

July 13, 1998

Outline of the First IGES Brainstorming Forum on Emissions Trading

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This report is the outline of the first IGES Brainstorming Forum which was held on June 21 and 22, 1998 at Shonan Village.

Japan has no experience in emissions trading which will be introduced in accordance with the Kyoto Protocol. Emissions trading will be a very important future measure of Japan in the issue of global warming; however, it has not been sufficiently acknowledged in Japan due to lack of experience and information.

The purpose of this forum was to gather stakeholders of Japan and gain deeper recognition of this system and to provide effective information for building a new framework through discussion apart from each participant's position.

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I. Composition of Forum

I.1 Introduction

This forum aims to deepen understanding of emissions trading system, which was adopted in the Kyoto Protocol through frank discussion. For the system has only few examples worldwide except the U.S.(actually the U.S. does not have much experience in GHGs either), this forum is expected to function as a core of discussion in Japan with participation of stakeholders.

Basically, the discussion will be made through *private* opinions although the *concerns* which come from each participant's origin will be reflected to the discussion. The assumption of the discussion is the establishment of emissions trading market including private sectors; however, it is a *supposition* for better understanding of the system and it is not meant to lead the discussion to the direction.

Examples of this kind of regular brainstorming on emissions trading are; Policy Forum by UNCTAD/Earth Council which is international, Braintrust by Center for Clean Air Policy(CCAP) which is held in the U.S.

I.2 Day 1

The theme of Day 1 was the aspect of international system of the emissions trading which was prescribed in the Kyoto Protocol.

The discussion started from the report of SBI/SBSTA in June by Ms. Yasuko Kawashima of NIES:National Institute for Environmental Studies. After Naoki Matsuo(IGES) summarized the points of discussion, the issue of supplementarity and effect for technology development was discussed. (The issue of seller/buyer responsibility was discussed again at the last part with regard to the view points of the market.)

I.3 Day 2

On Day 2, we focused on emissions trading system as a domestic system. The main theme was the issue of allocation to domestic sectors. Allocation to upper and down streams were discussed after Mr. Taishi Sugiyama of CRIEPI(Central Research Institute of Electric Power Industry) and Matsuo sorted out important points.

Lastly, the aspect of a market of emissions trading system was examined. The current status of SO₂ emissions trading system in the U.S. and a proposal of CO₂ emissions trading system made by IPE in the U.K. this year were introduced by Mr. Shunsuke Hayaoka of The Industrial Bank of Japan. The important points in having the market effectively function, such as the issue of the responsibility of the buyer/seller choices were discussed.

I.4 Providing Information

IGES is providing emissions trading system related information for other than the participants of this forum. The materials of IGES Climate Change Project, starting from the report of this forum, will be provided through IGES Web site (<http://www.iges.or.jp/>) for those which can be distributed electronically. Concerning the materials of this forum, there are OHP sheets of main points by Matsuo, papers discussion points and reports on overseas conferences by IGES researchers. The order of the contents of this report is not according to the actual discussion. This report contains the outline of the discussion but not the contents of each presenters reports. This report is based on the record by IGES researchers (Hamamoto, Nakada, Enoki, Togo), however, Matsuo is responsible for seeing if it fully reflects the opinions of the forum participants.

II. International system & General Ideas

II.1 Can emissions trading system reduce emissions?

Point of the issue

Introduction of emissions trading (or JI and CDM) is just a transfer of emissions and it is not clear that if it is effective for reducing emissions. On the other hand, it is true that the U.S. committed themselves to a difficult task of - 7 % on the condition of introducing emissions trading. In case of international negotiations, Europe or developing countries see emissions trading as ineffective for emissions reduction and the U.S. as effective.

Summary of discussion

- (1) If we suppose the reduction goal as given, there will be no change in the emissions with or without emissions trading system. (However, the cost for reduction will be smaller.)
- (2) On the other hand, supposing the cost as given, the total emissions will be less with the trading.

It is important to know which is more realistic. As long as the market effectively functions, the total emission amount will not increase by the trading in principle, since the seller countries reduce the increased portion made by a buyer country (if we neglect the ethical aspect of supplementarity which is discussed later or the issue of hot air).

- (1) is based on the supposition that each nations can observe the Protocol without emissions trading. The idea of (2) is that without emissions trading, there will be countries incapable of compliance due to the high cost, such as the U.S. mentioned above.

This issue is also related to Hot Air Trading. It can be pointed out that the total amount of emissions may increase by trading hot air in Russia(Reduced amount without effort for reduction; hot air exists with or without the trading).

On the other hand, there are opinions such as it is waste of time discussing the hot air since the Protocol does not contain the idea of hot air itself (other approaches may be more constructive). Some insisted on the necessity of hot air as a stimulation for activating the trading.

Some were concerned that hot air would not exist if Russia or Ukraine economically develop, however, others see that in this case rapid technological innovation might occur due to lack of emissions and the U.S. could start selling.

Those who insisted on the importance of the capped emissions trading system including the developing countries in the future emphasized on inviting developing countries to quantified commitments and the emissions trading system. It was pointed out that from a broader(long-term) point of view, establishment of strong incentive for the developing countries to participate(ex; attractive early allocation), rather than strictness and transient increase in emissions.

Organizer's Impression

These gaps in opinions seem to come from the recognition of the strictness of emissions reduction commitment or compliance possibility. Those who emphasize on (1) or hot air trading are comparatively optimistic about the compliance possibility, on the other hand, those who do not focus on hot air trading issue think trading as a condition for compliance. The latter opinion includes concern for collapse of the Kyoto Protocol framework itself due to decrease in number of countries capable of compliance.

II.2 Supplementarity

Point of the issue

The Kyoto Protocol prescribes emissions trading or JI as supplemental to domestic measures. To obtain the supplementarity, EU emphasized on some limitation for trading and the umbrella group's opinion is there should not be limitation. This is an important point of view in prescribing the characteristic of the trading system.

Summary of Discussion

The points of discussion on whether to support the “umbrella plan” or the “EU plan” are as follows:

(1) The umbrella plan supporters opinion, besides that there should be no limitation to the market, is that it is fine if GHGs decrease at a total since global warming is an worldwide issue. They also criticized that EU is inconsistent in insisting on limiting the international trading but trying to form the bubble within EU.

The technological difficulty in actually limiting the market in which private sectors also participate was also pointed out.

(2) On the other hand, EU Plan supporters think that technology does not have to be developed if there is no limit to trading, since the idea of emissions trading is that quantified emissions commitment could be bought if quantified commitment could not be observed. If so, besides ethical aspects, there would be concerns that a measure too dependent on emissions trading would delay R&D for reducing domestic emissions. It was indicated that possibility in realizing the no-limit trading is low since it is doubted the developing countries insisting on supplementarity would accept the introduction of no-limit emissions trading system.

In that sense it might be rather advantageous in the long-term for concerned countries to limit emissions trading and have early measures for domestic technology. For example, as technologies developed with high cost regardless the market are now blooming in Japan, regulations may contribute to technical progress. It may be more

important to diffuse the existing excellent technology such as in Japan to developing countries.

II.3 Relation with technology

Point of the issue

Emissions trading is an attractive option in the sense that it adopts the most inexpensive measure, however, rather than direct regulations, it may lower the incentive for technological innovation as mentioned above.

Summary of discussion

Points regarding technology are;

- (1) Possibility of lower cost of measures
- (2) Possibility of development of innovative technology
- (3) Effect on technological innovation
- (4) Doubt for economic measure itself

Taking the SO₂ emissions trading in the U.S. as example, it is the general understanding that the expensive scrubber lowered its price by price signals. However, SO₂ and GHGs are different issues. For example, it is doubtful that the cost would also be lower for GHGs measures due to technological problems.

In relation with technological innovation, there are concerns that the unlimited emissions trading might prevent the technological “innovation” from developing. Especially in the steel and automobile industries, the R&D incentives for innovative technology might be bigger if they do not depend on emissions trading.

On the other hand, although emissions trading do not have positive effect so much for technological innovation, it may greatly effect the diffusion of efficient technology.

Expectation for the market mechanism itself (how reliable the trading market can be) differs from person to person. This difference bring about two opinions; one is that it is important to establish the market mechanism and the other is that it is more crucial to have concrete measures such as R&D policy.

Organizer's Impression

“Technological innovation” will be most greatly influenced by emissions trading. Personally, at least for short/medium-range, the effect of innovation of inexpensive and efficient technology will be greater for controlling the GHGs emissions. For the “technological innovation” which is given great importance in the long-term, it can be supplemented by other means than trading (e.g. subsidy). However, the trading system will be effective in the future for the diffusion of innovative technology. point

II.4 Seller's Liability and Buyer's Liability

Point of the issue

Buyer's Liability (or shared/shared liability)can be introduced to quantified emissions itself. In this case, the buyer will lose the value of the quantified emissions they purchased if the sellers do not observe the Protocol, or receive discount with regards to the extent of the compliance. The advantage of this is that the incentives for monitoring or compliance of sellers can be established through market mechanism. The disadvantage is that the system becomes complicated.

Summary of Discussion

This issue of seller's liability and/or buyer's liability is closely related to the system of Protocol compliance. If the compliance system is good enough it will be the seller's liability and there will be no problem. If not, some kind of security is necessary and the buyer's liability is an example. (Actually both buyers and sellers are liable) In this sense, this time the discussion on the compliance system was not enough, so the discussion ended undeveloped.

Different image on this issue emerges from different consideration of the quantified commitments as a merchandise. Those who emphasize on buyer's liability have image of bond or stock.

- (1) Seller's liability system has some advantages: it can be easily handled as merchandise since its value would be internationally standardized, and it enables to realize smooth trading. Market can be workable from early stage by releasing certain amount of quantified commitments to the market from early phase. There would be fewer risks for traders to consider. However, tasks remain in the case when sellers just sell as much as possible and gain profit without compliance.
- (2) The merit of the buyer's liability is that the price can be a pressure for sellers' non-compliance. The demerit is there is fear of market collapse due to decrease in trading amount. It is quite complicated, as a state of compliance of a country may effect other countries' compliance, and there is a concern of chain bankruptcy. Also, compliance of a country and compliance of national enterprises are different issues. The problem of consistency remains. Especially, in the latter case there was no consensus what kind of "discount" should be supposed. There was an opinion that it is best to use the market pressure of buyer's liability and the government should be responsible for their national enterprises. Market experts had different opinions for this issue. However, it was pointed out that it is not that commodity with various price trends emerge from the judgement by the market on the extent of the compliance, but that the commodity have one price trend with fluctuation.

Organizer's Impression

The concern of seller's liability supporters is that there might be no market at the first stage of trading (e.g. first commitment period) and that in that case many Annex I countries might fail in compliance due to decrease of the supply of quantified commitments to the market. Therefore, it is possible to adopt the seller's liability system until the market fully functions and adopt the buyer's liability system (after some announcement period). In the case of buyer's liability, it is important to discuss with more concrete image of the system.

III. Emissions trading as domestic system

III.1 Domestic Allocation Issue

III.1-1

Pre-conditions and points of the issue

The domestic allocation system is the main item in designing the domestic emissions trading system and a concern for private enterprises. However, currently the whole domestic emissions trading system tends to be discussed based on vague image. Since there are many possible ways and each country can adopt an independent way, it is meaningful to discuss the right or wrong of a system. However, it is dangerous to have it as a base for the discussion of the right or wrong of the domestic emissions trading system as a whole.

In this forum, it was discussed what concerns the domestic allocation system might have, whether it is from misunderstanding or it is substantial, and what kind of better system can be supposed. Therefore, the domestic emissions trading system which conducts allocation to the private sector is the precondition of the discussion, however, it is a supposition to deepen understanding and there is no agreement on its necessity. Also, though domestic system is discussed here, trading is supposed to be international.

III.1-2 Allocation Criteria

Summary of discussion

The first issue was the methodology of allocation was discussed. It was discussed whether the allocation should be auctioned or should be a free-of –charge allocation system such as

grandfathering(allocation based on past results; standard amount does not be limited by emissions results). The establishment of the standard year of allocation was also discussed.

The first idea examined was that “down streams” would be allocated by grandfathering with the standard year of 1998 and reduce with standardized allocation up to minus 6% compared to 1990. Some opinions were submitted to this idea. As for the allocation system, there was an opinion that auction is more preferable since there would be large transaction cost in negotiation for grandfathering, however, there is no transaction cost in auctioning. To this idea, some were concerned that it would be politically difficult to actually adopt domestic emissions trading system unless it begins with some vested rights of emission. Also it was pointed out that in case of auction, the use of the funds gained by selling allocation would be a problem. Allocation by grandfathering is said to be difficult and costly in negotiation, however, some expected that, compared with regulations, cost reduction effect of emissions trading might exceed the transaction cost.

Secondly, as for the question of whether 1998 should be the standard year or not, some said it is a problem if reduction effort after 1990 could not be counted, and others see 1998 more preferable considering the increase due to “business condition effect”. Of course 1990 standard base in the Kyoto Protocol or 1973 when energy saving started were also on the list, however, the problem of new comers was pointed out in the case of these fairly old years. Also, in adoption of the average of 1990-1995 as the standard rate, it was discussed what kind of useful statistical handling there might be. Allocation could be quite demanding, but there was an advise that allocating more quantified commitments could be fairly acceptable. For example, it could be possible to allocate more than it is estimated in the Kyoto Protocol and governments buy them back later(purchase from foreign countries?). Or, as in RECLAIM which is an emissions trading system in the U.S., it is possible to first allocate more (e.g. maximum amount of past several years) and reduce as a whole later. The existing allocation system base on voluntary action plan was also pointed out (it is necessary to have some consistency between quantified commitments target and target of emission per value added).

Next, it was discussed what the “standard amount” of allocation amount should be. It is a matter of whether to allocate with CO₂ emissions per value added or with CO₂ emission total amount (it can also be done by energy consumption). In this relation, in case of allocating with total energy amount or CO₂ emission total amount, power industry has no other way but to purchase quantified commitments from outside unless power consumption is reduced, since they are responsible in supplying energy. Therefore, some mentioned that preferable units as incentive for energy saving is emission per value added X consumption

amount (emission amount). However, considering the consistency with other industries, others said that establishment of an unified index of emission per value added among different industries would not be so easy. It was also pointed out that it is also possible for each industry to adopt idiosyncratic standards of emission per value added (in case of multiplex allocation-inside an industry- which is to be mentioned later).

III.1-3 Auction

Summary of discussion

In case of auction, it was pointed out that the issue is how the funds gained by selling allocated amount will be used. One possible way is to refund to limited players. However, in this case many tasks came up such as how should the refund system be (paying back to those who gained bits would only help monopoly), what shall the standard of refund system be, and whether all sectors concerned (including foreign countries) should be open or not. The system to keep one part of all assigned amounts for auction was also introduced (US SO₂ Allowance Trading).

As a personal opinion from the industrial sector comparing the auction (+refund) and the allocation by grandfathering, the upper energy stream sector prefers the allocation in which the current situation is acknowledged. In case of auction (+refund), a simple system such as with surplus allocation in accordance with emission reduction effort is desirable for them. Many pointed out that in case of acknowledging vested rights of emission or selecting participants of auction, it is important that the system is flexible with frequent change of players (the new entrants).

III.1-4 Allocation phase

Points of the issue

Considering CO₂, the phase of the allocation should be upper energy stream sector (import and produce phase) and down energy stream section. In allocating the upper stream sector,

in principle the compliance would be automatically realized. However, in allocating the down stream sector, national compliance could not be insured unless some measures are taken for the sectors which would not (or could not) be allocated. Other merit of regulation on upper stream is there are fewer firms concerned and it is easier to manage. On the other hand, since the down stream sector has the actual information of marginal abatement cost, it can be said that emissions trading originate in allocation in down stream. In case of allocation in down stream, what needs to be discussed, in case of allocating for enterprises of certain rank such as highly energy-consuming industry (e.g. enterprises with designated factory of energy management which is regulated by energy saving law), is how should other enterprises should be treated. Since management cost would be high if the number of the concerned firms is too many, therefore, limitation based on some kind of standard would be necessary. It can also be said that it is more easily added to merchandise in down stream compared to upper stream. In case of allocating in down stream, other than direct allocation by the government, it is possible to have multiplex structure with some industrial parties in between.

If emission certificate or coupon system is to be introduced, the regulation phase (the phase in which the government checks the consistency of quantified commitments and emission amount) and allocation phase can differ in general (the certificate can be mediation for these two phases). For example, it is possible to allocate for the down stream and set the regulation phase to upper energy stream sector at the same time. In this case, energy consumers in the down stream must make the payment with certificate when purchasing energy (fossil fuels). Upper stream sector is obliged to report the consistency of fossil fuel sales record and emission certificate to the government annually.

It is depend on each country's industrial structure, political balance-of-power and other characteristics.

III.1-5 Upper stream allocation

Upper stream allocation may be a realistic solution in a sense, but there some points should be considered. One is concerning "rent". The owner of specific assets can make profits since their supplies are inelastic. Allocating for the primary energy industry might end up in providing rent for free depending on its pricing behavior. The truth and false, right or wrong of the issue was discussed.

For example, consumer price of oil was discussed in allocating for the upper stream sector. The points are as follows: there would be no price change if the sector sale its products within the quantified commitment grandfathered, since it already gets its quantified commitment for the whole oil amount for sale. However, it is necessary to purchase from outside in supplying more.

In this case, the oil price for the amount to be purchased for quantified commitment could rise in accordance with the rise of “marginal” cost. However, it should be considered whether the price rises just for the “marginal” cost or the increased amount would be just quantified commitment price added to the total cost of supplied oil (resulting in the increase of the average cost). In a naïve economic theory the former would be right, however, in that case the rent emerging from quantified commitment allocation would be given to oil selling industry. In the latter case, there would be no rent.

It was pointed out by the energy industry that the actual collecting system of the necessary cost of purchasing quantified commitments would not be so theoretical as mentioned above. It was indicated that it would be possible to shift the cost for purchasing quantified commitment to the gasoline for household/transportation sectors equally and avoid shifting to heavy oil for industry (the gasoline market can not be said as competitive. The surplus cost can easily be collected since the price elasticity of demand is low. On the other hand, heavy oil for industry has high price elasticity).

In this case, it is feared that allocation for upper stream would not help the effort of energy saving by industries at all. As for opinion on the shifting of the costs to household/transportation, some pointed out that if the energy price is proportionate to carbon content under tax-exclusive pricing, it would be clearer system and would give the incentive for carbon reduction. However, even if tax-exclusive pricing is adopted, energy-consumption might not reduce regardless of price rise due to the low price elasticity. It was pointed out that it is not desirable that all the burden center on gasoline.

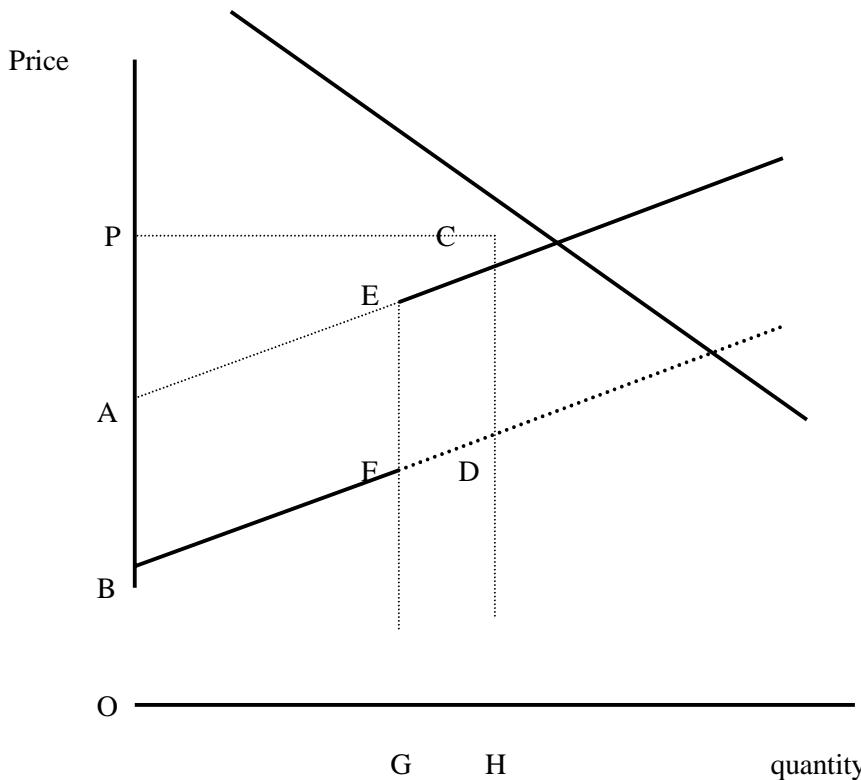
III.1-6 The issue of rent in the first allocation

The issue above mentioned of rent in the upper stream allocation indicates the possibility of profits the upper stream section may gain by the allocation system. The points of this issue, from the standard economics theory, are as follows: first of all, we assume that market is perfectly competitive and therefore firms behave as price takers. Suppose that government conducted the first allocation (grandfathering) of quantified commitments for domestic

CO₂ emissions to industrial upper stream sector (e.g. oil industry). When demanders try to burn the oil they purchased, the buyers must have the quantified commitments for the related CO₂ emission amount. Therefore, the upper stream sector such as the oil industry would sell the products with the quantified commitments for the CO₂ emitted by the use of the products.

The supply curve of the profit is derived from the marginal cost curve. Now the oil industry is allocated the quantified commitments not by auction but by grandfathering system, therefore, the cost concerning the part for the quantified commitments (quantified commitments purchasing cost) would be zero. However, the firms which wish to sell more than the allocated quantified commitments must purchase the exceeding amount from overseas. Therefore, the supply curve in this case becomes “discontinuous”. It is shown in a graph below.

C represents the market price. The variable cost is BOHCEF. The total revenue is POHC. The difference between and the total revenue and the variable cost, that is, the producer's surplus, is APC + ABDC. ABDC can be regarded as the rent emerging from the domestic allocation by grandfathering.



It is the “standard” interpretation by micro economics. However, it is another question whether this kind of pricing behavior based on such marginal principle would be actually implemented. Also, it would differ depending on the market structure of the industry concerned. Suppose, for example, the case of the first allocation for the power industry which has the supply responsibility and is regional monopoly. The power rates are calculated based on the full costs. If quantified commitments are purchased from abroad to supply more power than allocated by the first allocation, the cost would be included in the full costs. It means that the pricing behavior would be based not on marginal cost but on average cost. In this case, power companies would have no rent by the first allocation.

III.2 Matching with other measures

Summary of discussion

As long as emissions trading is a “framework”(though it depends on the allocation system), sectors which could not be covered by emissions trading such as household/transportation should be supplemented with some other policy measures.

There are two possible ideas regarding this matter:

- (1) When these sectors are not covered by the emissions trading (e.g. when allocation and trading are possible only in industrial sector).
- (2) When household/transportation is also covered (e.g. when governments or upper stream sector conduct the trading instead)but emissions trading could not contribute to the emissions reduction of those sectors (when the necessity of regulation on these sectors are acknowledged).

In either case, the household electric charges would have to rise intensely to actually realize demand control with the effect of price incentive. It needs to be discussed if it is politically feasible. It is a major issue if the policy measures which offer price incentive would work by using the market mechanism. However, in another words, it is a matter of establishing a system in which the price incentive would work. Price incentive for enterprises would easily be effective, however, for the final consumer such as in household sector, it is difficult for the price incentive to effectively work due to the low price elasticity. There would be no effect of control without price rise to certain extent. In that case, it is possible to adopt any regulatory measures.

In any case, enterprises might shift their factories due to the introduction of domestic and international systems. It is necessary to take that into account and establish the international and domestic systems.

Also, as for fundamental issue, the shift in people's point of view is necessary and it should work together with the price incentive towards the emission reduction.

III.3 Transition measures

Summary of discussion

The first commitment period regulated in the Kyoto Protocol will start in 2008. It was pointed out that countries with no experience in the emissions trading, such as Japan, would need soft-landing and gaining of experiences as transition measures beforehand.

In the United States, as in President Clinton's statement in October last year, there is the movement of introducing the early reduction credit system as a domestic system. In Japan, there were different opinions regarding the establishment of domestic market, however, it is agreed with majority that governments need to present "clear signals".

The discussion on this issue did not reach to share any concrete image.

IV. Market's point of view

Summary of discussion

The image of the market for quantified commitments is vague. It is usually the case that market would start from bilateral trading and develop gradually with many rules emerging from the market competition, and it is not as if the market suddenly makes up all the rules and builds up the market. There was an opinion that even in case of emissions trading, it would be reasonable to leave some "room" for try and error, rather than aiming at something perfect from the beginning.

As an example, there was an opinion that it should first start with the seller's liability system and shift to buyer's liability system from the second or the third period in order to

have the market efficiently function. This is because there is concern that the market might not work so well from the beginning of the first commitment period. It is not preferable to change the market rules in the midway, however, it might be possible if certain time, such as in "change after three years", is decided (and such information is provided) in advance.

Having experience in emissions trading would be beneficial though it is different from existing systems in that it artificially makes the commodity and system design. There was an opinion from the persons concerned with the market trading that it is necessary to set minimal rules and utilize the market mechanism as much as possible. In principle, there was no major disagreement.

If the quantified commitments are allocated for free, the bills would also be free, however, the capital gained would be taxed and it would be the burden on the enterprises. In the case of the SO₂ allowance trading, the quantified commitments which is purchased at the time of offsetting emissions is also taxed (there is no tax for swap). If we suppose that enterprises buy the quantified commitments for free, they can hold them as profit from revaluation since the book value is zero. Also, if we suppose that the quantified commitments are not assets, brokers would gain enormous profit. It is necessary to recognize these points and design the system with regard to the tax system of the country concerned.

It was also discussed whether Russia, which is regarded as the largest seller, could really be a seller, whether the U.S. Congress would ratify the Kyoto Protocol, whether there would actually be possibility of the establishment of the emissions trading market which could function as a condition for the effectuation of the Protocol.