microorganisms • Making trucks larger and rationalizing delivery to increase the load per vehicle • Making boats larger and raising the stowage factor • Making the internal distribution between primary distributors more efficient to reduce total transportation amounts and distances • Linkage with the housing business sector to promote positive introduction of oil central water heaters and heating systems
Electric Power (Federation of Electric Power Companies)	<ul style="list-style-type: none"> • Efforts will be made to reduce in 2010 the CO₂ emission per unit of output in the electric power industry as a whole by about 20% as compared to the 1990 actual. As a result, although the electric power output in 2010 is expected to increase 1.5 times over 1990, the amount of CO₂ emission will be kept down to an increase of about 1.2 times. 	<ul style="list-style-type: none"> • Promotion of the best mix of electricity sources centering on atomic energy power generation. • Promotion of efficient use of energy. • Promotion of adoption and wide dissemination of new energy. • Promotion of technological development for recovery, disposal and stabilization relating to CO₂. • Support for energy-saving in the use of electricity, etc.
Gas (Japan Gas Association)	<ul style="list-style-type: none"> • In 2010, energy efficiency will be raised by 15% over 1990 in the manufacturing/distribution stages and the consumption stage. (The CO₂ reduction will be equivalent to about 3,300,000 tons in terms of carbon.) 	<ul style="list-style-type: none"> • Promotion of popularization of natural gas. • Promotion of efficient use of energy.

Table 2. Measures to cope with global warming: four energy consuming industries

Sector	Target	Measures
Steel (Japan Iron and Steel Federation)	<ul style="list-style-type: none"> • Promote energy-saving in production process (reduce energy consumption in 2010 by about 10% as compared with 1990) • In coordination with regional community, make use of plastic waste and unused energy (down equivalent of about 3%) • Supply of high-grade steel which will make it possible to save energy when using steel material. (Down similarly about 4% in society as a whole.) • Contribute to energy conservation through international technological cooperation. 	<ul style="list-style-type: none"> • Wider dissemination of existing energy-saving technology; promotion of practical application and popularization of revolutionary technology. • Use of plastic waste at steel mills through cooperation of state and regional community and use of used and unused energy in regional community. • Development and dissemination of high-function steel (high tension steel plate, electromagnetic steel plate, etc.) • Cooperation in energy-conservation measures of joint implementation activity, etc.
Cement (Cement Association of Japan)	<ul style="list-style-type: none"> • The industry average unit requirement for total fuel in FY 1990 was 2940 kj per 1 kg of cement clinkers. (2720 kj per 1 kg of cement by the year 2005 has already been stated as its target by the German Cement Industry.) The industry average for amount of electricity used was 95.4 kwh per 1 kg of cement. Both of these figures below the levels for other advanced countries. • Therefore, the Association does not indicate specific target values, but will strive to reduce energy consumption as much as possible. 	<ul style="list-style-type: none"> • Expand the use of fuel-substitute waste • Promote the usage of remaining heat • Expand the production ratio of mixed cement • Convert inefficient facilities into highly efficient ones • Promote joint operation
Paper manufacturing (Federation of Paper Manufacturers in Japan)	<ul style="list-style-type: none"> • Intend to reduce the unit requirement of energy purchased to 10% of the 1990 level by the year 2010 (1973 • ->1994: reduced 40%) • Strive to support planting operations inside and outside Japan to expand owned or managed tree planting areas to 550,000 ha by the year 2010 	<ul style="list-style-type: none"> • Positive introduction of energy-saving production facilities and systems • Strive for improvement of energy conversion efficiency and economic efficiency • Promotion of utilization of fossil fuel substitute energy • Effective use of combustible waste
Chemical (Japan Chemical Industry Association)	<ul style="list-style-type: none"> • Efforts will be made to reduce the energy input per unit of output in 2010 to 90% that of 1990. 	<ul style="list-style-type: none"> • By making use of various technologies possessed by the chemical industry, efforts will be made to develop process technology relating to energy conservation and environmental harmony.

Table 3. Measures to cope with global warming: automobile manufacturing and transportation sectors

Industry	Target	Measures
Automobile (Japan Automobile Manufacturers Association)	<ul style="list-style-type: none"> • Will aim for certain attainment of the fuel target for gasoline sedan cars in the year 2000 and the fuel target for gasoline trucks in the year 2003. • Regarding CO₂ resulting from the consumption of energy in the automobile • manufacturing process, in 2000 it will be stabilized at the 1990 level. 	<ul style="list-style-type: none"> • Raise automobile's fuel efficiency. • Disseminate low-emission cars. • Cooperate in joint implementation activities. • Regarding CFC12, push study of system from recovery to destruction. • Conduct on continuing basis the movement to educate the public on energy-saving driving, etc.
Transportation (Japan Trucking Association) (Provisional plan)	- None	<ul style="list-style-type: none"> • Implementation of measures against noise pollution. • Promotion of the NO_x Law. • Implementation of proper driving, etc. • Promotion of joint transportation and delivery. • Promotion of adoption of low-pollution trucks, etc.
Rolling Stock (Japan Association of Rolling Stock Industries) (Provisional)	<ul style="list-style-type: none"> • By the year 2000, stabilize the CO₂ gas exhausted as energy is consumed in the rolling stock production process at the 1990 level. 	<ul style="list-style-type: none"> • As a measure to reduce weight for higher speed and to save energy, promote the introduction of cars made of stainless steel and aluminum alloy.
Aviation (Three-Airlines Liaison Committee on Environmental Problems)	<ul style="list-style-type: none"> • By 2010, CO₂ emission per transport unit (passenger seats-distance) will be reduced by 10% from the 1990 level. 	<ul style="list-style-type: none"> • Promotion of adoption of new type aircraft and switching equipment and materials to new type aircraft. • Adoption of future aircraft navigation system (FANS), etc. • Energy-saving at offices and plants.

Table 4. Measures to cope with global warming: construction and housing

Industry	Target	Measures
Construction (Japan Federation of Construction Contractors, others)	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • At the designing stage, consider the use of materials and energy systems of low CO2 emission. • In future, set up a concrete CO2 reduction target and make efforts to attain it. • As an emission source of CO2, construction activities' 1.3% is small. However, construction-related activities account for one-third of all Japan. Therefore, the construction industry will coordinate with related industries to grapple with the problem.
Housing (Japan Federation of Housing Organizations) [Preliminary Plan]	<ul style="list-style-type: none"> • Targets for reduction will be established in order to bring CO2 emissions after the year 2010 down to the same level as in 1990. 	<ul style="list-style-type: none"> • Measures will be taken to enhance the efficiency of houses and to increase their useful lives. • Through concerted action with related industries, efforts will be made to achieve reductions of emissions resulting from the manufacture of construction materials. • Through advancing the development of new technologies related to construction work, efforts will be made to further reduce the industry's burden on the environment. • Efforts will be made to reduce emissions in the use of housing, in its demolition and its disposal.
Real Estate (The Real Estate Companies Association in Japan)	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Controlling the burden of energy use caused by building operations, through insulation, greater incorporation of greenery, etc. • Evaluating energy-saving measures based on the use of energy-saving equipment and systems, regional air-conditioning systems, co-generation, etc. • Supporting the development of new or unexploited sources of energy, and promoting their use. • Encouraging close coordination with related industries in order to adopt the use of greenery-related products and innovative technology at the stage of planning and design. • Promoting awareness-raising activities among users of building facilities and other persons.

Table 5. Waste Disposal Measures in Voluntary Action Plans of Some Manufacturing Industries

Industry	Target	Measures
Electronics (Electronic Industries Association of Japan, others)	<ul style="list-style-type: none"> • Target will be set only for waste from plants as follows: Final disposal volume will be reduced in 2010 by more than 40% from 1992. • The target for recycling in 2010 will be set at over 60%. 	<ul style="list-style-type: none"> • Use of LCA methodology, etc. • Recover waste separated according to type, push recycling thoroughly. • Introduce heat recovery facility, etc.
Beer Brewing (Brewers Association of Japan)	<ul style="list-style-type: none"> • To promote reduced use and recycling of containers and packaging • (maintaining a continuous recovery rate (99%) of the returnable bottle system) 	<ul style="list-style-type: none"> • Raise the recycling of surplus dirty slush and waste diatom. • Reduce surplus dirty slush by means of unpleasant air processing. • Raise the recycling rate of label dust, raw material bag and used paper.
Chemical (Japan Chemical Industry Association)	<ul style="list-style-type: none"> • In 2010, reduce by 40% from 1990 the volume of outsourced final reclamation dumping of industrial waste. • Increase the recycling of industrial waste in 2010 by 15% over 1990 	<ul style="list-style-type: none"> • By promoting Responsible Care, each company will implement voluntary control without fail.
Automobile (Japan Automobile Manufacturers Association)	<p>The rate of possible recycling of new car models after the year 2002 will be more than 90%.</p> <p>The volume of final disposal of waste in 2000 will be less than 40% of the 1990 level.</p>	<p>Effective use of shredder dust generated from used cars.</p> <p>Development of technology for dismantling used cars and providing information about them.</p> <p>Reduce environmental burden substances, such as reducing lead use to half by the end of 2000 and to a third by the end of 2005.</p>

Table 6. Voluntary action plans: distribution sector

Industry	Measures to cope with global warming	Waste Disposal Measures	Environmental Management	Environmental Conservation in Overseas Business Activities
Department Store (Japan Department Stores Association) (provisional plan)	<p>Will establish stores that contribute to easing the environmental burden, such as by using clean energy and giving priority to installing energy-saving facilities and equipment.</p> <p>Will rationalize physical flow that takes the environment into consideration, such as by spreading hanger delivery in coordination with the apparel industry, using agent delivery of procurements, and joint delivery to customers, etc.</p>	<p>Will reconsider merchandise from the LCA standpoint.</p> <p>Will simplify packaging, restrict the use of packaging material, and use packaging material of small environmental burden.</p> <p>Will promote the reduction and recycling of waste produced in stores.</p> <p>Will conduct education of consumers and employees to enhance their environmental awareness, etc.</p>	<p>Keeping in sight the spread of environmental inspection by external organizations according to a standardized method, will study the international standards of ISO and LCA and will grapple with the structuring of voluntary environmental management that is consonant with the actual situation and of an in-house voluntary assessment system.</p>	
Chain Stores (Japan Chain Stores Association)	<p>Development of environmentally harmonious goods, etc.</p> <p>Positive purchasing of energy-saving goods, recycled products, etc.</p> <p>Making store more energy efficient</p> <p>Studying the introduction of a total energy efficiency improvement system, such as through the utilization of intermediate water.</p> <p>Improvement of the goods distribution management system, reduction in the number of vehicles and total operating distance through cooperation.</p> <p>Reduction of distribution routes, such as using on-demand supply systems and the amount of distribution materials used</p> <p>Completion of the stop idle movement.</p> <p>Make office work paperless</p> <p>Proposal and addressing of more energy-saving life styles to consumers</p>	<p>Improving the method of supply</p> <p>Completing fractional recovery for the purpose of making industrial waste into a resource</p> <p>Promoting paperless office work</p> <p>Promotion of simple packaging and no packaging</p> <p>Utilizing packaging materials that place less of a load on the environment</p> <p>Promotion of the movement to bring own shopping bags</p>	<p>With the issuing of ISO14001 in September 1996, recognition about environmental inspection has deepened in the retail sales circle. In the future, the Association will promote further study of environmental management systems and environmental inspection that meet the actual situation at chain stores.</p>	<p>In addition to complying with the Keidanren Global Environment Charter, the Association will consider how to keep from bringing Japan's idea of mass production, mass consumption and mass waste into the host country.</p> <p>The Association will eye enlightenment activities in developing countries concerning the environmental load caused by mass consumption and will provide our country's experience and knowledge to construct a recycle-society economic system that fits the country's situation.</p>

Table 7. Voluntary Action Plans: Service Sector

	Measures to cope with global warming	Waste Disposal Measures	Environmental Management	Environmental Conservation in Overseas Business Activities
Foreign Trade (Japan Foreign Trade Council)	<p>Target</p> <ul style="list-style-type: none"> • Make efforts to lower the volume of electricity, gas, and water consumption in 2010 to the level of 1990. <p>Measures</p> <ul style="list-style-type: none"> • Study the effect of corporate activities on the global warming phenomenon. • Transfer energy-conservation technology to other countries. • Preservation of forestry resources and promotion of reforestation business. • Adoption of energy-saving equipment, implementation of public education movement and periodic review of results, etc. 	<p>Measures</p> <ul style="list-style-type: none"> • Adoption of recycling technology of advanced countries and transfer of our country's technology and development of new technology. • Promotion of recycling business. • In offices, conduct recovery of waste separated according to type without fail. • When purchasing office supplies, green procurement will be promoted. 	<ul style="list-style-type: none"> • A study will be conducted on the designing of an environmental management system that is consonant with the business of trading companies and efforts will be made to use ISO14001. • For the purpose of reducing the environmental burden, positive guidance and advice will be given to relevant trading companies in accordance with the spirit of ISO14001. 	<ul style="list-style-type: none"> • In conducting operations overseas, the Keidanren Global Environment Charter shall be the action guideline in order to contribute through business to the host country's economic development and environmental conservation and to the enhancement of the welfare of the host country's people.
Non-Life Insurance (The Marine and Fire Insurance Association of Japan)	<ul style="list-style-type: none"> • Push further economizing on the use of paper resources. • Push conservation of energy resources in the office, such as electricity and gas. 	<ul style="list-style-type: none"> • Make efforts to raise the rate of use of recycled paper. • Raise the recycling rate of waste generated in offices and make efforts to reduce the volume of final disposal, etc. 	<ul style="list-style-type: none"> • Will make efforts to make use of environmental management systems such as ISO. 	<ul style="list-style-type: none"> • Will push enlightenment activities, such as in-house education and environmental education outside the company.