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VOLUNTARY APPROACHES: TWO JAPANESE CASES

Pollution Control Agreements in Yokohama City and Kitakyushu City

This report discusses the Pollution Control Agreements in Yokohama City and Kitakyushu City.

It was prepared by Hidefumi Imura of Nagoya University and Rie Watanabe of the Institute for Global Environmental Strategies.

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FOREWORD

At its first meeting, 23-24 April 2001, the Working Party on National Environmental Policies under OECD's Environment Policy Committee agreed to start new work on voluntary approaches used in environmental policy, building on a few selected case studies. These case studies were each to be prepared by external consultants – discussing two concrete cases of voluntary policy approaches in Canada, United States, Japan and Denmark respectively.

The present report discusses the Pollution Control Agreements in Yokohama City and Kitakyushu City. It was prepared by Hidefumi Imura of Nagoya University and Rie Watanabe of the Institute for Global Environmental Strategies.

The case studies will – together with other available material – feed in to a final project report on the use of voluntary approaches in environmental policy that is expected to be released in 2003.

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VOLUNTARY APPROACHES: TWO JAPANESE CASES

Pollution Control Agreements in Yokohama and Kitakyushu City

EXECUTIVE SUMMARY

A first Pollution Control Agreement was negotiated in Yokohama in 1964 ...

In 1964, Electric Power Development Co., Ltd (EPDC), a company controlled by the former Ministry of International Trade and Industry (MITI), was planning to build a new coal-fired thermal power plant in the Yokohama area. Yokohama was already suffering from air pollution in its coastal industrial area, and it was expected that this power plant would aggravate the air pollution in the city. As the national law had not enough regulatory power to prevent air pollution, Yokohama City developed a "pollution control contract," in which EPDC committed to take measures to achieve agreed targets beyond the levels required by the law. This contract is regarded as the first PCA in Japan.

... while the first such agreement in Kitakyushu was concluded in 1967.

In 1967, an agreement was concluded between Kitakyushu City and Tobata Kyodo Thermal Power Ltd (TKTP). As it was the first agreement in that city, they adopted an ad hoc procedure. The mayor sent a letter to the company, requesting it to take special measures for air pollution control. The company sent a reply to the mayor, stating that it would faithfully take measures to comply with the requests by the mayor. In 1969, a second agreement was concluded. In this case, the mayor of Kitakyushu, the governor of the Fukuoka Prefecture and the president of TKTP met and signed the agreement, which stated that the company had to take measures to reduce the sulphur content of fuels and install dust collectors. After the city enforced a municipal ordinance for pollution control in 1970, the PCAs began to play a complementary role to achieve the standards set by the ordinance.

In both cases the environmental targets have been met by a wide margin ...

The agreement in Yokohama stated that the concentration of SO₂ should be below 500 PPM, that the amounts of smoke and dust should be below 0.6g/Nm³ and that EPDC should periodically monitor the density of smoke, noise level, wastewater quality, etc. In Kita, the agreement inter alia sought to ensure that the national ambient air quality standard for sulphur dioxide be achieved. In both cases, the targets have been met by a wide margin.

... in part authorities had an effective "threat".

The fact that Yokohama city had the possibility to block the building of the power plant can have contributed to the environmental effectiveness in that case.

The economic efficiency of PCAs in Yokohama could be low ...

In Yokohama City, the PCAs were concluded with single companies. Hence, there were no mechanisms that could secure that a given environmental target was achieved by lowest possible cost. On the contrary, the tendency for agreements in Yokohama City to only cover expansions and new plants can cause some low-cost abatement options not to be pursued.

... while the collective agreements in Kitakyushu might be more effective.

In Kitakyushu City, a collective agreement was concluded between the city and more than 100 emission sources. There was a consultation committee consisting of the environmental authorities of the city and the companies, and they decided the general reduction policy. Then the city and companies made negotiations individually about the allowable emissions. However, it is not clear what criteria were used to distribute the total abatement measures across the firms involved. If more or less similar percentage reductions in all plants were sought, *total* abatement costs would generally not be minimised.

While administrative costs related to the PCAs originally were considerable ...

It took more than half a year to conclude the agreement in Yokohama after the construction plan of the coal-fired thermal power station was proposed. The city and EPDC both undertook different tests to estimate the impacts an agreement would have. Further, Yokohama City also submitted a request to MITI for budgetary support to EPDC. All these administrative procedures took much time. In Kitakyushu City, a committee with representatives of public authorities and private companies discussed the design of the PCAs. This multiparty consultation helped to streamline the negotiation procedures and reduce the transaction cost. Today, in both cities, one small section handles the matters related to the PCAs together with other work.

... they have now decreased, as the agreements play a more minor role.

Many PCAs in Japan are used as a supplement to existing regulations. They are also used as a condition for companies to acquire a permit or licence. The different instruments generally work in a same direction. Japan has "total mass pollutant control" schemes for air and water pollutants. The government designates special areas of control, and allocates emission quotas to prefectures and municipalities. These schemes could perhaps in principle be converted to tradable permit schemes.

The present case study will, together with similar case studies of voluntary approaches used in Canada, Denmark and United States – and other available material – feed in to an OECD report on the use of voluntary approaches in environmental policy, expected to be published in 2003.

POLLUTION CONTROL AGREEMENTS IN YOKOHAMA CITY AND KITAKYUSHU CITY

1. Introduction

1.1 Historical Background

1. Japan started its rapid economic growth driven by industrial production expansion in the mid 1950s, encountering severe air and water pollution problems in the 1960s. At that time, the first model of Pollution Control Agreements (PCAs) was developed in industrial cities such as Yokohama City and Kitakyushu City, where there were a number of large polluting factories and plants and new facilities were planned to be built.

2. In those cities, there were increasing concerns about the environmental impact of expanding industrial activities, firing anti-pollution campaigns of residents. However, there were not effective national and local environmental laws to control polluting industrial activities. The central government paid little attention to pollution issues, regarding them as “local matters” which the central government had little to do with. In that situation, local governments individually started to take actions to control pollution. PCAs were one of the tools that local governments developed to implement effective environmental control at the local level through negotiation and agreement with companies.

1.2 The role of Local Governments in Environmental Policy in Japan

3. With the increase of people’s complaints about pollution damages, local governments administering large industrial areas were forced to start the control of industrial pollution. However, at that time, pollution issues were not recognised as a national problem, but rather considered to be local problems restricted in special industrial areas and large cities. The central government was not eager to take actions against the problems as it thought local governments had to cope with them. In the absence of effective national environmental laws, they enacted their own pollution control ordinances (Tokyo in 1949, Osaka in 1951, Kanagawa in 1951 and Fukuoka in 1955).

4. In 1960s, the economic development and industrial growth were regarded as the prime national policy priority and the national land development policy was promoted based on the Comprehensive National Development Plan and the Law for Promoting Establishment of the New Industrial Cities. As a result, serious air and water pollution took place all over the country, and pollution control became one of the priorities of the national policy agenda in the late 1960s. Japan’s industrial production growth was accelerated by the import of abundant oil from Middle East. Sulphur dioxide air pollution caused by oil refineries, petrochemical complexes, steel and iron, and power plants became very serious as demonstrated later by the Yokkaichi asthma.

5. To control air pollution from industrial sources, the Smoke and Soot Law was enacted in 1962. However, the effectiveness of the law was limited due to the following:

1. The law was based on the principle to keep the balance with economic growth objectives.
2. The scope of the law was limited to the regulation of the areas where air pollution was already serious, and it paid little attention to the prevention of air pollution which might take place in new industrial areas.
3. The emission standards set by the law were not stringent enough to improve the air quality already very deteriorated. Moreover, local governments were not fully authorised to take their own measures such as the setting of standards, conduct of inspection and enforcement of special emergency measures.

6. In this situation, local governments had to develop their own schemes of environmental pollution control. Furthermore, in the national politics, the ruling Liberal Democratic Party (LDP) kept the majority of the seats in National Assembly, and opposing Socialist Party tried to win local elections. The mayor of Yokohama City, supported by Socialist Party, was eager to promote policies free from the interference by the central government control. On the contrary, the general political atmosphere in Kitakyushu City, an old, local industrial city, was conservative, but the mayor and the companies were exposed to the strong pressure of local people asking the mayor to take measures against the serious air and water pollution.

1.3 Pollution Control Agreements as a Tool of “Co-operative Regulation”

7. We can distinguish two main types of environmental policy instruments that have been used in the United States and many European countries as well as Japan: command and control, and economic instruments. Japan however, has found more co-operative ways to set and implement these modes, which we term “co-operative regulation”. This Japanese approach is characterised by the “negotiated consensus building” through discussion, persuasion and norm-setting. Bureaucratic guidance and regulations proceed through careful negotiations and try to solicit voluntary compliance. The practical method to exercise this co-operative regulation has been the use of “pollution control agreements” (PCAs), which were invented and widely used by local governments and companies to compromise the business interests and the environmental concerns shared by local residents.

8. Some local governments, such as Yokohama City, pioneered the first model of the PCAs in the early 1960s. The first PCA concluded in Yokohama City was called “the Yokohama method” and many local governments such as Kitakyushu City immediately followed the model. Thus the PCAs spread rapidly all over the country. In the mid 1990s, there already were more than 40,000 PCAs, and some 1,000 new agreements have been constantly added every year.¹ As there are such a large number of PCAs, they are of wide variety in terms of the scope and content. However, there are some common features shared by virtually all PCAs.

1.4 Yokohama City and Kitakyushu City

9. Yokohama City, situated near Tokyo, formed a major part of the “Keihin (Tokyo-Yokohama) industrial area”, the largest heavy industrial area in Japan. In the 1950s and 1960s, many new industrial facilities – such as power plants, oil refineries and steel mills – were built along Yokohama’s coastline facing Tokyo Bay. The city is today the second largest city in Japan with 3.4 million people.

10. Kitakyushu City, situated in the western part of Japan, also formed one of the largest heavy industrial areas in Japan. The city was founded in 1963, as the result of the unification of five cities

¹. There are some 30,000 agreements which are valid, as many agreements have already expired.

including Moji, Kokura, Wakamatsu, Yahata, and Tobata. The city developed as a city of iron and steel industry since the first modern steelworks in East Asia was built in 1901. Its population today is 1.02 million people. The city has become famous for its success in transforming a “grey” city to a “green city”, and its efforts to promote international cooperation to transfer its lessons to the cities in developing countries in Asia. For its achievements, it received two awards from the United Nations: the Global 500 Award in 1990 and Local Government Honours Award in 1992.

11. This report takes up the PCAs in Yokohama City and Kitakyushu City. By and large, case studies of these two specific cases present the general characteristics of the PCAs. In Yokohama City, by the end of 1980s, 44 agreements were concluded since the first one was signed in 1964. In Kitakyushu City, 183 agreements have been concluded following the first one in 1967.

1. What is the main content of the scheme? Which are the parties to the scheme? Which are obligations of the private and public parties?

12. A Pollution Control Agreement (PCA) is an agreement concluded between a local government and a company or a group of companies on the special pollution control measures that the company or the group of companies must take to preserve the local environment. In some cases, local residents, individually or as a group, participate in the agreement² as one of the interested parties or as witnesses. PCAs were developed by pure local initiatives, and there has been little involvement of the central government in the PCAs³.

13. In the PCAs, local governments and companies which plan to *build new facilities* or *expand old plants* agree on the extra measures that the company must take in addition to the ordinary measures already necessary for meeting the existing regulation and standards required by the relevant national laws and local ordinances. Some PCAs were also concluded to reduce the pollution caused by *existing* plants, as in the case of Kitakyushu City. The scope of the agreements is not restricted to the items covered by the existing legislation, and the levels of control targets are usually stricter than those formally required by laws. Local governments request, solicit, or persuade companies to accept to take such extra measures. In return, companies can achieve their business objectives smoothly, avoiding oppositions by local residents. Thus, the PCAs have been used as an effective and practical tool to compromise the local needs of development and environmental protection. This is a major reason why such a large number of PCAs have been concluded.

14. There are many forms of agreements, such as agreement, memorandum, contract, and recognisance. All of these are collectively categorised as the PCAs. Furthermore, for insignificant cases, e.g., for small factories, companies often submit written pledges to the local government authorities, stating that they will faithfully take measures according to the relevant laws or their own code of conduct. In Kitakyushu City, the number of such pledges received during the period from 1971 to 1997 amounted to 883, while the number of agreements concluded was 183.

2. During the period from April 1997 to March 1998, for example, 1200 new agreements were concluded, including 106 cases in which the local residents signed the agreements as interested parties and 59 cases in which they participated as witnesses.

3. At the national level, there is another model of “co-operative regulations” concerning the setting of national standards. New pollution regulations and standards are devised and implemented via processes of co-operative regulations. This refers to the joint consultation of business and ministries to decide upon acceptable standards, and once decided, the rather willing implementation by business.

15. In the PCAs, local governments (prefectural governors or mayors) and companies agree on the measures to be taken by the companies in order to protect the environment in the local areas. They define the allowable amount or concentration of pollutants emitted, technologies to be adopted for pollution control, and so on. Most of the PCAs also include clauses defining the special duties of companies, such as the conduct of monitoring and reporting, acceptance of impromptu inspection and information disclosure, as well as the sanction and punishment in the case of violation, such as shutdown of operation and the procedures of dispute reconciliation.

16. The content of the first agreement concluded between Yokohama City and the Electric Power Development Company (EPDC) is summarised in Box 1 below, and the list of agreements in Yokohama City is shown in Appendix 2.

17. According to the clause 1 and 8 of the agreement (Box 1), EPDC monitored emission concentration and reported the data to Yokohama City twice a month. Furthermore, in 1974, Yokohama City introduced a telemetering system to send data on-line from the emission sources to the monitoring centre. Until now, 34 facilities, including EPDC, have concluded the contract to install telemeter system.

18. In 1993, EPDC proposed a plan to replace Yokohama's coal-fired thermal power plant and this monumental agreement was terminated at that time. According to the officer of Yokohama City in charge of the pollution control agreement, EPDC faithfully followed the agreement, and there was not a case in which Yokohama City requested the company to pay the cost of special measures taken by the city. As a result, the SO₂ concentration in this area in 1970 was one fifteenth of the level that was forecasted before concluding the agreement. Thus, the Yokohama method proved effective to control air pollution, but the environmental laws enacted later also contributed to the actual environmental improvement.

Box 1: Summary of the agreement between Yokohama City and EPDC

1. EPDC has to monitor atmospheric phenomena, in order to take the appropriate measure to prevent air pollution based on the monitoring results, and to collaborate with the monitoring survey conducted by Yokohama City.
2. The efficiency of electric precipitator should be above 98%.
3. The chimney should be higher than 120 m, the velocity to discharge should be more than 30m/sec, and temperature of the emission gas should be higher than 130°.
4. EPDC should use high quality coals from Hokkaido.
5. The amounts of smoke and dust should be below 0.6g/Nm³ (1.2g/Nm³ in the smoke and soot law). The concentration of SO₂ should be below 500 PPM (2200 PPM in the smoke and soot law).
6. Pollution control machines should be installed indoors, so that noise from these machines should be kept below the specified level (40 phon).
7. EPDC should make an effort to dispose of wastewater.
8. EPDC should periodically monitor the density of smoke, noise level, wastewater quality, etc.
9. EPDC should submit the monitoring report if Yokohama City requests. If necessary, EPDC should permit Yokohama City to make an inspection.
10. In the case that EPDC does not comply with the above, or the Isogo coal fired thermal power plant causes air pollution problem, Yokohama city will take necessary measures to control the pollution. EPDC has to pay for the expense spent for the measures taken by Yokohama City.

2. *When was the scheme first introduced? Have any significant modifications later been made to the scheme? Which ones?*

Yokohama City: The first PCA in the country

19. In 1964, the Electric Power Development Co., Ltd (EPDC), a state owned company established and controlled by the central government [the former Ministry of International Trade and Industry (MITI)], presented a plan to build a new coal-fired thermal power plant in Yokohama area. MITI requested TEPCO (Tokyo Electric Power Company) to transfer a part of its land to EPDC in order to construct a new coal-fired thermal power plant. The plant was considered to be necessary not only to meet the increasing demand of electricity, but also to relieve the domestic coal industry that was on the decline. However, Yokohama already had been suffering from air pollution in its coastal industrial area, and it was expected that this coal-fired thermal power plant would aggravate the air pollution in the city. As the national law had not enough regulatory power to prevent air pollution, Yokohama City developed an innovative instrument, a “pollution control contract,” in which EPDC made a commitment to take measures to achieve agreed targets beyond the levels required by the law. This contract is regarded as the first model of PCA.

Kitakyushu City

20. In 1967, the first agreement was concluded between Kitakyushu City and Tobata Kyodo Thermal Power Ltd. As it was the first agreement in the city, they adopted an ad hoc procedure. The mayor sent a letter to the company, requesting to take special measures for air pollution control. Then the company sent back a reply to the mayor, stating that it would faithfully take measures to comply with the requests by the mayor. This exchange of letters was the first agreement made between the mayor and the company. In 1969, the second agreement was concluded. In this case, the mayor of Kitakyushu, the governor of the Fukuoka Prefecture and the president of Tobata Kyodo Thermal Power Ltd met and signed the agreement, in which they decided that the company had to take measures to reduce the sulphur content of fuels and install dust collectors. After the city enforced the municipal ordinance for pollution control in 1970, the PCAs began to play a complementary role to achieve the standards set by the ordinance.

21. In most cases, the agreements are concluded between local governments and individual companies. In Kitakyushu, however, a “collective agreement”, “Agreement on the Pollution Control Concerning Sulphur Oxides”, was concluded between the city and 47 companies and 54 factories in March 1972. This agreement was also different from the former agreements in that its objective was to control air pollution from *existing* sources. In order to achieve the national ambient air quality standard of sulphur dioxide, the companies and factories were asked to submit plans for the measures they would take. The law did not request such plans, but the agreement asked them to make the plans which prescribed the type of fuel they would use, its sulphur content, the maximum total emission volume of sulphur oxides, nitrogen oxides and dust. In January 1977, the collective agreement was revised and signed by 48 companies and 57 factories, in order to achieve the amended national ambient air quality standards. Thus this collective agreement was used as a tool for enforcing the national law.

22. The number of agreements in Kitakyushu increased as shown in Table 1 below. Many agreements were concluded when the national and local environmental regulation was strengthened in the 1970s. Then the number decreased as clean air and water were retrieved, but still agreements are used from time to time as a useful tool to supplement the law. An example of the pollution control agreements in Kitakyushu is given in Box 2. When agreements are concluded for conventional types of factories, such a stereotype model can be used, just following the content of previous cases for similar facilities. This demonstrates that many agreements today just play “cosmetic” roles as a supplementary tool to the law. In such cases, there is little administration and transaction cost involved in the negotiations.

Later development of the agreements

23. Following the Yokohama case, 11 local governments concluded agreements with 26 companies during the period of 1965-67. After September 1968, when a pollution control agreement was concluded between TEPCO (Tokyo Electric Power Company) and Tokyo Prefecture, i.e., the largest power company and the leading local government in Japan, the number of agreements made a rapid increase. 30 prefectures and 100 municipal governments concluded PCAs with 574 companies by 1970. Yokohama City itself concluded 44 agreements by 1979, 18 of which were concluded by 1970, as shown in Appendix 1.

Table 1. The number of agreements concluded in Kitakyushu City

Year	Number	Year	Number
1967	1	1983	1 (1)
1968	0	1984	1
1969	2 (1)	1985	1 (1)
1970	8 (1)	1986	1
1971	63 (1)	1987	0
1972	3	1988	0
1973	10	1989	2 (3)
1974	1	1990	1 (9)
1975	9 (3)	1991	3
1976	61 (55)	1992	3 (1)
1977	1	1993	3
1978	0	1994	1
1979	1	1995	0
1980	1 (1)	1996	1
1981	2 (1)		
1982	2	Total	183 (79)

Note: The figures in the parenthesis denote the number of agreements expired.

Box 2: An example of the Pollution Control Agreements in Kitakyushu City

The City of Kitakyushu (*the former*) and the Company (*the latter*) agree on the following, in order to make it doubly sure that measures for pollution control should be taken.

Purpose

This agreement aims to prevent the occurrence of pollution due to the business activities of the latter, thereby protecting the health of the citizens of Kitakyushu and preserve their living environment.

Effort and co-operation

- (i) The latter shall faithfully follow this agreement and always make the best effort for pollution prevention.
- (ii) The latter shall positively co-operate with the measures taken by the former.

Air pollution control measures

(a) The latter shall take measures for air pollution control as specified below:

(b) Specification of the type of the fuels to be used.

(c) Definition of the smoke and soot emission facilities. Specification of the emission amount of smoke and soot (Sulfur Oxides, Nitrogen Oxides and Dust) from these facilities.

(d) The emission amount of smoke and soot shall be reduced as much as possible regardless of the

provision in the previous item.

(e) The latter should obtain the approval of the former when it adds a modification to the smoke and soot emission facilities or install new such facilities.

Water pollution control measures

(a) The latter shall properly treat the waste water by using a waste water treatment facility, and the quantity and the quality of the waste water after treatment should be as follows:

Specifications of the volume and quality of waste water including such items as PH, Chemical oxygen demand, suspended solid, chemicals, etc.

(b) The release of water pollutants shall be reduced as much as possible regardless of the provision in the previous item.

Prevention of noise and vibration

With regard to the machines that produce noise and vibration, the latter shall pay enough attention and take proper measures to prevent them.

Offensive odours

The latter shall make the maximum effort for the prevention of offensive odours, and follow the guidance of the former if there are any complaints against the offensive odours caused by the latter.

Solid Waste

The latter shall be responsible for the proper treatment and disposal of the waste generated in its factory, pursuant to the provisions of “the Law on the Deposal of Wastes and Public Cleansing”.

Measures in the case of accident

When a pollution has occurred or might occur due to trouble or breakage of facilities, the latter shall take emergency measures promptly so that the damage should be minimized, and report the content of the measures to the former as soon as possible. The former can order the latter, according to the degree of accident, to stop operation of the facilities that are concerned with the accident.

Measurement and record

In order to grasp the state of soot and dust emissions, the latter shall conduct measurement of the items for which emission standards are set in the Air Pollution Control Law and other related laws, and keep that record for three years.

Report and On-the-spot Inspection

The former can ask the latter to submit a report, or send its officials to make on-the-spot inspection.

Disclosure of the Agreement

According to the “Kitakyushu City Freedom of Information Ordinance”, the former shall disclose the related information if there is a public request for that information

Consultation

The former and the latter shall consult and decide on the relevant matters when there is a need to decide on what is not written in this agreement, or when it becomes necessary to amend what is written in this agreement.

24. At first, the central scope of PCAs was the control of air pollution, then the scope expanded to include other environmental items such as the control of water pollution, noise, the preservation of greenery and landscapes and nature conservation. Accordingly, they had different names, such as “environmental preservation agreement”, “natural environment preservation agreement”.

25. The role of the PCAs changed as a number of environmental laws were enacted and the national and local environmental institutions were drastically improved in the 1970s. The main role of the PCAs in

this time was not to be a substitute of the law as it was the case in Yokohama, but rather to facilitate the enforcement of the national and local environmental laws. Laws set the ambient air and water quality standards, however they were the level of environmental quality desirable to be attained and maintained and there were no guarantees that the standards would be achieved quickly. Therefore, even in the presence of the law, local environmental authorities and citizens wanted to have a tool to push companies to make best possible effort to achieve the environmental standards as promptly as possible. It is true that the relative importance of the PCAs decreased because, regardless of the agreements, companies had to take measures according to the environmental regulation and there was less need to ask companies to take extra measures. Nevertheless, even today, local residents often have a concern about cases in which something they can not imagine might take place – accidents, new pollutants, new scientific findings, etc. Thus, local governments and people request companies to conclude agreements, and most of the agreements today are concluded to make sure of faithful actions of companies for items which are not sufficiently dealt with in the law, such as toxic chemicals, sunshine, greenery, etc., and prescribe the sanctions in the case of non compliance. In the 1980s and 1990s, for example, many PCAs were concluded to take measures for preventing ground water pollution caused by IC industries and preventing environmental pollution by hazardous wastes, as the relevant regulation did not exist at that time. In such cases, the PCAs played a “precursor” role of laws. Thus, PCAs still play an important role to cope with new problems that might emerge and take measures that are not prescribed by the law.

26. Thus, the old model of PCAs developed in the 1960s is still valid today. In Yokohama City, for example, a new PCA was concluded in 2000 when a new coal-fired thermal power station was built. There were arguments about the need of the coal-fired thermal power station, since a gas-fired power station would be more environmental friendly. In issuing the permission, the city adopted the traditional method of concluding a PCA with the company, asking it to take the most advanced countermeasures.

3. *What was the “origin” of the scheme? Who took the initiative to negotiate the agreement? Was it e.g. the private party that proposed this as an alternative to a tax/charge or an existing or proposed regulation?*

Yokohama City

27. The origin of the agreement was the initiative of Yokohama City, led by its mayor. Local governments had few legal instruments to require companies to take measures which were not required by the law. On the other hand, the company found economic merits to conclude the agreement. Firstly, it could obtain the permission to build a power plant in an area close to the large Tokyo metropolitan area, where there were many consumers of electricity. It was not easy to find such a good location in other areas in the Tokyo-Yokohama metropolitan area. Moreover, the company might have had great difficulties in obtaining the consent of the local residents without concluding the agreement. The company knew how hard it was to build a plant against the anti-pollution protest of local people. There had been a famous event in Mishima and Numazu (cities in Shizuoka Prefecture), where the opposition of citizens blocked the construction plan of a petrochemical complex.

28. In May 1964, the Council on Electric Development Adjustment (*dengen kaihatsu chousei shingi kai*) of the Economic Planning Agency gave an approval to construct a 265MW coal-fired thermal power plant in this area. In June of the same year, citizens in Yokohama who learned about the plan established the Environmental Preservation Committee, with more than 200 members. In response to this action by citizens, Yokohama City started an automatic and regular monitoring of SO₂ and dust in the whole city area. In addition, it conducted a smoke diffusion test and simulation, in order to examine the environmental impact of the coal-fired thermal power plant, taking into consideration that a number of energy companies (TEPCO, Tokyo Gas, Japan Energy and others) were planning to build facilities in the same area, and that

it was predicted that the siting of these energy intensive industries in a limited area would cause serious air pollution.

29. The land EPDC tried to buy from TEPCO was land originally owned by Yokohama City. The city had created the land by reclamation and sold it to TEPCO. When the land was transferred to TEPCO, the city and TEPCO had made a contract concluding that TEPCO should not sell the land to others without the consent of the city. The city utilised this contract to persuade EPDC to conclude the agreement. In other words, without concluding the agreement, the transfer of land from TEPCO to EPDC was not permitted. At the same time, the city also concluded an agreement with TEPCO, which said that TEPCO must obtain an advanced permission of the city to build a new power plant on the rest of the land.

30. Before the agreement was concluded, the air pollution in Yokohama was already serious. Yokohama City started measurement of dust fall and SO₂ concentration in the exiting industrial area in 1956. Furthermore, in 1958, the city made more systematic, area wide monitoring in order to have a clearer picture on the state of environment. The results of the study predicted that the emissions from the facilities to be built in the area would cause serious air pollution in other parts of the city. Since the health damage of air pollution in Yokkaichi was already known, a group of medical doctors in this area expressed concerns about the environmental impact. In May 1960, the group submitted a letter to the mayor, requesting him to take appropriate measures to prevent air pollution. In response to this letter, Mr. Asukata, Mayor of Yokohama City, supported by the Socialist Party, sent a letter of notice to the facilities, requesting them to consider the need of pollution control. The replies from the facilities were faithless ones, merely stating that they would use only gas and oil as fuels and that they would not emit such a large amount of soot and smoke that would cause air pollution. However, it was already known that the incineration of oil containing sulphur had caused the serious air pollution in Yokkaichi. Therefore, the mayor decided that the city should not permit the land transfer if EPDC did not take effective control measures. It was predicted that the same level of air pollution as already occurred in the old industrial area of Yokohama, would take place in the central part of the city, unless appropriate measures against pollution were taken. Based on this assessment, Yokohama City and EPDC negotiated the measures to be taken. At the same time, since EPDC was a state-owned company, Yokohama City submitted a request to MITI, soliciting budgets necessary for the company to take the measures prescribed in the agreement as listed in Box 1. In response to the request of Yokohama City, the Parliament Vice-Minister of MITI (Ministry of International Trade and Industry) sent a letter to the city, stating that MITI would make an effort to meet the requests of Yokohama City.

31. The negotiation between Yokohama City and power companies which were under the control by the national government was something like a proxy war between the city led by the socialist mayor and the national government (MITI) under the control of ruling Liberal Democratic Party. The agreement might not be concluded without the leadership of the mayor, and therefore even anti-government people highly appreciated this as the “Yokohama method”.

Kitakyushu City

32. The political climate of Kitakyushu was more conservative than Yokohama. However, the air and water pollution in the old industrial city was so serious that the mayor met fierce anti-pollution campaigns of citizens. As the city was the castle town of the largest iron and steel company in the country, actions of other companies were largely influenced by the decisions of that key company. Here, the city and the top of the company made negotiations and decided to take effective control measures to limit pollution. They knew the action already taken in Yokohama City. They did not like to have a mayor supported by the Socialist Party, and they had to demonstrate that the mayor supported by LDP (the Liberal Democratic Party) could take effective actions as in Yokohama. Furthermore, a large portion of the residents was the

employees and their families of the polluting industries, and pollution control was recognised as a requisite for the companies to protect the health of their employees.

33. Thus, in the case of Kitakyushu, a typical model of co-operative regulation was adopted. The negotiation and consultation of the city and companies, the top of the leading company among others, led to the agreements on the action to be taken by the companies. Newspapers at that time, however, criticised Kitakyushu City for its weak attitudes to the companies and the weak public involvement in comparison with Yokohama City.

2. Environmental effectiveness

4. Are the stated environmental objectives being met?

34. The prime objective of the PCAs concluded in Yokohama City was the prevention of SO₂ pollution. The agreements proved effective to attain drastic reductions of SO₂ emissions, as shown in Tables 2 and 3. According to an estimation conducted in 1964, the total SO₂ emissions in a business-as-usual scenario would be 300 tons/day, while the actual total emission in 1970 proved to be a mere 20 tons/day, a reduction to one fifteenth. Figure 1 shows the change in the emission of sulfur oxides in Yokohama. The city had an old industrial area along the coastline of Tokyo Bay, and the emission from that area increased rapidly in the early 1960s. Then in the mid 1960s, a new coastal industrial area (Negidhi-Honmoku area) was developed and the emission from this area increased rapidly, while the emission in the old area decreased. The increase in the new area would have been much larger if the agreements were not concluded. In the 1970s, the emission both in the old and new areas achieved a sharp decline as the stringent regulation was enforced and new control technologies were adopted.

Table 2. Projected emissions of SO₂ in 1970 in the Negishi-Honmoku area

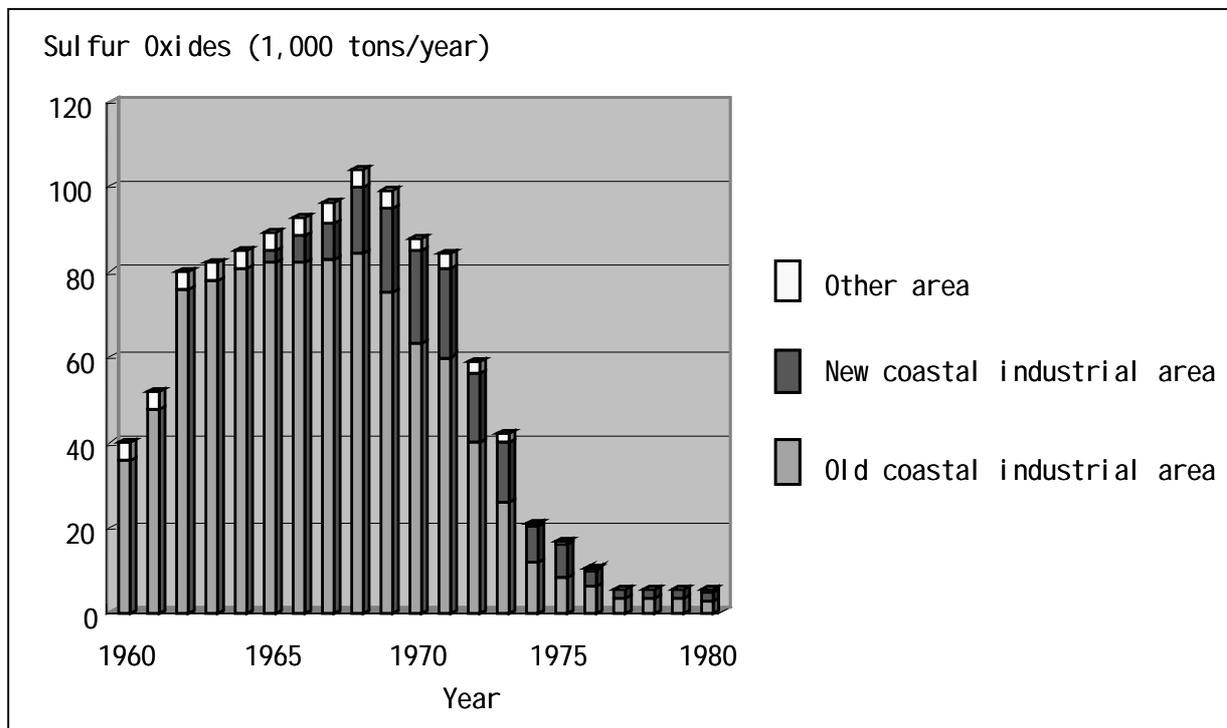
The industry type	Total amount of oil (kl/day) ⁴		The total amount of SO ₂ emission
Oil fired plants	488	8.6%	300t/day
Coal fired plants	4855	85.7%	
Others	323	5.7%	
Total	5666	100.0%	

Note: Based on the estimation conducted in 1964.

Table 3. The actual emissions of SO₂ in 1970

Sector	The emission amount of SO ₂ (t/day)
Oil refinery	8.0
Fire power plant	6.0
Gas	3.0
Others	2.4
Total	19.4

4. The projected SO₂ emissions in the new coastal industrial area (Negishi-Honmoku area) were comparable to the emissions in other coastal areas along Tokyo Bay: 530t/day in the Kawasaki coastal industrial area, and 360t/day in the Tsurumi Kanagawa coastal industrial area.

Figure 1. Change in the amount of SO_x emission in Yokohama city

Source: The report on Yokohama Case Study published by X Research Institute, 1993.

35. Similarly, air pollution in Kitakyushu was also improved drastically. However, the emission reductions in the two cities were not solely achieved by the PCAs, but as a result of combined measures of regulation and voluntary compliance.

36. The Basic Law for Pollution Control and other environmental laws were enacted in 1970 and the Environmental Agency was created in 1971 as a central promoter of national environmental policy. Following these events, the environmental management capacity of central and local governments was drastically improved in terms of scientific information, standard setting, monitoring and inspection, etc.

37. At first, as there were no effective national and local environmental laws, the PCAs were developed as a major tool to demand companies to take advanced measures. After a number of environmental laws were enforced, the PCAs mainly played a complementary role. The content of the agreements were carefully assessed and negotiated between the local government authorities and companies. In the earlier models of PCAs, the agreed measures were really innovative, e.g., adoption of new control technologies still under development, but those in the later agreements tended to be a compilation of conventional methods. There have been a few cases where the agreements were violated.

5. *Were the stated objectives set by public authorities or by the private parties to the agreement?*

38. The stated objectives were decided through negotiation between the cities and the companies. In the first agreement in Yokohama, however, the city took the initiative and persuaded the company that was reluctant to take actions which were not required by the law. The national government, MITI, did not directly intervene in the negotiation between the city and the company, but it provided various types of guidance to the company as the agreement had a significant implication for the national energy policy.

39. The emission targets were decided by scientific studies conducted by the city and the company. Considering that many large facilities would be built in the same area, Yokohama City conducted a diffusion simulation study in addition to the ordinary air quality monitoring. EPDC also conducted a wind-tunnel experiment of pollutant diffusion. The results of these studies were made available to both parties as well as citizens, and both parties negotiated and decided the target values, considering the available technology and the cost. In Kitakyushu, the targets were also decided by the city and the companies in order that the environmental quality standards should be achieved. Almost 97 per cent of sulphur oxides emission in the city was accounted for 30 large companies located in the city. These companies and public authorities including Kitakyushu City, Fukuoka Prefecture, and the Kyushu Regional Bureau of MITI formed a committee, the Committee for Information Exchange and Consultation on Air Pollution Control in Kitakyushu City. They held a number of formal and informal meetings to discuss how to achieve the environmental standards as efficiently as possible. Based on the discussions and negotiations among the 30 companies and the public authorities, each company submitted an individual plan to reduce its pollutant emissions.

6. Did any third party take part in the setting of the targets?

40. There was no formal participation of any third party in the first agreements in Yokohama and Kitakyushu in the setting of the targets. In the case of Yokohama, however, citizens were invited to the monitoring test and wind-tunnel experiment. In both cities, as local people were very much concerned about the bad environmental quality, data were made public. Moreover, as there were strong, anti-pollution campaign and anti-industry movements all over the country, much data were made public and the public support facilitated the prompt actions in the cities.

41. Following the first model in Yokohama, new models of agreements were developed. In many later cases, citizens, individually or as a group, took part in the negotiations of target settings. In early cases, citizens did not have enough information, but later they were able to find rich scientific data from various sources and influence the decision by local governments and companies.

7. Was a "Business-as-Usual" scenario elaborated before the finalisation of the agreement? If so, how? Was any third party invited to provide comments on this scenario?

42. There are a variety of agreements today. Some agreements are based on quantitative assessment, but many agreements, especially those concluded for smaller companies, have clauses just stating that the companies should faithfully prevent the occurrence of any kind of pollution problems.

43. In the early models in Yokohama and Kitakyushu, they made future projections of pollutant emissions and decided the reduction targets. Especially in the case of Yokohama, they made various simulation studies before the finalisation of the agreement. Later, however, the Air Pollution Control Law and the Water Pollution Control Law were enforced and such projection for individual factories was no more important. The laws designated special control areas and asked relevant prefectures to prepare plans to control the total pollutant emissions in order to achieve the national ambient air and water quality standards. In the case where such total pollutant emission control plans exist, the agreements must be just consistent with the plans. However, there are still areas where environmental standards for some items such as NO_x have not been met. In such areas, the PCAs can play a role to ask companies to take measures beyond the law.

8. *Does the scheme include any provisions that can stimulate dynamic efficiency, for instance by stimulating research and development? Has the scheme been accompanied by the introduction of any fundamentally new (and “environmentally friendly”) technological solutions? What, if anything, would have hindered the introduction of these solutions had the scheme not been put in place?*

44. Early models of PCAs, e.g., those in Yokohama and Kitakyushu, included a number of innovative technical measures which were not special according to the standard today, but which were very new and ambitious at that time. In the first agreement in Yokohama, the chimney had to be higher than 120 m, and the efficiency of precipitators had to be higher than 98%, all of which were very high standards considering the technology availability at that time. In many cases, PCAs asked companies to introduce new control technologies that were still in the stage of verification. As a matter of fact, such ambitious target settings stimulated dynamic efficiency by facilitating the development of new technology. Without the pioneering role of PCAs, improvement of national environmental legislation and technology development would have been delayed considerably.

9. *How is environmental performance measured and verified? Are the results of the monitoring made public? If so, and if the agreement is made at a sector level, is the performance of individual firms measured and made public?*

45. When the first agreement was concluded in Yokohama, environmental management capacity of local governments was very weak. They did not have efficient monitoring systems. Therefore, the conduct of environmental monitoring was the prime duty of the company. The clause 1 of the agreement (Box 1) clearly stated that the installation of the monitoring instrument was a duty for EPDC. The monitoring result was reported to Yokohama City and made public, although the disclosure was not obligated.

46. Later, however, local governments conducted environmental monitoring according to the new environmental laws. Therefore, for environmental items such as conventional air and water pollutants, environmental performance was generally monitored according to the scheme of ordinary environmental monitoring based on the law. In other cases where the pollution prevention of special pollutants such as new chemicals was necessary, special provisions for monitoring were placed in the agreements. In recent cases, the data are mostly made public.

10. *Are other policy instruments used to achieve the same policy targets? (See also further questions on policy packages below.) Is it possible with reasonable accuracy to disentangle the individual contributions of the different instruments – and of other “outside” factors, like changes in exchange rates, in GDP, in average temperatures, etc.?*

47. Until the late 1960s, environmental laws were not strong enough to control industrial pollution. The national uniform standards specified by laws such as the Smoke and Soot Law were not effective to prevent serious air and water pollution that occurred in heavy industrial areas. Special measures were necessary to control pollution in such heavy industrial areas. In the absence of effective regulation, the PCAs played a role to substitute the national law, setting stricter control targets than the law required.

48. The role of PCAs changed as new environmental laws were enacted and regulation was tightened. In 1968, the new Air Pollution Control Law replaced the Smoke and Soot Law, following the enactment of the Basic Law for Pollution Control in the previous year. In 1970, the Basic Law and Air Pollution Control Law were amended when many other environmental laws were enacted at the same time. The new Basic Law allowed local governments to set their own standards stricter than the national law. Furthermore, in 1974, the Air Pollution Control Law was amended again, and the “total mass emission control” was introduced. In this scheme, the prefectural governors administering the areas where industrial

establishments were intensely located and heavy pollution might take place were asked to prepare plans to reduce the total amount of pollutant emissions.

49. The emission standards specified by laws became stricter than the emission levels previously set in the PCAs. Agreements were revised as the law defined stricter standards. Table 4 shows that the emission target set in the agreement between Yokohama City and EPDC for a coal fired power plant was revised so that it was stricter than the national standard. Moreover, the PCAs were used to specify the control measures to be taken by companies much more in detail than the law required. In the agreement between Yokohama City and EPDC, for example, specific measures such as the installation of electric precipitators with the efficiency above 98%, a chimney higher than 120m, and the use of high quality coal from Hokkaido. The law did not specify such details. In addition, the PCA authorised the city to receive detailed information on the measures taken by EPDC through the monitoring and reporting based on the agreement. The agreement also defined various duties of the company which the law did not require, such as the acceptance of the inspection by the city, submission of information to the city when the company planned to make any significant change in the mode of operation, information disclosure, shut down of the plant in case of non-compliance, revision of the target as necessary.

50. Thus in the case of Yokohama, the PCA was used to require companies to take measures to achieve the targets higher than the national standards. Figure 2 shows how the stricter control targets for sulphur oxides were set as a result of the combinatory efforts of the pollution control agreement and the enforcement of national laws. At first, in 1964, the emission target set by the agreement was much lower than that required by the law (the Soot and Dust Control Law). Then the law (the Air Pollution Control Law) was amended many times and more stringent standards were set. Following this, the agreement was revised so that it should require more stringent measures than the law. In the 1980s, however, its role was marginally small compared to that in the 1960s. In the case of Kitakyushu, as its first agreement was made in the 1970s, the PCAs were used as a tool to accelerate the enforcement of the law in a more direct way. The use of higher quality fuels was the key control measure in the collective agreement in Kitakyushu. Each company made a plan to switch to cleaner fuels with lower sulphur content, and the Committee on Information Exchange and Consultation on Air Pollution consisting public authorities and representatives of companies examined whether the collective actions would promptly achieve the target set by the national law. The agreements accelerated the concerted action of companies, thereby facilitating the enforcement of the law.

11. Is there a credible threat that other instruments (like new/higher taxes or stricter regulations) will be introduced if the stated targets were not met? Which alternative instruments would seem likely?

51. In many agreements, there is a clause on the sanction in the case of non-compliance. In some cases, the factories might be shut down. In the case of Yokohama, it was concluded that the city would take measures if the company could not achieve the target and the company had to bear that cost. However, there have only been few cases where the sanction was made.

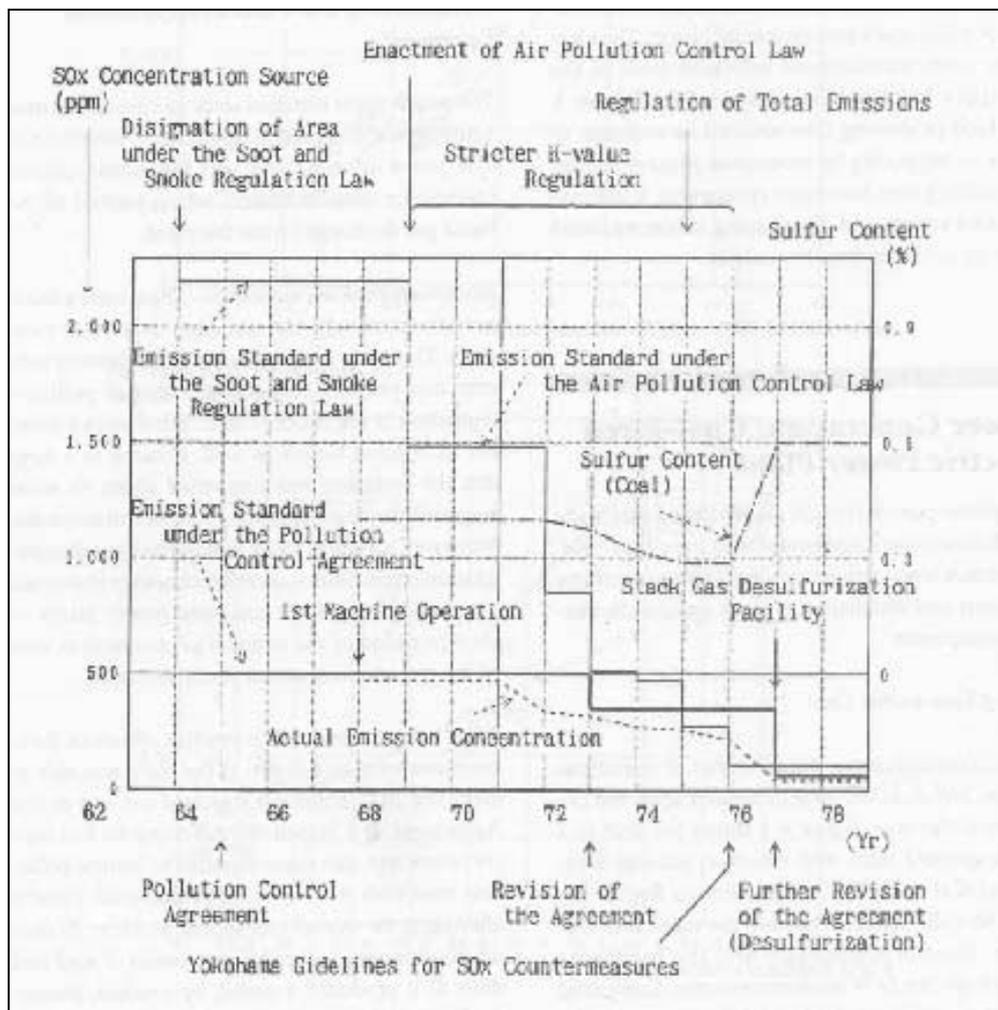
12. Are there any indications that alternative instruments in practice would have contributed better to achieving the environmental targets – in the shorter and longer term?

52. At the beginning, the standard set in the national law was too lax, and the PCAs played a role as a substitute of the law. In the longer term, however, the regulatory measures based on the law were strengthened and the PCAs played a supplementary role to the law.

53. After the introduction of the total mass emission control system in the Air Pollution Control Law in 1974, the standards set in the law became stricter than the targets set in the PCAs. However, the PCAs

can be used to ask companies to take extra measures which are not required by the law. The agreement with EPDC in Yokohama, for example, obligated the company to adopt special pollution control equipment, use especially high quality fuels and provide data to the city.

Figure 2. The relationship between the PCA and enforcement of national law on SOx emission control in Yokohama



Source: Report on Yokohama Case Study published by X city Research Institute, 1993.

3. Economic efficiency

13. Does the scheme include any special mechanisms that are likely to promote cost-efficiency? If so, which one(s)?

54. In the PCAs, there are no formal mechanisms to promote cost-efficiency. However, the technologies to be introduced based on the agreement were carefully decided considering the cost.

14. *If the scheme covers several individual firms or plants: How is total abatement shared between the firms/plants? Was the burden sharing specified in the agreement or left to the private party to decide at a later stage?*

55. In Yokohama City, the PCAs were concluded with single companies. In Kitakyushu, there was a collective agreement, in which more than 100 emission sources (individual companies and factories) participated. However, there was no specified burden-sharing rule. All participating companies were requested to achieve almost the same rate of reduction, and an emission reduction quota was allocated to each source according to the actual emissions at the time when the agreement was concluded. The abatement cost might have been different according to the type and size of the sources. The participating companies were large ones, and a key technical measure was the use of high quality fuels with lower sulphur content, i.e., a measure in which all sources had to bear similar cost increases. The allocation of emission quota was exercised when the total mass emission control schemes based on the law were introduced for air and water pollutants in the 1970. In these cases, relevant prefectures negotiated and decided the emission quota, and then each prefecture allocated its quota to individual sources. However, the decision processes of the quota allocations were not been made public.

56. In Kitakyushu City, a collective agreement was concluded between the city and more than 100 emission sources. There was a consultation committee consisting of the environmental authorities of the city and the companies, and they decided the general reduction policy. Then the city and companies made negotiations individually about the allowable emissions. The city checked whether the collective action could achieve the local environmental target. The city solicited or persuaded the companies to further reduce their emissions if the collective action could not achieve the goal.

15. *Are any estimates of the marginal abatement costs for individual polluters available? If so, do the marginal abatement costs differ significantly?*

57. Unfortunately, no such estimate was made.

16. *If one were to rank all emissions covered by the scheme by increasing marginal abatement costs, would a significant part of the cheapest abatement possibilities be found in a limited number of firms?⁵ If so, in which type of firms and/or in which sectors?*

58. In case of Kitakyushu, there were several large sources and the most significant reduction in the total emissions in the area was achieved at these sources. Other smaller sources, even if the number was large, made smaller contributions. The marginal cost of reduction must have been smaller for larger sources (economy of scale), but unfortunately such data are not available.

4. Practical implementation

17. *Have any significant examples of free riding been found concerning this scheme? For example, are there any major firms that benefit considerably by avoiding a proposed tax or regulation, without itself being party to the agreement?*

59. In Kitakyushu, there was a collective agreement in which more than 100 sources participated. The role of larger sources was critical for such a large number of companies to make an agreement. The

5. This would indicate that a cost-efficient abatement approach could have income distribution impacts that some would consider “unfair” – unless (preferably undistorting) compensation mechanisms could be found.

agreement was concluded by the initiative of an iron and steel company which was the largest company in that sector in Japan.

18. Have any special measures been taken to avoid free riding?

60. There were no special measures. In front of the anti-pollution and anti-industry campaign in the 1960s and early 1970s, the major companies were conscious about their social responsibility, and they did not try to avoid regulation without itself being party to the agreement.

19. What does the industrial association do to prevent free-riding among its members?

61. In Kitakyushu, the companies formed a consultation committee in which the representative from the largest company took the initiative. That company (“New Nippon Steel Company”) was a leading member of Japan Iron and Steel Industries Association and “Keidanren” (Federation of Economic Organizations), the most influential industrial association in Japan. It was keen to the pollution control measures that Japanese industry must take. In Japanese business culture, other companies followed the same manner as the leading company took positive action.

20. Does it seem likely that the free-riding problem would have been reduced or increased had any alternative policy instrument been used instead?

62. There were no free-riding problems.

21. Are there any “watchdogs” (such as environmental NGOs with a particular interest in the issues covered by the agreement) that could be expected to signal if a significant degree of regulatory capture has taken place?

63. Yes. There were anti-pollution citizen groups that watched the actions of the local governments and companies. They could influence the local election and prefectural governors and mayors were keen to their actions. Companies also were careful about them because there were a number of cases where the anti-pollution movement blocked new construction projects.

22. Have any claims of such capture been made in this case? If so, what has been the response of public authorities and the private parties?

64. In the case of Kitakyushu, the agreements were concluded between public authorities and the private companies, and information disclosure and citizens’ involvement was rather weak compared to the case of Yokohama. Media and some citizen groups criticized that the companies were merely planning to take business as usual measures, which they would have taken regardless of the agreements.

23. Is there reason to believe that public authorities are well informed about costs of abatement options of the firms in question – meaning that there are few information asymmetries in this case?

65. In the 1960s when the first PCAs were made, most abatement technologies were still under development, and there was not large demand of special control technologies. Therefore, their cost was generally very high. Companies were reluctant to take measures due to the cost. The first agreements obligated the companies to adopt such expensive technologies. Later, however, the costs decreased significantly, and the size of the market for environmental technologies expanded. As far as conventional abatement options is concerned, much information about cost is available for public authorities today.

However, there are new problems, such as hazardous chemicals, for which sufficient data are not available, neither for public authorities nor for companies.

24. Does it seem likely that problems related to regulatory capture would have been lower or higher had any alternative policy instrument been used instead?

66. The agreements played an essential role when there were not effective environmental laws. At that time, there was no case of regulatory capture. However, regulatory capture took place as new laws were enacted and more stringent standards were enforced. The agreements were used just as a “cosmetic” tool to demonstrate that the public authorities and the companies seriously discussed the environmental matters and decided to take measures that would accelerate the enforcement of the law and that they were prepared for new problems which might emerge.

5. Administrative / transaction costs

25. Provide estimates on administrative costs (monetary outlays, time use, etc.) concerning the negotiation of the agreement – both for public authorities and the private parties involved. Information on the number of separate negotiations under the scheme should be included.

67. When the first agreement was concluded, both Yokohama City and EPDC conducted a number of studies to decide the contents of the agreement. They also had a number of formal and informal meetings. It took more than half a year to conclude the agreement after the construction plan of the coal-fired thermal power station was proposed. Yokohama City carried out a simulation test and a diffusion test, while EPDC conducted a wind-tunnel test. Some members of the municipal council, representatives of the citizens and scholars participated in those tests. Yokohama City also submitted a request to MITI, since EPDC was a state-owned company and it seemed difficult for EPDC alone to take the measures without budgetary support from the national government. All these administrative procedures took much time.

68. In Kitakyushu, “the Committee for Information Exchange and Consultation on Air Pollution” was formed, which consisted of the representatives of public authorities (Kitakyushu City, Fukuoka Prefecture, Kyushu Regional Bureau of MITI) and 30 private companies. They made discussions on the schemes of PCAs. The multi-party consultation among the public authorities and private companies at Committee meetings was effective to reach a collective decision and reduce the transaction cost, streamlining the negotiation procedures.

69. Today, both in Yokohama City and Kitakyushu City, one small section (1 chief officer and 2-3 clerks) handles the matters related to the PCAs together with other work, such as regulatory guidance and public relations.

26. Provide estimates on any changes in administrative costs – for the public and private parties – due to the continued operation of the scheme.

70. Administrative costs reduced significantly as model agreements were pioneered by Yokohama City and others and data were accumulated. For monitoring, for example, the cost reduced very much once the equipment was installed and as public monitoring system was improved.

71. In later cases, local governments, even small municipalities with little experience in environmental control, could benefit very much from the experiences in other cities. Actually, there were many officers from other local governments visiting Yokohama City to learn its experience. This must have contributed to the reduction of administrative costs.

27. *Discuss whether the scheme provides “relief” from administrative costs involved in previous or existing policy tools – such as exemptions from rules requiring individual licences each time changes to production methods are made, exemptions from certain reporting requirements, etc.*

72. In the first case of Yokohama, the PCA was a condition for the company to acquire the license of buying the land. At first the PCAs were used to substitute the insufficient laws, and then they played a role to supplement the existing regulations. They have not been used as an instrument to simplify the procedure of acquiring license or reporting. Thus, it did not reduce administrative cost by exempting the duties set under the regulations. However, the faithful fulfilment of the agreements improved the public acceptance of the business activities of the companies, thereby reducing the cost to obtain the consent of local people when the company planned to build new plants or expand the existing facilities.

28. *Discuss the role of third parties – as concerns the administrative costs. Did any “relieves” compared to previous or existing legislation provided to the private party through this scheme (as referred to in question 27) face strong opposition from e.g. environmental NGOs?*

73. In some cases, citizens participated in the PCAs as witnesses. This arrangement must have reduced the administrative costs by increasing their transparency and improving the public acceptance.

29. *Provide available information on any (other) special measure taken to limit administrative costs related to the scheme.*

74. There have not been any special measures intentionally aimed to limit administrative costs. As many agreements were concluded, however, administrative procedures were customised and it contributed to the cost reduction.

30. *Indicate whether administrative and transaction costs seem likely to have been lower or higher had any alternative policy instrument been used.*

75. At first the PCAs were necessary because there were not effective environmental laws. Regulatory schemes based on laws were enforced after new control measures were adopted in the PCAs. At that time, PCAs lowered the cost of regulation. Then the improvement of regulatory system lowered the administrative and transaction costs of the PCAs. At the same time, many PCAs today supplement the law, lowering the cost of implementing regulatory measures. Thus, laws and PCAs supplement each other, reducing the total cost.

6. Voluntary approaches versus tradable permits schemes

31. *What are the likely main reasons for not using an economic instrument in this particular case? This could for example be fear of negative impacts on sectoral competitiveness, fear of unwanted distributive impacts, problems in defining a suitable tax-base or a suitable basis for emission permits, legislative obstacles that prevents the authority that is party to the agreement from making major changes to existing statutory requirements, etc., etc.*

76. There were serious human health damages caused by air and water pollution. To control air and water pollution in order to protect human health was the absolute requirement. For that purpose, Japan preferred direct regulation based on standards rather than economic instruments. As there were a number of health victims, such as patients of the Minamata disease (i.e., organic mercury poisoning) and the Yokkaich asthma, the government as well as people thought that regulation of the polluting industrial

activities would have more direct impact. When the standards set by the law was not stringent enough, people preferred the PCAs as substitute of direct regulation. It was beyond imagination for the people at that time to use economic instruments to control

32. What are the main differences between the scheme in question and a potential tradable permits scheme (for a single company, a given sector or economy-wide) with (partially) grandfathered permits? What would it take to convert the current scheme into a tradable permits scheme? Stricter requirements concerning the measurement and verification of actual emissions, establishment of a market place for the trades, etc?

77. Japan has “total mass pollutant control” schemes for air and water pollutants. The government designate special areas of control, and allocate emission quota to prefectures and municipalities. These schemes might have potential to be converted to tradable permit schemes. In that case, the collective agreements as used in Kitakyushu City might play a supplementary role to implement the schemes.

33. Could any significant economic or environmental benefits be foreseen if such a conversion was to be made?

78. Maybe, but not certain.

7. Policy mixes

34. What other policy instruments are used in the same area as this scheme – or impacts indirectly (positively or negatively) on the relevant environmental outcomes, without necessarily being design with such a purpose in mind (cf. also question 10)? Examples of the latter could be certain provisions in general income taxes; for instance as concerns the deductibility of travel costs.

79. As mentioned before, the PCAs and regulatory standards are used in a way mutually supplementary.

35. Are there specific links between the scheme in question and an environmental permitting or licensing system? If so, please describe.

80. The first PCA in Yokohama was linked to the permitting of land transfer. In many cases, the PCAs are conditions for companies to receive permit or licence to build new plants, expand old facilities, make a major change in production process, etc.

36. How do the instruments “interact” with each other? Do they generally influence behaviour in a parallel direction, or do they give firms or households contradicting incentives? Are there specific provisions to limit the instances of contradicting incentives?

81. Many PCAs are used as a supplement of the exiting regulations. They are also used as a condition for companies to acquire permit or licence. They generally work together in a same direction, i.e., pollution prevention.

37. Do all the instruments have a “measurable” impact on behaviour, or is actual behaviour to such a large extent determined by one (or a few) instrument(s) that the other policy instruments could be seen as redundant (and thus perhaps involving unnecessary administrative costs, etc.)?

82. The PCAs have been developed in Japan’s special culture that can be termed “co-operative regulation”. The PCAs have been developed as a tool for public authorities and private companies to maintain information exchange, consultation, informal negotiation, etc. From the viewpoint of an outsider, there are redundancies between the laws and PCAs. Actually, however, they supplement each other.

38. What is the “relative contribution” of the given voluntary approach in this context?

83. Without the “precursor” role played by the PCAs, enforcement of environmental laws would have been delayed considerably. The use of PCAs allowed local governments to develop effective control measures and flexible application of laws.

8. Conclusions

39. What are – in your opinion – the main strengths and weaknesses of this particular voluntary approach? What would it take to significantly limit the negative impacts of the weaknesses in the future?

The main strengths

- The PCAs can set higher targets than the law requires, depending upon the natural and social conditions of the local area.
- They provide opportunities for public authorities and companies to exchange information and decide the best appropriate method, thereby minimising the conflicts between the two parties.
- They can be used to take precautionary measures against new issues for which much information is not available, e.g., new toxic chemicals.

The main demerit

- In some cases, the legal ground of the PCAs is not clear, and they are subject to the discretion of the public authorities.
- In some cases, they lack transparency, as the negotiation between public authorities and private companies is not made public.
- There is a redundancy between the law and the PCAs.
- There are many cases where the PCAs are abused without serious consideration about their needs.

40. Are there particular lessons for other OECD Member countries to learn from this scheme?

84. The PCAs were developed as an instrument suitable for Japan that was achieving rapid industrial growth and suffering from severe pollution damages. Therefore, the lessons will be most useful for countries in transition economies that are trying to achieve rapid increase in industrial production.

85. The key for the successful application of the PCAs is the mutual trust and reliance of the public authorities and private companies, sharing common policy goals. Japan was able to develop the scheme of

“co-operative regulation”, such as the PCAs, thanks to its relatively clean bureaucratic system which did not suffer from serious corruption.

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Appendix 1. Pollution Control Agreements concluded by Yokohama City

Industry Party	Sector	Plan	Date	Measures								
				Monitoring	Reporting to the city	On the spot Inspection	Prior consultation in case of alteration	Subrogation	Defrayment of the cost	Information disclosure	Shutdown in case of accident	Later Revision of the target
EPDC Isogo coal-fired thermal power station	Electricity	Coal-fired thermal power station 265 MW	1.12.1964	x	x	x		x	x			
Japan Energy (Nippon Mitsubishi Oil Corporation)	Oil refinery	The first stage plan	13.1.1965	x	x	x	x		x			
Tokyo Gas	Gas	The first and second stage plan	13.5.1965	x	x	x			x			
Tokyo Electric Power Co.	Electricity	350 MW	18.8.1965	x	x	x	x		x			
Idemitsu	Research institute	New construction	6.9.1966	x	x				x			
Mitsubishi	Research Institute	New construction	7.7.1967	x	x				x			
Tokyo Electric Power Co.,	Electricity	LHG fired power plant 350 MW*2	24.7.1967	x	x	x	x		x			
Tokyo Gas	Gas	LNG base – The third stage plan	24.7.1967						x			
EPDC Isogo coal-fired thermal power station	Electricity	Coal-fired power station, 265 MW. The second power plant	25.7.1967									
Japan Energy (Nippon Mitsubishi Oil Corporation)	Oil refinery	The second stage plan	10.25.1967 11.2.1967									
Asian oil	Oil refinery		22.11.1968	x	x	x	x		x			

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Tokyo gas	Gas	The fourth stage plan	24.5.1969									
Japan Energy (Nippon Mitsubishi Oil Corporation)	Oil refinery	The third stage plan	18.7.1969									
Japan Energy (Nippon Mitsubishi Oil Corporation)	Research institute	New construction	18.7.1969						x			
Japan Energy (Nippon Mitsubishi Oil Corporation)	Oil refinery	The third stage plan – Renovation	25.9.1969					x				
Tokyo Electric Power Co.,	Electricity	The third LNG fired power plant	20.5.1970									
Tokyo gas	Gas	The fifth stage plan	19.5.1970									
NKK	Steel	The plan to shift to Ogishima 600 million t/year	25.12.1970	x	x	x	x	x	x	x		
Tokyo gas	Gas	Scrap and built (the first and second plan)	25.3.1971	x	x	x	x	x	x			
Tokyo gas	Gas	The fifth plan Renovation	4.1.1971									
Tokyo gas	Gas	The sixth plan	17.5.1971									
Showa tansan	Others	New construction	25.8.1971				x		x			
Japan Energy (Nippon Mitsubishi Oil Corporation)	Oil refinery		21.10.1971				x		x			
Asian Oil	Oil refinery		11.11.1971									
Mitsui	Chemical institute	New construction of research institute	15.11.1971						x			
Tokyo Electric Power Co.,	Electricity		24.1.1972									
EPDC	Electricity		15.2.1972									
Asahi glass	Glass		13.5.1972	x	x	x			x			
Ajinomoto	Vegetable oil		14.11.1972	x	x	x			x			
Nissan car	Car		12.3.1973	x	x	x			x			
	Steel	Planning	15.8.1973									

Chiyoda	Research institute	Construction of new research institute	23.10.1973	x	x	x		x	x		x	
Nissan	Car		28.1.1974	x								x
Nitto Chemical	Chemical		31.1.1974	x	x			x	x		x	x
Bishiwa	Chemical		31.1.1974									
Tsurumi	Chemical	Increase of producing capacity	19.5.1974	x	x			x	x	x	x	x
Tokyo gas	Gas	Tsurumi factory The third plan	14.6.1974	x	x			x	x		x	x
Mitsubishi chemical Corporation	Research institute	Corporate in Kamoshida area	6.6.1975	x	x			x	x			x
Asian Oil	Oil refinery		11.7.1975	x	x			x	x		x	x
Tokyo gas	Gas	The seventh plan SHG installation	26.12.1975	x	x			x	x		x	x