

Development and Environment in Japan

YUZURU HANAYAMA

I. Introduction

Japan has been running along the course of economic growth with the highest speed in the world during the last two decades. And it is said that in the result of this Japan has suffered from many distortions, e.g. inflation, high concentration of population into a few large cities including housing problems and so forth; but among them, the gravest one is environmental disruption. In this paper I will try to explicate the causality between economic growth and environmental disruption in Japan.

One can easily give some examples which show the correlation between economic growth and environmental disruption. It is well known that the elasticity of energy consumption to GNP is approximately 1 as to a nation. In fact, energy consumption in Japan has been increasing with an average rate of 13.2 per cent per year from 1960 to 1969 (during the same period the consumption of electric energy has been increasing by 12.4 per cent) while the rate of growth of GNP was 10.9 per cent (in real terms). Although the ratio of petroleum in the total energy has been increasing in this period, in the short run we can say that there is a linear relation between petroleum consumption and economic growth, and as the sulphur content in the imported petroleum to Japan is approximately 2.5 per cent, the volume of sulphur-dioxide discharged from factories and power plants into the air increases as GNP goes up. The same we can say about water. Water consumption also increases as the GNP increases in some area. And it is known that if the content of phosphorus compound or nitrogen compound in wasted water has reached 2 ppm, the water condition of the sea or lake becomes worse with economic growth even if the water is dispersed by the ordinary process, for the ordinary water dispersing process can remove carbohydrate but cannot remove neither phosphorus nor nitrogen compound from the water.

Although these facts are true, correlation is different from causality. We should analyse more carefully the causality between economic growth and environmental disruption.

From this point of view, extravagant waste of resources seems to be the key link in the causal chain. And this link seems not only the most operational one but possible to be controlled by economic policies most easily. So I will try to describe in the following chapters how Japanese economic growth wastes many kinds of resources and how the external effects or environment have been neglected. In the concluding chapter technological and economic policies will be mentioned which have been or should have been applied in Japan.

II. Extravagant Waste of Resources in Japanese Economic Growth

Nowadays Japan consumes so much resources as the ratio of consumption of some kinds of resources reaches a tenth in the world. For example, in 1969 Japan consumed 9.1 per cent petroleum of the total volume consumed in the world, 14.3 per cent copper, 15.8 per cent zinc, 11.0 per cent aluminium, 19.0 per cent nickel and 15.8 per cent iron, while the ratio of Japan's population in the world is only 3 per cent and the ratio of her area is only 0.3 per cent. In Table 1 we can see how the Japanese GNP depends on the consumption of natural resources. The rate of increase of consumption of these resources is, moreover, very high (two or three times as large as that of the average rate of the OECD nations). So if the present trend is left as it is, Japan is soon going to consume a quarter or a third of all the natural resources in the world.

Table 1: Consumption of Main Kinds of Natural Resources per \$1,000 GNP in Major Industrial Nations (1969)

	Petroleum	Copper	Lead	Zinc	Nickel	Aluminium	Iron	Total
U.S.A.	18.9	2.7	0.3	0.4	0.5	2.2	15.6	40.6
France	14.6	3.6	0.4	0.5	0.9	1.5	16.0	37.5
Italy	24.0	4.2	0.5	0.6	0.8	1.8	24.1	56.0
West Germany	20.9	6.4	0.8	0.6	0.9	2.6	27.9	60.1
U. K.	22.9	7.3	0.5	0.9	0.9	2.2	23.8	58.5
Japan	24.9	7.0	0.4	1.2	1.5	2.9	38.0	75.9

Source: United Nations, Statistical Yearbook.

However, this may be impossible, because for Japan to obtain the natural resources from the foreign countries will become more and more difficult and the environmental disruption to occur with the waste of those resources will become unbearable to almost all of Japanese people. We should not forget that petroleum contains some volume of sulphur which is exhausted and pollutes the air when petroleum is consumed, and that if we want to refine the iron ore we must use coal which also contains some sulphur. We should not forget either that copper ore frequently contains arsenic which is the most horrible poison if it comes into the human body, and similarly aluminium coexists with fluorine and zinc does with cadmium. Both of them can cause terrible diseases to human kind, and some other metals, like lead or mercury, can lead to gruesome results. Almost every Japanese can be reminded of the Yokkaichi asthma caused by sulphur-dioxide, "Itai-itai" (meaning "Ouch-ouch") disease by cadmium, or "Minamata" disease by mercury. But before to hurry to conclusions from these examples, we must see the historical facts and understand why Japan could realize the past high rate of economic growth.

Although Japan is said to be the poorest country as to natural resources and although a large volume of resources is imported year by year, at the beginning of this century copper and coal were most important items for Japan to export. Immediately before the First World War, Japan produced about 10 per cent of copper in the world and the copper industry (mining and refining) was the most important one next to textile industry in Japan. Among the refineries, Ashio was the largest and most prosperous one. Ashio copper mine

had been managed by the government itself during Tokugawa era and the beginning of Meiji era and was sold to Ichibei Furukawa, the founder of the Furukawa group, a prominent financial group in Japan, in 1878. Furukawa soon made Ashio mine the most productive mine by importing mining techniques from Germany. The production of copper from Ashio had been at most 300 ton a year before it was sold to Furukawa but under Furukawa's management the production increased to 700 ton in 1891 and to 1,600 ton in 1917.

But as the copper production from Ashio increased, environmental disruption also proceeded. The smoke containing high density of sulphur-dioxide blasted every plant in the Ashio valley; the area having suffered from the damage is now estimated about 1,700 ha and nowadays no plant can be seen there. And the eroded sand and soil from the bare valley caused floods downstream. The sand made the river bed high and in the end these floods occurred more easily than before. To make matters worse, the floods scattered about the residua of copper refining containing arsenic and other harmful substances which killed the fish and blasted the crops. It is said that pregnant women who drank the water polluted by the residua, miscarried the baby, and mothers could not give the breast to their baby.

The area submerged by the flood and covered with the residua reached 50,000 ha and the population who suffered from the damages was estimated at least at 200,000. The people, of course, got angry and urged that Ashio mine and refinery should be closed. But Furukawa Company not only rejected the people's claim but also denied her responsibility of the damages. And the Government first backed Furukawa's side and brought pressure upon the people's claims and action using police power. But at last the government became impossible to neglect the people's claims and ordered Furukawa to install some facilities to prevent the residua from flowing down. On the other hand, the Government decided to construct a large flood basin for flood control. In the end the damages were reduced and the protest actions of people declined.

At the time, capitalism in Japan can be said committed to original sin. Since then too many similar sins have been committed by the rapid economic growth of Japan with little reflection upon this tragedy.

The development of copper refinery gave an incentive to electric power industry and through it to chemical industry. We come across another and more grave tragedy, "Minamata" disease. Susumu Noguchi, founder of Chisso Co. (nitrogen manufactures), was an electric engineer originally. After engaging in construction of a hydroelectric power station he established his own company and started to produce nitrogen fertilizer by the surplus electric power and imported techniques of nitrogen fixing. In 1901, he succeeded in producing nitrogen fertilizer by the calcium-carbon-dinitrogen method, only one year later than Knapsack Factory in Germany, and succeeded in synthesizing ammonia in factory scale earliest in the world (in 1932) and built a rayon factory in 1931. The Chisso Co. gained much profit and the number of workers at Minamata factory increased and citizens of Minamata city enjoyed their prosperity. After the Second World War, the Chisso Company developed a technique to synthesize aceto-aldehyde, original materials of PVC, from acetilene. The production volume of PVC at Minamata factory was only 5ton a month in 1949 but increased to 150 ton in 1951, 1,500 ton in 1957 and 2,500 ton in 1960, analogously to the economic growth in Japan.

However, the wasted mercury — used as a catalyzer in the aceto-aldehyde production process in Minamata factory — caused very dreadful accidents. Some part of the mercury changed into organic compounds in the process and was ingested by microbes and fish, and through the food chains gradually condensed. And at last fishermen and people eating much fish suffered from the poisoning of organic mercury. The brain tissues of the patients were fused and disrupted. The patients,

including children born to the suffering mother, became blind, dumb, convulsed, mad and in many cases died. The number of the dead of "Minamata" disease reached 52 since 1953 and the number of the alive patients who are suffering seriously and are authorized as victims by the government reaches 129 up to the present; but it is said that the number of the latent patients may be over 100,000, if close investigation will be held.

The volume of mercury wasted by the Minamata factory is now estimated about 60 ton. It never was difficult for the factory to prevent the mercury from flowing out and to reclaim and use it as a catalyzer again. But the company spared the additional expenditure for it and let the disease occur. This case is surely the worst one but the attitude of the Chisso Co. is more or less common to every other company and government. The dreadful result of persuing only the profit or economic growth and neglecting the welfare of neighboring people or consumers can easily be counted: except Minamata disease there is Aganogawa disease (the same one as Minamata disease), poisoning of arsenic mingled into dry milk by accident, poisoning of PCB similarly mingled into cooking oil, or poisoning of cadmium missed by mining and ingested with rice. Each of them could have been prevented, if Showadenko Co., Morinaga Dairy Co., Kanemi Rice Oil Co. or Mitsui Mining Co. respectively, had adopted fool-proof facilities and made assurance doubly sure. The crimes of these companies are now disclosed one after another in the courts held recently. And the managers of almost all companies are now known to fear environmental disruption and they become more generous than before to spend money on pollution preventing facilities. But the myth of economic growth is still alive in Japan. The managers urge that people should endure some unpleasantnesses, noise, loss of clean air and water or ugly landscape.

On of the most important reasons why Japan has been able to realize economic growth with a high speed is that Japan is blessed with good ports and can utilize the ports conditions fully. Resulting from the defeat in the Second World War Japan lost its colonies, and about seven million people moved back to Japan. At that time a serious problem was how to produce on the limited land and to supply enough food. The import and production of food increased rapidly but the increase of production was highly dependent on the extravagant use of chemicals and synthetic fertilizers, what is one cause of the food contamination today. The second problem was how to increase exports. Since Japan is not blessed with mineral resources and especially is lacking in petroleum and iron resources, the Japanese government adopted the policy to arrange ports and build large cargo boats and oil tankers in order to cut down transportation costs. The policy hit the mark. There were some navy ports left unused at that time having enough depth for tankers or mammoth cargo-vessels to unload. Some of the representative modern industry complexes in Japan, namely, Yokkaichi, Mizushima or Tokuyama, were born in such a way. On account of these good port facilities the scale of Japanese vessels became larger and larger. The scale of the largest tanker in the world was 46,000 ton in 1955, but reached 104,000 ton in 1959, 206,000 ton in 1966 and 367,000 ton in 1971, all of them being built in Japan. Similarly, exclusive cargo-vessels for iron ore became larger and larger and on account of the scale-up of vessels the transportation cost of petroleum declined from 5.8 dollars per ton in 1960 to 2.9 in 1970, while the average distance of transportation increased by 6 per cent. (The transportation cost of

iron-ore declined from 5.5 dollars in 1960 to 3.6 dollars in 1970 while the transportation distance increased by 47 per cent.) The cost therefore was cheaper than in the case of resources produced in Japan and transported by train. This has enabled Japan to have gigantic oil refineries, oil-chemical industry combinates and iron-works leading the world. On the other hand, the reclamation of combinate sites disrupted the beautiful Japanese sea shores and contaminated air and water because a quantity of pollutants exhausted from the factories was far stronger than the capacity of the environment to dilute and to make the pollutants innocuous.

Yokkaichi, for example, had been so blessed with clean air and bright sun-shine before the beginning of operation of the Mie stream-power station in 1955, that a famous sanatorium for tuberculous patients was located on the shore. But the government nominated Yokkaichi as one of the petroleum chemical sites and lent nearly gratis to Showa Oil Co. and other five companies the ex-navy site that had been constructed by reclamation off-shore. From 1955 on the factories began to operate and the volume of oil used and gas exhausted increased promptly. In 1962, the volume of sulphur-dioxide exhausted by the six factories was about 100 ton a day, the density being about 0.1 ppm. in mean value throughout the year and 2.5 ppm. in the highest value at Isozu monitoring point.

On account of the polluted air, between 1965 and 1971 44 persons died from asthma or pneumonia. About 600 patients being tortured by the "Yokkaichi" asthma are authorized by the government as victims of contaminated air and receive medical benefits from government. Some of the patients dared to bring a suit against the six companies for having polluted the air and made a claim for a compensation for the damages, not only monetary but also mental ones. The court decided in 1972 that the six companies' acts were unlawful and ordered the companies to pay 88 million yen to 9 accusers including the two who died on the way of their action. The managers of the six companies obeyed the judge and began to negotiate with many other patients for compensation.

Similar contaminations of air can be seen at the cities of Mizushima, Amagasaki, Kawasaki, or Chiba, each of them being representative for the economic growth in Japan heavily based on oil, chemical and iron and steel factories. In every case the government, along with companies, should be called to account, because the government should have foreseen the bad results of constructing such gigantic complexes and should have planned to prevent the neighboring people from suffering by careful investigations about meteorological and oceanographical conditions in advance to the permission for companies to operate. The government also should have ordered the companies to provide facilities to protect the environment and the welfare of the people, or should have ordered to stop or curtail the operation scale when the damage became explicit.

But the attitude of the government has not changed yet. The government permitted already the construction of a combinate at Oita and Kashima, some times as large as Yokkaichi or Mizushima and announced the plan of a gigantic complex at Tomakomai, Mutsu-ogawara, Shibushi, still some times as large as Kashima. The government repeatedly announced that new complexes are well furnished with environmental protection facilities, for example, tall smoke-stacks diffuse the smoke. But many people are suspicious about the attitude of the government and the behavior

of the enterprises and dare to declare that they would prefer clean environment instead of more income or economic growth in monetary terms.

As to water pollution, Yokkaichi is one of the worst cases. The fish caught off-shore of Yokkaichi smell of oil so strongly that the fish from Yokkaichi have lost in their market value. In addition to this, the haul has declined rapidly after the beginning of factories operation. But more drastic change is proceeding in the Inland Sea that was most blessed with many kind of fish and marvelously beautiful sight of coloured serene water spotted with lovely islands. Surrounding this sea many ports and factories were built and the waste water from the factories polluted the sea to let it die together with the sewerage from some cities. The haul per year of sea bream, yellowtail, flounder and prawn in the Inland Sea declined from 1962 to 1967 —, respectively, from 6,900 ton to 5,600 ton, 1,400 ton to 800 ton, 140 ton to 90 ton and 1,100 ton to 900 ton. The volume of pollutants wasted into the Inland Sea (which has about 15,000 sq.km water surface and max. 60 m depth) is estimated as 1,600 ton per day of COD substances, 220 ton of nitrogen compounds and 10 ton of phosphorus compounds, 60 per cent, 70 per cent and 30 per cent respectively of them wasted by factories, the residuals coming from Osaka, Kobe, Hiroshima and other cities.

COD substances take away oxygen dissolved in the water through the process of decomposition by microbes and become sources of muddiness of water, and both nitrogen and phosphorus compounds are nutrients of micro plants such as many kind of algae. An abnormal propagation of the microbes is called "Akashio" (means brown tide) being feared by fishermen because in Akashio no fish can live on account of choke. Akashio was recorded in the Inland Sea 136 times in 1971 (18 times in 1960 and 4 times in 1950).

The muddiness of water prevents the sun-shine to reach the bottom of the sea; therefore seaweed can not grow any more and thus fish, especially prawn, has lost their spawning place. As the larvae of them are the best food for sea bream, yellowtail or flounder, these also declined gradually. Today many ecologists are very pessimistic about the future of the Inland Sea.

In conclusion we can say that Japanese industries have been plundering any kind of resources; mineral resources, water resources, good condition of ports and so forth. On account of this Japan has been increasing its GNP rapidly, on one hand, but, on the other hand, Japanese people have to a large degree lost their blessed environment: clean air, clean water, beautiful landscape. Recently some reconsideration occurs among Japanese people that we should compare more carefully the increase of flow value such as GNP with the decline of stock value such as blessed environment (or social goods in modern economic terms). From this point of view we should doubt the extent to which economic growth in Japan after the Second World War has developed Japanese people's real welfare. At least it must be said that while economic growth has brought income to some people it has inflicted awful damages upon other people. The result of this is an enlarged unfairness among the people. Therefore, if government and enterprises had paid care to the external effects of economic growth and spent more money on protection facilities or curtailed the operation scale of the economy, the path of growth and today's figure of the Japanese economy should be different from what it has been or is.

III. Situation of the Great Cities

Similar phenomena occur in some great cities of Japan — not as for fish in the Inland Sea but as for human beings. One ton of petroleum requires 4,000 cubic metres of oxygen to burn perfectly, and in Tokyo, as 40,000 tons of petroleum burn per day 160 million cubic metres of oxygen are consumed per day, while the consumption of oxygen by 10 million people's breath in Tokyo is only 3 million cubic metres. It is difficult to estimate how much oxygen is produced by the plants' photosynthesis but even supposing that the 23 wards area (core city of Tokyo metropolis) were covered perfectly with grass well cultivated, the volume of the oxygen produced by the grass would be 12 million cubic metres at most. This shows that the ecological balance has been lost already. Above Tokyo a thermal inversion layer appears on the days when it is fine with little wind, and below the inversion layer we have some 20 billion cubic metres of oxygen. So if by accident the inversion layer is kept for some days, the oxygen will be consumed by about one per cent per day; after a week people would feel as difficult to breathe as if they were on the top of the Himalaya.

There is another example to explain the condition of the air above Tokyo¹. In the petroleum burnt in Tokyo about 1,000 ton of sulphur is contained. This sulphur changes into 1.4 million of sulphur-dioxide gas. If the inversion layer would last for twenty hours above the 600 sq.km. area, the density of sulphur-dioxide goes up to 10 ppm. in average value. In fact, fortunately we have never experienced such a case because the inversion layer has not lasted for so long a time. But we cannot expect this kindness of nature any longer. And some kind of bad omen has appeared already. In 1970 and in 1972, middle school pupils exercising on the ground fell down in a group feeling choked. The real cause of this case has not been explicated perfectly but it occurred because of air contamination.

Similarly, the mass consumption of water in Tokyo destroys the ecological cycle in the Tokyo Bay. The volume of water consumed in Tokyo is now about 1.6 billion ton per year. According to the estimation of mine, the water contains 270 thousand ton of SS and COD, 10 thousand ton of many kinds of oil. 5 thousand ton of ABS, 100 ton of cyanide and other kinds of metals or poisons. 270 thousand ton of COD means to require 270 thousands of oxygen to dissolve these organic substances. But the oxygen supplied from air and river in fact is below 10 thousand ton. As result of this two thirds of the bottom of Tokyo Bay is impossible for any kind of shell or insect to live in. When the sewerage systems and disposal plants are completed in the near future, the condition may be improved a little but the effect of the sewerage works will be cancelled easily by the increase of water consumption. And the bottom of Tokyo Bay will still be impossible for almost all animals and plants to live on.

Let me show another case of extravagant waste of resources in the cities. The eastern part of Tokyo surrounded by the Sumida River, the Arakawa River and the Tokyo Bay is flat and blessed with underground water. Many factories have been located on this part and have been pumping up the underground water. As result of

¹ For more examples see: Tokyo Fights Pollution, Tokyo Municipal Library, Vol. 4, Tokyo 1970. For current information see: Tokyo Municipal News, Vol. 20 (1970) — Vol. 22 (1972). The Editor.

this the level of underground water went down year by year and the level of the earth also sank. The speed of the ground subsidence is now 20 cm per year, at the worst point and some parts of this area have subsided by 3 metres during the last two decades. The area of land the level of which is lower than sea level (average tide level in Tokyo Bay) reaches 65 sq.km. The government naturally has been spending money on construction of bank and pump stations. The sum of this kind of expenditure is 60 billion yen during the last decade. The pumping up of the underground water costs 200 yen per ton at least due to my estimation, while the enterprises pay only 0.5 yen a ton or so to dig the well and use electric pumps. Because enterprises did not pay the external cost which should be paid by the enterprises if the principle of "polluters should pay" were adopted, people are forced to pay the cost through taxes via the public sector.

Showing cynical contrast to the land subsidence, the area of Tokyo Metropolis has been increasing gradually, because of land reclamation by garbage off-shore. The government of Tokyo Metropolis collects 14,000 ton of garbage per day employing 13,000 people and using 3,300 garbage trucks in the 23 wards district. At present only a quarter of the collected garbage is incinerated in garbage factories, the rest of it together with the ash from the garbage factories is carried into the reclamation land and piled up in heaps.

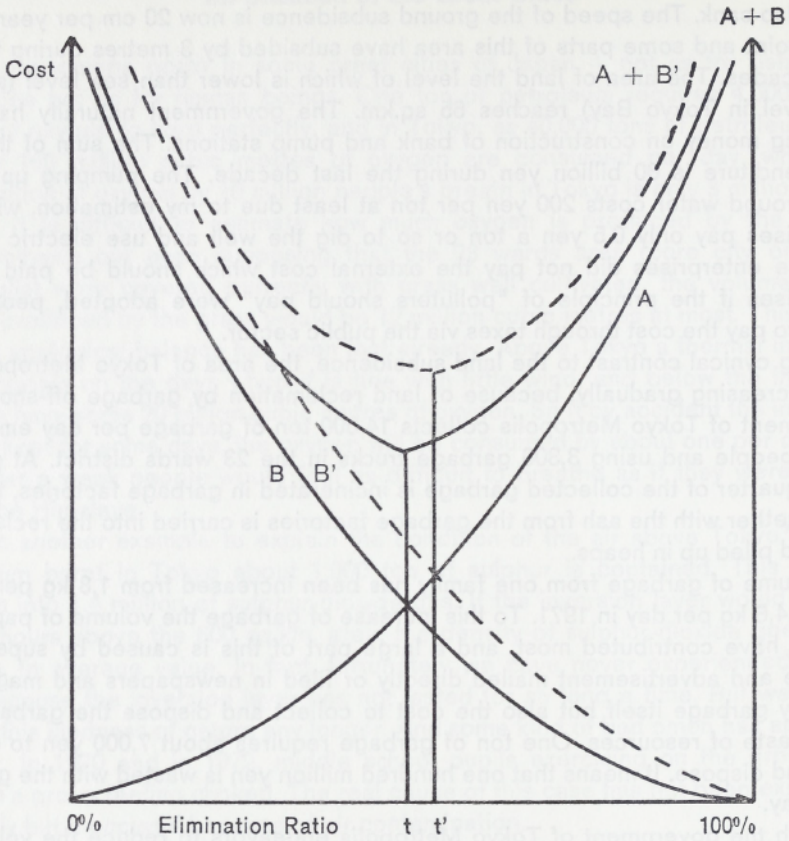
The volume of garbage from one family has been increased from 1,8 kg per day in 1961 to 4,6 kg per day in 1971. To this increase of garbage the volume of paper and plastics have contributed most, and a large part of this is caused by superfluous package and advertisement mailed directly or filed in newspapers and magazines. Not only garbage itself but also the cost to collect and dispose the garbage is a great waste of resources. One ton of garbage requires about 7,000 yen to collect, carry and dispose. It means that one hundred million yen is wasted with the garbage every day.

Although the government of Tokyo Metropolis endeavors to reduce the volume of garbage by constructing garbage incinerators, the schedule is always forced late because of the action of people neighboring the factory sites. The port engineers are now anxious that the garbage and the sludge from the sewerage disposing plants are going to make the bay too narrow. It has become a very serious demand for the people in Tokyo to reduce garbage and sewerage or they might die under the pressure of their waste, so as the bacilli cultivated in a glass vessel with abundant nutriment will die after an explosive propagation from the poisoning of their own waste.

IV. Principles of Policy

Today many economists point out that the market is not able to solve the environmental problem by its nature, and that it is necessary for the public sector to force the enterprises to pay the external costs which spill over from the factories. It is perfectly true, I think, but it is not easy to aggregate and assess the external cost. (See Fig. 1). The horizontal axis represents the ratio of elimination of external effects and the vertical axis shows the cost. Curve A means cost of protection facilities including operation cost and curve B means the external cost. If the principle of "polluter should pay" is adopted and the enterprise is forced to pay both the protection

Fig. 1: A Box Model of Environmental Cost



cost and the external cost, the enterprise will adjust itself to minimize the total cost and as the result of this the elimination ratio will be settled at t . Some economists may think that the optimum allocation of resources is realized in this case. But if the real curve of the external cost is B' instead of B , the elimination ratio should be t' . It may be rather easy for economists and engineers to determine the curve of A but it is very difficult for them to determine the curve of B . How can we assess the charm of the landscape, the amenity of quiet or the happiness to enjoy the clean air? Particularly it is very difficult to assess the damage if it is implicating the lives of human beings.

Curve B may rise vertically at some point. The shape of the curve B may depend partially on the law and policy, which will be changed by the people's demand and also will be changed by the ecological knowledge or new thinking about safety for the future. So it may not be so significant to minimize the total cost. The most important thing is to minimize the external effect itself by using preventing technology fully and foreseeing the future most carefully.

In order to realize this purpose it seems to be fairly effective to implicate the external cost as much as possible into the price of resources in the form of taxes

or charges. This will enable the government to have adequate money to protect the environment and it will also let enterprises save resources. We can find many examples showing that enterprises save the resources when the price of the resources rises. For example, when the price of water resources increases, enterprises easily can find a new process to save water consumption by using water repeatedly with little additional cost. The consumption volume of water to make 1 ton of pig iron from ore varies from 5 ton to 70 ton among the representative iron-works in Japan, though the final cost of pig iron does not vary much. In another case the enterprises decreased water consumption by 30 per cent when a charge of 5,5 yen per ton of water to flow into the special sewerage system was inflicted upon the factories in a district of Tokyo.

The Japanese government has been adopting the opposite kind of policies. The government has been eager to give many kinds of aid and subsidies or to reduce the taxes in order to let enterprises use as cheap resources as possible². Even when the government determined to force the enterprises to be furnished with environmental protection facilities, e.g. tall smoke-stacks, the government financed the installation funds and reduced the tax by admitting shortened repayments or partial tax exemptions.

By these kinds of policies the natural resources will be used extravagantly, because there is no binding incentive for enterprises to save them. Therefore if the government changes its attitude the effect will be large. In case this is happening, the price level of commodities may rise to some extent and the rate of economic growth may decrease. But we should not worry about it so much. We should take more care of the fairness of income distribution and of environmental problems rather than of economic growth per se, because the growth of GNP is just one of some measures to develop people's welfare and Japan has realized enough of simple quantitative growth of GNP to turn its eyes to other and more qualitative goals.

² Cf. Ministry of Foreign Affairs, Problems of the Human Environment in Japan. Report to the United Nations, Tokyo 1971; Environment Agency, Air Pollution Control in Japan, Tokyo 1972; ditto, Water Pollution Control in Japan, Tokyo 1972; ditto, Pollution Related Diseases and Relief Measures in Japan, Tokyo 1972. Many critical comments on Japanese environmental policies are to be found in: Shigeto Tsuru (Ed.), Proceedings of International Symposium on Environmental Disruption, The International Social Science Council, Tokyo 1970. The Editor.