Vision for a Virtuous Circle for Environment and Economy in Japan

～Toward a Healthy, Rich and Beautiful Environmentally-Advanced Country～

May 2004

Ministry of the Environment

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(Summary)

The aim of the vision is to establish a "Healthy, Rich and Beautiful Environmentally-Advanced Country" by realizing "virtuous circle for environment and economy", based on the concept that our actions for environmental issues will boost the economic growth while the resultant economic growth will further improve the environment. FY2025 is set as an interim goal to accomplish this vision.

1. “The market that fully recognizes the value of the environment” provides the groundwork for “building a virtuous circle for environment and economy.” Such a market is created by the following actors.

   (1) Consumers who care for the environment and consider the environmental impact when purchasing goods and services.
   (2) Investors who provide funds to environmentally conscious businesses.
   (3) Businesses who supply the market with eco-friendly goods and services, and make efforts to reduce the environmental load resulting from their business activities. Educational institutions that conduct research on environmental technologies and develop human resources.
   (4) Civil groups such as non-profit organizations (NPOs) that play a role as liaisons for the community, linking citizens with businesses and government agencies. Government agencies that incorporate environmental perspectives in all policies and support citizens and businesses.

Enhancing the systems and contents of environmental information and developing human resources are key challenges for building a virtuous circle for environment and economy.

When these individuals and entities share the same concerns and cooperate with one another for the betterment of the environment, thereby establishing a partnership society, a virtuous circle for environment and economy is realized.

2. Steps have already been taken to establish a virtuous circle for environment and economy.

   (1) Life-enhancing environmental techniques: In Japan, advanced environmental technologies and eco-friendly methods and systems have successively been developed, and such techniques have started to gain the support of consumers.
   (2) Resources yielded by “feeling sorry for wastefulness”: Efforts to reduce, reuse, and recycle waste have sprung up everywhere.
   (3) Spirit and power fostered by nature: Having contact with nature nurtures our spirit and body, and cultivates our interest in the environment and nature. Substituting natural energies for fossil fuel is necessary for ensuring peaceful life while consuming the world’s finite resources.

3. An ideal image of 2025 is portrayed.

(1) Japan's economy and society

(i) Environmentally conscious consumption and eco-friendly technologies create employment opportunities and help build a society with sound material-cycle that cycles resources and achieves high energy efficiency. Service industries that contribute to reduction of environmental load are expanding.

(ii) Fuel-cell vehicles are in wide use and a safe and accessible transport system that exerts little burden on the environment is established.

(2) Community and lifestyle

(i) Countryside with beautiful nature attracts many visitors: More people are spending holidays in the countryside with abundant nature. This creates more jobs for such areas and enhances the environmental awareness among community members.

(ii) Towns where excellent manufacturing techniques help build a sound material cycle: Manufacturingof eco-friendly products and recycling business generate more jobs. Residents in such communities have high environmental awareness. They are passionate to promote reusing and cycling resources in cooperation with businesses.

(iii) Cities regenerated by environmental spirit: Japanese big cities attract the world's attention as a marketplace that offers cutting-edge environmental technologies. The cities have more greenery and better environment. Exchanges among community members flourish, thanks to environmental conservation activities by civil groups.

(3) Japan and the World

Japan is expected to contribute to the conservation of the global environment by spreading Japan's environmental technologies and eco-friendly lifestyle to the world.

4. We hope that specific measures will be incorporated in the next Basic Environment Plan to realize this ideal society, so that various initiatives will be promoted within Japan and spread throughout the world.

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（Central Environment Council Recommendation, May 2004）

Table of Contents

Vision for a Virtuous Circle for Environment and Economy in Japan
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1. Introduction

(1) What this vision aims for

To make Japan a more attractive country in the 21st century, citizens must cooperate in establishing a virtuous circle for environment and economy. This is the country where our actions for environmental issues will boost the economic growth while the resultant economic growth will further improve the environment.

Although Japan does not have abundant resources, it is blessed with a beautiful, diverse nature and has the most advanced technology in the world. If there is a country that can establish a virtuous circle for environment and economy, Japan is without a doubt equipped with the means to become one.

When a country embarks on a journey toward becoming a sustainable society in which human activities are in harmony with the global environment, it will come to a deadlock if it pursues the interest of the economy or the environment separately. In order to build a virtuous circle for environment and economy, members of the society must make a concerted effort to have a desirable vision for the future, develop a feeling of mutual trust and cooperate with each other, share roles, and steadfastly fulfill their own social responsibility as a consumer, educator, business operator, government official, etc.

The vision is presented here with a distinct and easy-to-understand future image, to serve as a first step forward towards realization of a sustainable society. It declares 2025, the year when the children born in this fiscal year will celebrate the coming-of-age, as one of the goal lines of the efforts to make Japan a “healthy, rich and beautiful environmentally-advanced country.”

(2) Background

In June 2003, a report entitled “Aiming at a Virtuous Circle for Environment and Economy” was prepared by the “Discussion Meetings on Environment and Economic Activities” hosted by the Minister of the Environment. The report emphasized the importance of building a virtuous circle for environment and economy and pointed out that “integration of the environment and economy” in which economy and environment improve simultaneously by the virtuous circle is the desirable society of Japan in 21st century.

With regard to the direction for policy measures, the report called for the promotion of environmental actions by consumers and businesses, enhancement of the foundation for translating environmental actions into financial benefits, promotion of technological innovation and propagation of it, etc. Above all, the report pointed out that it is necessary to develop a clearly defined vision with a medium- and long-term perspective in order for people, businesses, and government to work together to build a virtuous circle for environment and economy.

In response to this recommendation, the “Expert Committee for a Virtuous Circle for Environment and Economy” was set up under the “General Policy Committee of the Central Environment Council” in September 2003.

2. Direction for and challenges to a virtuous circle

(1) Groundwork for building a virtuous circle

(i) Actors who create a virtuous circle

(Consumers who set the value standard and create demands)

“The market that fully recognizes the value of the environment” provides the groundwork for building a virtuous circle for environment and economy. An environment-conscious value standard and the demand of the market are created by consumers who care for the environment and base their purchasing decisions of goods and services on the basis of proper understanding about environmental impact of them, such as resource conservation, energy efficiency, and long product life.

(Investors who provide funds)

It is important that investors often use the environmental conservation activities of businesses as a criterion for investment. They evaluate whether a corporate activities are in congruence with their value standard and needs of consumers when they make a investment decision. They hold high regard for a business operator that employs eco-friendly technology and develops, produces, and distributes eco-friendly products and services and it makes easy for such a business to raise funds.

(Businesses who provide goods and services, and educational institutions that develop human resources)

In such market, businesses who have a will to improve the state of the environment and make efforts to provide environmental information to environmentally conscious customers will see growth in their sales, increase profits, create jobs, and bring economic growth. Businesses who adopt “Corporate Social Responsibility” as a management principle for their operations and are doing well in their businesses will make further contributions to the environment by developing more advanced environmental technologies, and mechanisms and social systems that reduce environmental load, introducing eco-friendly goods and services to the market, teaching environmental management to their employees, and reducing environmental load from business operations. Businesses in distribution, financing, and information, who serve as liaisons between consumers, investors, and manufacturers, are also important. Universities and technical colleges that develop both environmental technologies and human resources, and schools and local educational institutions that offer environmental education and learning also play an important role.

(Government agencies and civil groups that bring together members of the community)

The opportunity for various members of the community to cooperate in undertaking environmental conservation activities while creating new values brings them the joy of participation. Civil groups, such as NPOs, have taken on an increasingly important role as liaisons for the community. Local and national governments are also part of the community. National and

local governments should cooperate and fulfill their responsibilities to integrate environmental considerations in all policies. They should also establish a socio-economic system that supports the environmentally conscious actions of citizens and businesses. It is also important to expand this approach to an international level.

(ii) Challenges to realizing a virtuous circle

(Transition to the environment-conscious market)

Every individual's action is obviously important, but that alone is not effective enough. The key to building a virtuous circle is for various individuals to establish mutual trust and for every individual to fulfill his/her role in working towards a common goal. Unfortunately, the existing market mechanism may not be pointing in the direction of improving the environment because it lures consumptive behaviors with low prices rather than with environmental considerations.

To change this situation, various measures have been taken up to now. They include promotion of technological development, incentive/disincentive measures, such as favorable taxation for low emission vehicles, clamping down on illegal acts such as illegal dumping, government agencies taking the lead in greening operations, and voluntary actions by businesses and civil groups. The report introduced at the beginning of this document presented the basic direction for policy measures. In the following sections, issues pertaining to each specific area will be described. It is necessary to make further efforts to establish strategic systems that will clearly reward environmentally conscious businesses. For all these measures to achieve the expected results and to establish a virtuous circle for environment and economy, environmental information and human resources development are crucial.

(Environmental information that help bring forth a virtuous circle)

For consumers to properly select eco-friendly goods and services, it is necessary to have adequate environmental information available to the businesses, consumers, investors, and communities. For example, many of the eco-friendly products are priced higher than conventional products. In order to secure storefront space for these products to make them readily available to consumers, the manufacturers, distributors, and retailers must share environmental information. Manufacturers should make efforts to provide easy-to-understand information, by using environmental labels for example, to explain the environmental benefits of products in order to facilitate consumers in the selection of products. At the same time, it is necessary for consumers to know about and actively utilize this information as criteria for making selections. Information provided by government agencies, NPOs, and mass media, among others, will also motivate consumers and assist them in making purchase decisions. It is important for consumers and investors to gain access to information about, for example, the risk of chemical substances. It is desirable for eco-friendly products and services to create a new sense of value, and for users of eco-friendly products to adopt them as new status symbols.

(Human resources development that help bring forth a virtuous circle)

In addition to enrichment of environmental information about individual businesses or products, it is very important to nurture people who can appreciate and put the virtuous circle into practice. Environmental education and learning shall be promoted with special urgency because it is an important means to this end. Human resources with good understanding of the environment can be

developed for building a virtuous circle not only through school education but also through consumer education, workplace training, specialized curriculum in universities, lifelong learning in communities, and local activities. In addition, environmental consciousness can be nurtured and can be developed into one's sense of value through an eco-friendly lifestyle that pays attention to nature from childhood. Increasing contact with nature can cultivate one's appreciation for nature's beauty and a wholesome spirit to care for nature, protect it, and restore it.

When these individuals and entities share the same concerns and cooperate with one another for the betterment of the environment, thereby establishing a partnership society, a virtuous circle for environment and economy is realized.

(2) Immediate steps to build a virtuous circle

A virtuous circle for environment and economy cannot be achieved overnight. A first step must be taken now in order to reach that goal. Today, numerous initiatives have been launched to work towards the realization of that virtuous circle. The following introduces current undertakings, issues that shall be tackled beginning tomorrow, and goals pertaining to each specific area.

(i) Life-enhancing environmental techniques

Advanced environmental technologies and eco-friendly methods and systems, which are "environmental techniques" that can contribute to the conservation of the global environment, have successively been developed in Japan. These techniques have also begun to gain the support of consumers.

(Made-in-Japan cutting-edge environmental products)

For example, the latest models of refrigerators consume a fraction of the electricity consumed ten years ago. Many of Japan's electrical appliances, such as liquid crystal televisions and air-conditioners, have achieved the world's highest levels of resource conservation and energy efficiency. Japan's technology is also highly regarded throughout the world, including for example, low emission vehicles such as hybrid cars that have achieved a good balance between fuel consumption and acceleration performance. Japan has also made progress in material technology, such as light and strong steel plates and high-purity silicon, to support such eco-friendly products. Products to complement an eco-friendly lifestyle, such as fabrics that are cool in summer and warm in winter, have increased. Many of the technologies that Japan uses to reduce environmental load during production process are of the highest levels in the world.

(Environmental techniques created by tertiary industry)

"Environmental techniques" are not just for making goods. Leasing electrical appliances and furniture, and selling usable things at flea markets are also ways to contribute to the environment. Entrepreneurs, such as ESCO* that offers energy-saving services, have emerged. They recognize that what consumers want are not necessarily the products but the functions that the products deliver. A similar movement has also spread to the conventional manufacturing industry. For example, instead of selling fluorescent lamps, some businesses start offering "light" function generated by fluorescent lamps. Financial products with unique environmental appeal, such as Eco Fund, have increased. Progress is made in architectural techniques, such as heat insulation materials

and double glass for renovation, and in transportation techniques such as railroads and efficient distribution with low CO_2 emission.

* Abbreviation for Energy Service Company. It provides comprehensive energy-saving services. It is compensated by part of the benefits that the customer gains from energy conservation.

(Environmentally conscious consumers who promote the development of environmental techniques)

Japanese consumers, who are environmentally conscious and demand high quality, are the backbone supporting these technologies and techniques. Even if the environmental functions of each product are improved, if the quantity of products purchased per capita increases, the overall environmental load may increase. More and more consumers, however, have started to demand quality over quantity. Most of these demands, if directed towards an environment-conscious pursuit of "affluence that is healthy and beautiful," will create an immense market force. Furthermore, if more consumers actively request environmental information and ask constructive questions to provider, and government agencies and businesses provide more information, environmental communication techniques will also be improved.

(Strategy for innovative technologies)

There are some environmental techniques, such as the use of hydrogen energy, that are innovative but lack reliability, and therefore need a long term approach. These kinds of innovative technologies must be developed strategically, and infrastructure must be established based upon sufficient dialogue among businesses, communities, and government agencies.

(Goals pertaining to environmental techniques)

Changes in the consumptive behavior of consumers, businesses, and government agencies will further stimulate technological innovation of industries and help foster a virtuous circle, then the economy will be developed while reducing the environmental load (i.e. upgrading eco efficiency). The goals are to achieve the reduction commitment stipulated in the Kyoto Protocol (a 6% reduction from the 1990 level of emissions of greenhouse gases during the period between 2008 and 2012), establish a society that incorporates reduction of greenhouse gas emissions, and achieve long-term, continuous emissions reduction.

In order to realize this virtuous circle, it is necessary to step up "green consumption" to encourage purchase of eco-friendly goods and services. In a 2002 study, 31% of people surveyed answered, "take environmental impact into consideration when making purchase decision." The goal is to increase these individuals to over 80% in 2025.

(ii) Resources yielded by "feeling sorry for wastefulness"

The sentiment expressed in the Japanese term "*mottainai*" (feeling sorry for wastefulness) is the very attitude needed to preserve a beautiful Japan for future generations.

(Waste reduction and recycling)

Waste treatment has become a big issue for many local governments. Initiatives to reduce waste and to recycle have sprung up everywhere. Some local governments have succeeded in reducing waste by cooperating with residents and NPOs to enforce the collection of resources and create a recycling and reuse network, establishing the practices of bringing one's own shopping bags and

simplified packaging, and charging fees for the collection of domestic waste. Technologies also help reduce waste: technology to lengthen the service life of products, such as lighting equipment that consumes less electricity but has six times more service life, technology to make products smaller and lighter without compromising functions, and technology to substitute IT for the paper medium.

(Business models that reduce waste)

Instead of selling goods, providing the goods' functions as a service is also an effective means for reducing waste. For example, to provide the functions of goods as a service instead of the physical goods, some businesses expanding beyond the traditional business boundaries such as materials, products, distribution, or leasing services of electrical appliances targeting people living away from home on job transfer have emerged. Businesses who strive to reduce waste generated during the production process have increased in number. Businesses have taken initiatives to collect their used containers and used parts for reuse and recycling. Considerations for reuse and recycling have also started to be incorporated from the product development and design.

(Recycling technology)

Utilizing recycling technology to convert "waste" into resources has gained acceptance. For example, the use of waste plastics as deoxidizing materials for the blast furnaces at steel plants has begun. This not only reduces the amount of landfill but also cuts the consumption of coking coal, making it highly effective in reducing CO_2 emissions. Some of the used PET bottles have been recycled to make uniforms and office supplies. Recently, new plants have sprung up to reprocess used polyethylene terephthalate resin (PET) bottles into pure materials to produce new bottles. There are also initiatives to convert waste into biomass resources such as converting used "*tempura*" oil into bio diesel fuel and raw refuse into compost and so on. Ash from the incineration of waste is used to make eco cement. Technologies to use waste for electricity generation and heating applications have also made progress.

(Establishing a partnership society that supports recycling)

Cooperation of residents, civil groups, businesses, and government agencies in the community is indispensable for further promoting waste reduction, reuse, and recycling. For example, changes in the purchasing behavior of consumers and in the sellers' packaging practices can help reduce waste. Enforcing sorted collection of domestic waste and cooperation between businesses from different industries can expand the possibility of recycling. Information exchange and cooperation are also instrumental in increasing the sale of recycled products. It is hoped that not only government agencies but also civil groups, such as NPOs, will play a more active role in building trust among various entities, providing information, changing the lifestyle of citizens, and encouraging participation in recycling activities.

In some areas, the whole community is mobilized to reduce waste, take actions in facilitating reuse and recycling, and develop facilities for waste treatment to ensure that waste is properly recycled, reused, and disposed of. There are cases showing that these areas are successful in attracting businesses because businesses give high marks to such undertakings.

(Goals pertaining to a sound material-cycle society)

In line with the Fundamental Plan for Establishing a Sound Material-Cycle Society, the goal is

set at raising resource productivity (GDP/input of natural resources) to about 390,000 yen/ton in FY 2010 (an approximate 40% increase from the FY 2000 level). Resource productivity is an indicator that shows the maximum degree of affluence that can be generated with the minimum amount of resources.

A 2001 study shows that 20% of the people surveyed have participated in waste reduction or other environmental conservation activities organized by the community or NPOs. The goal is to raise the number of active participants to over 50% in 2025.

(iii) Spirit and power fostered by nature

Nature not only nurtures many living organisms but also gives people who are in touch with it a sound spirit and a healthy body. Substituting natural energies for fossil fuel is necessary for ensuring world peace while using the world's finite resources.

(Nature, spirit, and body)

Most of us modern people who live among artificial things will feel that our spirit is soothed and healthier when in touch with nature. Many middle aged and older persons who take great interest in maintaining health take up the hobby of hiking in the mountains in order to take in fresh air and be in touch with nature. The opportunity to be in contact with nature deepens our understanding of nature and nurtures our love for it. More people nowadays have become committed to maintaining the nature in their community and even restoring it. Some take pride in the beautiful nature and consider it an asset of the community. The preservation efforts of these individuals help reinvigorate communities.

(Development of ecotourism)

Recently, the idea of ecotourism has gained popularity. As more tourists are looking for opportunities to get in touch with nature, the demand for ecotourism is on the rise. For ecotourism to succeed, it is necessary to have coordinators who are familiar with the history and culture of the region and know ways to enjoy nature, as well as guides who can facilitate those experiences with easy-to-understand guidance. It is said that with good guides, tourists can increase their interest in nature, learn to enjoy it, and develop the desire for repeating such experiences. There are also programs for urbanites yearning to be away from the cities to gain refreshing experiences that are beneficial to their body and spirit. Such programs include participating in agricultural works, enjoying the gift that soil provides.

(Natural energy utilization)

Natural energies such as solar power and wind power are renewable. It is among the few types of energy Japan produces domestically that does not emit CO_2 in the course of electricity generation. Japan leads the world in solar energy generation and there is room for growth. As natural energies and the use of biomass from waste become more popular, many people will become energy producers as well as energy consumers. Upgrading such technologies and spreading them to the world will be extremely effective in improving the global environment. Increasing the use of natural energies in Japan, expanding the scale of production, and lowering its cost will help popularize the use of natural energies in the world.

(Nature-related goals)

It is hoped that people who enjoyed contact with nature will be more interested in nature and the environment, so that the number of people who spend holidays in areas rich in nature increases. The goal is to increase the number of Japanese spending more than ten days per year in nature to over 50% in 2025.

Another goal is to spread Japan's new energy technologies, such as natural energies, to the world in order to popularize their use.

3. An ideal image of 2025 when a virtuous circle for environment and economy is realized

When the actions we take today come to fruition, how will a society with a virtuous circle for environment and economy be like? An ideal image of Japan for 2025 is portrayed in the following.

(1) Japan's economy and society

(Incomes and employment generated by environmentally conscious consumers and eco-friendly technologies)

Environmentally conscious consumers who always choose eco-friendly goods and services help create new markets and value-added existing markets. While competition in the domestic and international markets will increasingly be intensified, in order to survive the competition, products and services ranging from household appliances, articles for daily use and food, to finance and retail sources, must have quality distinctively different from and superior to others. In this context, quality that appeals to environmentally conscious consumers and technological strength are important factors. Businesses s would respond to such a market trend, continue to develop technologies to better the environment, supply goods and services that answer consumer needs, and create new jobs.

These employment opportunities are not only for young people but also for healthy senior citizens who seek to contribute to the society. Indeed they have worked to obtain jobs and have earned income. Consumers now have higher awareness towards the environment, and many new community-based businesses were founded to respond sensitively to various local needs.

(A society that cycles resources and achieves high energy efficiency)

Many people have seriously concerned and taken concrete actions to improve the global environment, tackle the waste issue, and protect the natural environment. As the global economy and world populations expand, mainly in developing countries, it is even more difficult to secure resources and energy. For this reason, resource conservation and energy efficiency have become important factors in a customer's choice of goods and services. In the energy sector, the cost of natural energy has decreased and its use became more popular. Technological and infrastructure development for the production, distribution, and use of hydrogen have also made progress, making a society based on hydrogen energy a closer reality. At the same time, networks have been developed to integrate conventional logistics and reverse logistics in various industries including manufacturing and distribution industries. In such networks, resources are utilized in closed loops, creating added values. The era in which environmental pollution was a by-product of economic growth has ended. Today, endeavors to control the consumption of natural resources have become the driving power of economic development.

(Service industry contributes to environmental improvement)

The service industry has taken up a large portion of the economy. For example, in Japan's aging society, leisure, health, and elderly-related services now account for a major share of the economy. Among such services, some businesses actively incorporate values offered by nature into their operations.

Some businesses offer services providing the functions of goods instead of selling the goods. Some others offer the services to operate and maintain goods in addition to selling them. The wide acceptance of these services helps reduce environmental load during their production process as well as in daily life. Energy efficiency diagnosis and improvement services, as well as household energy management services, also help reduce environmental load. Instead of selling goods that are not environmentally efficient at low margin, more businesses engage in the leasing of used goods. Only goods made with highly advanced environmental technology are produced.

(Transportation friendly to users and the environment)

Low-emission vehicles are in widespread use. Vehicles powered by fuel cells have also become popular. A safe and easy-to-use transportation system is in place. Increased use of railroads, buses, and ferries has made the air cleaner. Accessibility has improved, enabling the use of wheelchairs and baby carriages. For the above reasons, with heightened awareness of health, more people walk or use bicycles.

(Virtuous circle for environment and economy)

The better the method to improve the environment, the higher the economic reward it provides for the business that utilizes it. For this reason, the environmental sector attracts the wisdom to generate sophisticated methods and clever devices. As a result, the environmental performance of Japan's products, business models, and policies increases and in turn brings forth economic success, creating a virtuous circle for environment and economy. Contrary to the worry that the aging population would deprive 2025 of vitality, environmental considerations have become the motivating force that generates affluence.

The market for goods and businesses which are more environment-conscious than ordinaries (environment-induced businesses) has expanded not only in Japan but also in other countries. In 2025, the market size of the environment-induced businesses has become over 100 trillion yen and the market has created over 2 million jobs in Japan.

Japan's landscapes and people's lifestyles have also changed. In cities and villages alike, development utilizes local characteristics, enhancing their unique appeal in a beauty of each natural environment. Communities all over Japan are revitalized with rich local colors. This stimulates comings and goings between communities. The following introduces several communities and the people living there.

(2) Community and lifestyle

(i) Countryside with beautiful nature attracts many visitors

More Japanese people are spending their holidays in the countryside to enjoy nature. When families from towns and cities come to the countryside for a lengthier period, they spend their days in many various ways. Some spend time on the seashore listening to the waves and some experience

the harvest of fruits and vegetables. To the localities these families visit, ecotourism utilizing local resources of beautiful nature and culture creates jobs for tourist guides and at local accommodation facilities. From the areas that have succeeded in their environmental appeal, tourists continue buying agricultural goods and locally grown produce even long after their vacations have ended.

Residents who benefit from the environment are passionate not only about the natural environment around them but also are supportive of global environmental measures. Japanese lifestyle is now characterized by solar power generating facilities on rooftops where there is plentiful sunlight, and wind power generators at places where the wind blows. This lifestyle appeals to environment enthusiasts all over the world and attracts visitors from overseas.

Comment of Mr. K, 52 years old, who lives in such countryside（31 years old in 2004）

I was born during the First Oil Crisis and I am now running a Bed & Breakfast while growing crops. Thanks to a tourism campaign twenty years ago, we decided to devote ourselves to building an eco-friendly image for this community. My B&B is small, but local B&Bs jointly own the latest low-emission cars and use them to pick up visitors. We serve meals made with homegrown organic vegetables or those purchased from farmers in the community. Visitors enjoy our beautiful chinese milk vetch (Renge-so) flowers, across the springtime fields. They praise our cogeneration facility that utilizes biomass from garbage and agricultural waste to supply hot bath water and electricity.

My son returned home last year and has started working as an ecotour guide. He utilizes the Internet for his business operations and we advertise our B&B and organic vegetables on the website. Thanks to the environmental image built by our community over the years, there are many people visiting our website. There are also manufacturers of eco-friendly products who ask us to introduce their products on our website and environment-related catalog retailers who ask our permission to set up links.

(ii) Towns where excellent manufacturing techniques help build a sound material cycle

Employment in Japan’s industrial cities, developed by mass production in the 20th century, is now supported by the production and recycling of eco-friendly goods. Japan is still at the forefront of the world, leading in products manufactured with minimum resources, in the development of products that are easy to reuse and recycle, in recycling technology, and in servicizing businesses that offer functions rather than physical goods. As the final landfill sites for waste are approaching their limits and the energy situation is grave, production technologies that save resources and energy are highly regarded by investors worldwide.

Many citizens are eager to purchase eco-friendly products and active in participating in waste reduction and recycling. They actively offer comments and suggestions on product functions to their manufacturers, which in turn encourage the engineers and technicians to make further improvement. More retail shops and recycling-related stores have opened to provide accurate information on and explanation for advanced eco-friendly goods and services. As people gain more understanding of global warming, more people travel by railroads, bicycles, or on foot. This in turn brings vitality to the local shopping districts near train stations.

Comment of Ms. S, 35 years old, who lives in such a town (14 years old in 2004)

I am a busy mid-level engineer working for a company that is highly regarded by customers and investors worldwide for our environmentally conscious corporate management. The industrial park where our company is located was constructed but left unsold during the economic bubble era, about the time I was born. Afterwards, the community's concerted effort in treating industrial waste was highly recognized and industries were attracted to the town. Green purchasing movements also boosted the sale of eco-friendly products, making it possible for environmentally conscious local companies to expand plants. That was why I was able to stay and get a job in the town.

At home, we lease furniture and energy-saving electrical appliances to obtain functions, not physical products themselves, because our needs change with the growth of our children. We use fuel cell cogeneration for some of the heating, hot water, and electricity, and enjoy the convenience of energy management services. I took a vacation last month with my husband and children on an island. Our dinner table was filled with lively talks of how the children dug up the Asari clams. On a personal note, the ocean breeze gave me energy and I came back filled with ideas on technology to increase environmental efficiency.

(iii) Cities regenerated by environmental spirit

Japan's big cities have many environment-conscious consumers, and thus pioneer world trends as a market supplying cutting-edge environmental technologies. Because competition in distribution is severe, an increasing number of retail shops provide accurate environmental information on products to win consumer support. In the financial sector, financial institutions that have gained the support of customers and investors through environmentally conscious fund management triumph in international competition.

Big trees line the roads. Buildings are insulated to facilitate efficient use of natural energies such as solar energy and heat. Because of enhancing the inslation properties of construction materials without wastage raising city temperatures, a cool breeze from the river blows by the trees, swaying the branches of trees in the garden and flowering grasses on the balconies. In the fall, people walk under the colorful autumn leaves towards the park to attend outdoor cultural events and concerts. Exchanges among community members, which used to lack enthusiasm, become lively through activities such as recycling and nature restoration. The range of environment-related activities has expanded to include collaboration with consumer campaigns, exchanges with agricultural villages, and international cooperation.

Comment of Mr. Y, 77 years old, who lives in such a city（56 years old in 2004）

I used part of my retirement funds to rebuild my home into an eco-house. It is comfortable and worry-free without any running cost for heating and lighting. My wife thanks me for that. Recently, as greenery in the neighborhood has increased and dragonflies and other insects have returned, my grandchildren who live in downtown apartments come to catch them. I join NPO activities to restore nature in the community and reduce waste, attend environment-related seminars at the primary school I graduated from a long time ago, actively participate in many community activities, and enjoy exchanges with many people, young and old. As I want to pass on a beautiful earth to the next generations, I invested part of my savings in a pension fund, which manages stocks and bonds of environmentally conscious companies.

Sometimes, I go hiking with my baby boomer friends to some familiar hills and mountains. We walk while listening to the rustling sound of leaves and babbling streams. I entered into a contract to have organic vegetables and dairy products delivered to my home every week from such familiar areas with good environment using railroads and low-emission vehicles. Since the delivery person also takes back the milk bottles, I do not even need to take time to get rid of them.

As globalization advances, environmentally-advanced Japan will have an even closer relationship with the world. The following describes how Japan will be like:

(3) Rich environment bringing affluence to Japan and the world as well

Japan's environmental technologies, which have led the world, are contributing to the conservation of the global environment. Japan is also active in international cooperation in the environmental field, which includes NPO activities, governmental assistance, social actions by businesses, and sister-city exchanges by local governments. NGOs are active in supporting the sustainable growth of developing countries by importing goods that are produced in a sustainable way. Japan is actively dispatching environmental information including those related to technology and lifestyle to the world, establishing its image as an environment-conscious high-tech country.

Goods being exported from foreign countries to Japan have to abide by strict Japanese laws on energy efficiency and environmental regulations. These goods must also provide information and encompass various environmental considerations. By doing so, they can gain the support of consumers. With an increase in economic partnership agreements between Japan and other Asian countries, including environment-related provisions, Japan's environmentally conscious lifestyle has influenced Asia's increasingly affluent consumers in big cities. The environmentally conscious trend of Japanese investors is the focus of attention of businesses seeking funds. An increasing number of Asian companies are now competing with Japanese companies in terms of environmental considerations. More countries have placed emphasis on environmental policies in view of fostering industries. The trend in the Asian market also affects businesses in other regions. Through inter-enterprise competition, environmental efficiency and resource productivity have significantly improved worldwide.

Comment of Ms. T, 21 years old, born in 2004

I used my university's summer vacation to travel to developing countries, where I saw how Japanese technology was utilized to improve the environment. The solar power plant that stretched in the wilderness was truly impressive. A technician who had studied in a Japanese university worked there. He told me that Japanese technologies are also used in the trains that run in the streets and in the wind-power plants in the suburb. When we parted, he shook my hand and said, "I went to Japan to learn environmental technology. In addition to learning the latest technology, I was impressed by the Japanese environmentally conscious lifestyle. Someday, this country too, will catch up with Japan and then overtake Japan."

At the dawn of this century, Japan presented a vision to the world in search of new values. It was the vision for "a virtuous circle for environment and economy." Some people say that the wars propelled technology in the 20th century. If so, the new driver for this century should be the environment. I am proud to be born in Japan - a country that seeks richness through a better environment and a country that brings up people and enhances technology for this purpose.

4. Conclusion

We have started to move in the direction of "a virtuous circle for environment and economy." Let us lead the world towards this goal, and take steps forward in making Japan a healthy, rich, and beautiful environmentally-advanced country.

The ideal image of 2025 portrayed in this report includes things that cannot be realized merely by continuing what we are doing today. This report does not portray the future as an extension of the present; rather, it first envisions the ideal image of future and then introduces actions that shall be taken today in order to reach this ideal future. It is hoped that the next Basic Environment Plan, to be formulated in FY 2005, will fill this gap between ideal and reality. We truly hope to see government agencies join forces in incorporating concrete measures into the plan and people all over Japan working together towards that ideal scenario of 2025, engaging in various initiatives and spreading them throughout the world.

Appendix 1:

Goals Set Forth in the Vision

[Life-enhancing environmental techniques]

(i) Greenhouse gas emissions reduction

A 6% reduction of greenhouse gas emissions in the 'commitment period' of 2008 to 2012, relative to the amount emitted in 1990. Establish a society that incorporates reduction of greenhouse gas emissions, and achieve long-term, continuous emissions reduction.

(ii) Increase the number of "green consumers"

More than 80% of people “take environmental impact into consideration when making purchase decision” in 2025.

[Resources yielded by “feeling sorry for wastefulness”]

(iii) Improve resource productivity

Based on the Fundamental Plan for Establishing a Sound Material-Cycle Society, improve resource productivity (GDP/input of natural resources) to about 390,000 yen/ton in FY 2010 (an approximate 40% increase from the FY 2000 level).

(iv) Increase the number of participants in environmental conservation activities

More than 50 % of people “have participated in various environmental conservation activities including waste reduction organized by the community or NPOs within a year” in 2025.

[Spirit and power fostered by nature]

(v) Increase the number of people who have some contact with nature

Over 50% of people spend more than ten days per year in nature in 2025.

(vi) Popularize natural energies

Spread Japan’s new energy technologies, such as natural energies, to the world in order to popularize their use.

[Economy and society in 2025]

(vii) Expand environment-induced businesses

Market for environment-induced businesses expanding not only in Japan but also in other countries. Aim for the market size of over 100 trillion yen and over 2 million jobs in 2025.

Appendix 2:

Deliberations at Central Environment Council

Year 2003

September 19: Minister of the Environment sought for deliberations at Central Environment Council on the "Vision for a Virtuous Circle for Environment and Economy." The Council's General Policy Committee was appointed to take charge.

September 24: The 14th General Policy Committee meeting of the Central Environment Council decided to establish the "Expert Committee for a Virtuous Circle for Environment and Economy."

Deliberations of the Expert Committee for a Virtuous Circle for Environment and Economy

The 1st Committee meeting: November 4

The secretariat explained the details of the establishment of the Committee and issues to be discussed. Then, free discussion was carried out.

The 2nd Committee meeting: November 20

Presentations on "Life-enhancing Environmental Techniques" and free discussion.

(Presenters)
Sonoda, Nobuo: Director, Corporate Environmental Affaires Division,
Matsushita Electric Industrial Co., Ltd.
Tsutsumi, Kenzo: President, The First Energy Service Company Limited.
Tatsumi, Kikuko: Chairperson, Nippon Association of Consumer Specialists
Ito, Tetsushi: Group Manager, Public Affairs Group, Environmental Affairs Division,
Toyota Motor Corporation
Seki, Masao: General Manager, Social & Environmental Responsibility Division,
Sompo Japan Insurance Inc.

The 3rd Committee meeting: December 19

Presentations on "Spirit and Power Fostered by Nature" and free discussion.

(Presenters)
Tsuji, Haruo: Corporate Advisor, Sharp Corporation
Yoro, Takeshi: Professor, Graduate School of Medical Science, Kitasato University
Yamamoto, Katsuko: Editor in Chief of "YOUYOU", SHUFUNOTOMO Co., Ltd.
Kobayashi, Hidetoshi: Managing Director, Marketing, Japan Travel Bureau Foundation

Year 2004

The 4th Committee meeting: January 16

Presentations on “Resources Yielded by ‘Feeling Sorry for Wastefulness’” and free discussion.

(Presenters)

Ogura, Yasutsugu: General Manager, Planning and Marketing Dept., Environmental Solutions Center, JFE Holdings, Inc.

Kurosu, Ryuichi: Mayor, Hachioji City
Co-chairperson, Special Committee on Wastes Measures in Japan Association of City Mayors

Sakita, Yuko: Chair of the Board, NPO GENKI Network for Sustainability
Representative, NPO Shinjuku Environmental Information Network
Journalist and Environmental Counselor

Nagashima, Tokuaki: Vice President, Teijin, Ltd.

Fukao, Norio: Manager, Development Division, Nikkei Business Publications, Inc.

The 5th Committee meeting: February 12

Deliberations on the report to be prepared by the Committee.

The 6th Committee meeting: March 18

Deliberations on the draft report.

The draft report was made open for public comments: March 19 - April 5

The 7th Committee meeting: April 16

Final report was prepared.

May 13: The 18th General Policy Committee meeting of the Central Environment Council
Deliberations based on the expert committee's final report were carried out and the council's recommendation “Vision for a Virtuous Circle for Environment and Economy in Japan” was finalized.

(Note) Titles of the presenters are from the time of presentations.

Appendix 3:

Members of the Expert Committee for a Virtuous Circle for Environment and Economy

○Asano, Naohito: Professor, Faculty of Law, Fukuoka University
Amano, Akihiro: Director, Kansai Research Center, Institute for Global Environmental Strategies (IGES)
Fukao, Norio: Manager, Development Division, Nikkei Business Publications, Inc.
Former Editor-in-Chief of "Nikkei Ecology"
Kurihara, Takashi: (Note 1) Mayor, Omuta City
Chairperson,Special Committee on Wastes Measures in Japan Association of City Mayors
Kurosu, Ryuichi: (Note 2) Mayor, Hachioji City
Co-chairperson, Special Committee on Wastes Measures in Japan Association of City Mayors
Kouzu, Kanna: Novelist
Ogura, Yasutsugu: Director, JFE Holdings, Inc.
General Manager, Planning and Marketing Dept., Environmental Solutions Center,
JFE Holdings, Inc.
Sakita, Yuko: Chair of the Board, NPO GENKI Network for Sustainability
Representative, NPO Shinjuku Environmental Information Network
Journalist and Environmental Counselor
Sasanouchi, Masayuki: Project General Manager, Environmental Affaires Division,
Toyota Motor Corporation
Seki, Masao: General Manager, Corporate Social Responsibility, Sompo Japan Insurance Inc.
Sonoda, Nobuo: Director, Corporate Environmental Affaires Division,
Matsushita Electric Industrial Co., Ltd.
Tatsumi, Kikuko: Chairperson, Nippon Association of Consumer Specialists
Tsuji, Haruo: Corporate Advisor, Sharp Corporation
Tsutsumi, Kenzo: President, The First Energy Service Company, Limited
Ueta, Kazuhiro: Professor, Graduate School of Economics, Kyoto University
Wake, Yoko: Professor, Faculty of Business and Commerce, Keio University
Yamamoto, Katsuko: Editor in Chief of“YOUYOU”, SHUFUNOTOMO Co., Ltd.
Yoro, Takeshi: Professor, Graduate School of Medical Science, Kitasato University
◎Yasuhara, Tadashi: Adviser, Environmental Information Center
Yasui, Itaru: Vice-Rector, United Nations University

（In alphabetical order without titles, ◎=Chairperson, ○=Deputy Chairperson）

(Note 1) Was a member till the second Committee meeting.
(Note 2) Became a member from the third Committee meeting.