

**Design of Japanese Emissions Trading System
- Issues and Options-**

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Abstract

In mitigating climate change, the Kyoto Protocol requires Annex I countries to reduce greenhouse gas (GHG) emissions. In achieving their targets, the Kyoto Protocol allows the countries to use the Kyoto Mechanisms (KM), including emissions trading (ET), which is recognized as one of the most cost-effective ways. Prior to the official start of International ET System (IETS) under the Kyoto Protocol (KP), several Annex I countries, such as the UK and EU, have designed and implemented domestic ET systems (DETSs) through either the concept of policy-mix (climate change tax and ET) or active private sector initiatives. Based on the review of strengths and weaknesses of each system and with due consideration of socio-economic conditions in Japan, this paper proposes ways to design Japanese domestic ETS (JETS), based on more proactive private sector involvement, including a) policy-mix, b) market-initiated system, and c) use of the special oil account as a source of the incentives for participation. However, the implementability of these ideas remains to be tested.

Keywords: Domestic emissions trading system, Japan, UK, Canada, EU, Special Oil Accounts, Policy-mix

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1. Introduction

As the benchmark for the international effort to tackle global climate change, the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed on the Kyoto Protocol (KP) that include the greenhouse gas (GHG) emissions reduction target for Annex I countries during the first commitment period (2008-12). For example, compared to the emissions level in 1990 (the base year), the EU is required reducing its GHG emissions level by 8 %; the US needs 7 % reduction and Japan needs 6%.³ However, these targets are not easy to comply only through domestic measures. Therefore, the KP provides Annex I countries with policy options, such as joint implementation (JI), clean development mechanism (CDM), and emissions trading (ET), under the KM, which allow these countries to use the credits obtained from these projects against their reduction targets.

Among these Kyoto instruments, the ET allows Annex I countries to trade their emissions allowances (EAs) among them at a market price and use the purchased EAs as a part of their emissions reduction efforts. At COP 7 meeting in Marrakech in 2001, the countries agreed that the ET of GHG would start from 2008 as International ETS (IETS). Prior to its official start, several countries have already started or are about to start the domestic ETS (DETS). For example, the UK implemented the UKETS in 2002. In addition, with the EU Directive in July 2003, the member countries of the EU agreed to create a Europe-wide ETS (EUETS), which starts from 2005. In the US, although it may be implemented outside of the KM, based on its success in the SO₂ case⁴, the establishment of a domestic GHG ETS, which will be consistent with an international system, seems to be considered seriously as an option for global warming mitigation. According to *Nikkei* on February 3, 2004, once the KP comes into force, the total size of the IET market will be above 20 trillion yen⁵. A big market with high potentials is about to emerge in the global market.

Among Annex I countries, Japan is one of the largest emitters of GHG. However, the

³ For details, see the list of Annex B countries in the Kyoto Protocol (<http://unfccc.int/resource/docs/convkp/kpeng.pdf>); Like Japan, Canada also needs to reduce its GHG emissions level by 6% below the 1990 level.

⁴ According to EPA, it is estimated that the emissions trading system saved as much as \$3 billion per year. (<http://www.epa.gov/airmarkets/arp/overview.html>). Although the U.S. Acid Rain sulphur dioxide trading program will run until 2010, the initial evidence indicates that trading is an effective tool in terms of cost savings and emissions reductions. And as a note, designers of EUETS studied SO₂ case carefully.

⁵ In this paper, the numbers are all written in the US-style. Solely at the EUETS, it is projected that the total size of the market will be several billion Euro or more. Besides, if Japanese domestic emissions trading market is to be launched, the size will be approximately 1 trillion JPY. (www.recycle-solution.jp/keiji/274.html)

market for tradable EAs in Japan is still immature. The Ministry of the Environment (MoE) and Ministry of Economy, Trade and Industry (METI) have considered a creation of a DETS as an option to promote effective reduction of GHG emissions in Japan. However, with harsh oppositions from the private sector on the idea of putting caps on the amount of emissions by each industry, the activities that have been tested under the government initiatives are still only in the pilot phase. So far, with the participation of several companies, MoE and METI organize a pilot phase of the DETS. Moreover, some companies have tested corporate-wide ETS, and several companies have been seeking CDM projects around the world, believing that the EAs obtained from these projects can be used against their individual reduction requirements once a DETS is in place. In order not to be left out from big business opportunities in the ET business, which may be created through the linkages among the EUETS and other DETSs, it is crucial for Japan to set up its own DETS as soon as possible.

In designing its DETS, Japan can learn various things from the experiences of other countries that have already established their DETSs. Countries, such as the EU, the UK and Canada, faced massive oppositions from the private sector in their system design. In order to establish the current schemes, it was necessary for them to negotiate with the private sector to find the way that both private sector and governments can gain from the participation. Somehow, they have succeeded in reaching agreements with companies and letting them participate actively in their DETS.⁶ Since Japanese government also faces oppositions from private sector in designing GHG emissions reduction strategies including the DETS, it should be worth for Japanese policy makers to analyze the cases in the UK and Canada.

This paper will propose some policy options for the creation of the DETS in Japan (JETS), including the aspects of negotiation between the government and the private sector. In Section 2, this paper will analyze aspects of setting up the DETS. In Section 3, based on the examples of the UK and Canadian DETSs, this paper will make some suggestions for policymakers on possible designs where the private sector plays active roles. For this purpose, as a source of financial and tax incentives for companies to participate in the DETS, possibilities to use the revised special oil account (SOA) will be discussed, together with other policy items, such as the method of allocation, financial mechanism and transparency.

⁶ Here, participation has two meanings: 1) participation in the system-designing phase and 2) participation in the established system.

2. Why Emissions Trading?

A. Overview

This section discusses why countries choose to establish a DETS as their GHG mitigation method over other methods like environment taxes. First, unlike other methods, the ETS has an international scope. In other words, once many countries or regions establish their DETS based on international rules, it does not seem very difficult to create linkages among them and operate the ET globally as long as countries including Japan show their counterparts that their systems aim at achieving the Kyoto targets. Experts consider the ET as an important potential means of minimizing the costs of reducing GHG emissions. A report of the Pew Center on Global Climate Change in 1999 states that one of the earliest and most robust findings of economics is that, where relative costs of performing an activity differ among individuals, business firms or regions, there are usually potential gains from trade.⁷ In addition, at the seminar held in Tokyo in February 2004⁸, Andrei Marcu of International Emissions Trading Association (IETA) said that, in order to reduce GHG at the lowest cost, a market-based trade system is the most appropriate one, and it is crucial to establish closer ties among other regional markets in order to maximize the benefit.⁹ According to analysts from the International Energy Agency (IEA), the use of economic instruments such as domestic and international ET could reduce the costs of complying with emissions targets by up to 50 per cent.¹⁰ The UK and the EU have already caught the wave by establishing DETSs well in advance. Japan should not miss the wave.

Second, the creation of the DETS gives incentives for the private sector to participate in the GHG reduction efforts actively. Under the DETS, since the EAs simply move from a company to another company domestically, it does not seem that the total amount of GHG emissions will decline. However, the existence of the system may open new frontiers for domestic actors in seeking various options for reducing GHG emissions through market principles. This may help a country reduce its emissions as a whole. If the effects from the DETS are not enough to fulfill the reduction target of a country, it may be able to obtain extra

⁷ J. Edmonds et al. (1999) (http://www.pewclimate.org/projects/econ_emissions.pdf)

⁸ The seminar was co-organized by J-Power and Fuji Research Institute on the possibilities to establish domestic emissions trading scheme in Japan.

⁹ <http://www.ghg.jp/comment/comment0401.html#001>

¹⁰ http://www.pewclimate.org/media/pershing_presentation.pdf#20

EAs in the form of credits by implementing JI/CDM projects to help reduce its obligations.¹¹ Once a well-established DETS becomes available, it is also possible for a country to seek opportunities to form alliances with other DETSs. In this regard, a country can use the IETS as an instrument to obtain EAs that can be used against its own emissions reduction targets. Japan can purchase EAs from other Annex I countries at the market price. Through the IETS, in principle, Annex I countries may not need to implement any JI/CDM projects abroad. They simply need to make calls to any EAs brokers and purchase them at the market price as much as they want. In this sense, Annex I countries can achieve their targets in cost-effective ways by saving time and money, which they otherwise need to use in order to seek and implement JI/CDM projects and/or implement costly domestic options. To make it happen, the DETS needs to be implemented first.

B. Why Emissions Trading is Beneficial?

When designed properly, the ET helps a country achieve its environmental objectives, including reducing GHG emissions, without sacrificing the economic welfare. Emitters can meet their reduction commitments entirely through their own efforts, buying the EAs auctioned by the government or unused by another sources, or doing both. Ultimately, the ET is driven by the desire to minimize costs and maximize profits.

From the business aspects, the DETS increases options for companies to reduce their GHG emissions effectively. With the ETS, there will be incentives for its participants to seek low-cost option for reducing GHG emissions both domestically and internationally. One may purchase EAs through the ETS; one may find JI/CDM projects to obtain EAs in the form of credits or negotiate with those who find the projects. Moreover, companies can apply the ET as a part of their business strategies. They can manage risks by developing the commodities such as derivatives in trading scheme. While carbon taxes give companies impressions that they need to pay whatever they do and however hard they try in their business (passive image), the ETS can be good incentives for companies to improve their performances in reducing emissions in terms of efficient management and technology development. In addition, the system will create new business opportunities. Since the system is a “trading system,” it is highly consistent with the ongoing trend of liberalization of

¹¹ Haites b (2003), p.5: Official development assistance (ODA) may not be used to help finance CDM projects.

energy markets.¹² In order for these companies to acquire as many tradable EAs as possible, new incentives for companies to commit themselves into the global efforts on reducing the total GHG emissions through more energy efficient methods will be created.

The ET can also encourage innovation of the methods and technologies with higher energy-saving potentials. It is true for companies that the ET may provide them with the way to reduce their GHG emissions less costly than other methods. By developing more energy-saving technologies, the positive effects of the ET become bigger because they can create more “extra credits” over their obligated level. This means that they will have more EAs to sell. By selling these EAs, more financial resources for the companies will be created. If the system is designed properly, the ET can provide the companies with good incentives to invest in technology innovation. This also creates competitions among emitters for the lowest-cost emissions, which can stimulate innovation and development of the least costly measures and technologies to reduce emissions further. For example, a company can eliminate or reduce its emissions by developing renewable technologies to replace traditional fossil-fuel-fired electricity generation.¹³ When a new technology is introduced and/or an activity is undertaken that reduces emissions, an "offset" is created. Then, a company can take credit for the offset and sell it in the emissions market.¹⁴ The mass planting of trees, which acts as "carbon sinks" because they absorb GHG emissions, is an example of an offset that could be used for a credit.

C. Is ET really beneficial? –Potential for increased costs for energy market

As mentioned above, the introduction of the DETS as one of the ways to reduce GHG emissions for the private sector, which also creates incentives for innovating energy-efficient technologies.

The level of the effects caused by the ETS depends upon the size of the trade activities, but there is a possibility that the effects will be greater than the case of carbon tax. Carbon tax

¹² One of the good examples is the UK system of electricity trading.

¹³ Energy transformation from fossil fuels to renewables is a trend of CDM projects.

¹⁴ However, the question is whether it is worth for companies to try while the innovation of new methods and technologies will put more cost burdens on them. In order to boost private sector's active participation in domestic emissions system, some “carrots” or incentives should be clearly provided.

has an effect to promote private sector's activities to save energy, but it is not the system to control the total amount of the consumed energy. On the other hand, in the case of the ET, with its characteristics as the regulation on the total amount of energy consumption, for the companies concerned, the incentives to achieve a certain target will become higher. The outcome of the influence on the market may differ whether the caps on the emissions will be on the suppliers of energy or the demand-side.

- **Case 1: Caps on the Supply-side**

In this case, for the companies that produce, import and sell fuels, if their efforts on GHG emissions reduction do not make enough progress, they need to purchase the EAs by the amount of the gaps between their actual level of achievement and their targets. This leads to the increase of the energy price. Since the amount of the increase in the price will be added on the price of fuels, the energy sources that emit huge amount of GHG will lose their price competitiveness in the energy market (decreased competitiveness).

Moreover, the potentials for reduction of each energy sources will make a big difference in cost-benefit analysis of introducing the ETS. For example, if the ratio of low emissions sources, such as nuclear and hydropower, has already been high and that of high emissions sources, such as coal, has been low at present, there would be little space for improvements. Therefore, if the level of the allocation is not high enough for a company, it needs to purchase the EAs in order to achieve its target. Since the cost to purchase the EAs will lead directly to the price increase, the cost competitiveness of the company will be affected immediately. In order to deal with these situations, some electric power companies have already made efforts to obtain credits by implementing projects to plant trees abroad.

- **Case II: Caps on the Demand-side**

In this case, there will be incentives for the energy consumers to switch towards low-emission fuels and take actions to cut their energy consumptions by developing and implementing energy-saving methods. Whatever happens, these companies will face significant extra financial burdens in reducing their level of GHG emissions.

However, there will be cases that these companies can fulfill their energy demands through purchasing EAs. For example, if a company mainly uses coal, which emits high level

of GHG, it is necessary for that company to purchase EAs that can offset the amount of GHG emitted by burning coal. In this case, for such a company, there may be a huge extra burden. In some countries, in order to deal with such a situation, there is a trend that the importers of coal include the EAs as a package when they sell coal to its consumers. By doing so, international and domestic competitiveness of companies in terms of price could be maintained. In addition, by including EAs in the price of coal, there will be no extra costs foreseen, and therefore, in terms of companies' balance sheets, there will be few risks to corporate management.

In general, although there may be some negative aspects of using the ET, it is surely one of the cost-effective options for the companies to reduce their GHG emissions. In addition, as mentioned above, it will also create incentives for the companies concerned to make massive efforts to innovate and develop more energy-efficient and low-emission technologies, which may not occur if the ETS is not implemented as an effective method.

D. Ideas for Systemic Design of the Domestic Scheme

If the system is designed and implemented properly, the introduction of the ETS can be a “win-win” solution for a country to tackle with the climate change issues effectively and fulfill its requirements internationally. But, what kind of system is proper for Japan?

One of the ideas is to design the system based on the idea of “cap and trade” (credit trading) system where the EAs has already been allocated to countries. The system involves trading of the EAs, where the total amount of the EAs is strictly limited or “capped.” EAs are created to account for the total allowed emissions (an allowance is a unit of measurement referred to as Assigned Amount Units: AAUs). Trading occurs when an entity has excess EAs, through either actions taken or improvements made, and sells them to an entity requiring EAs because of growth in emissions or an inability to make cost-effective reductions. The caps and trade programs are closed systems, but can be modified to allow the creations of new permits by non-capped sources in the manner of credit-based systems.

Another is a “baseline and credit” system. The baseline represents the forecast emissions of a company, business unit or project, using a “business-as-usual (BaU)” scenario, which is defined as the expected emissions if the firm did not implement emission reduction activities.

This forecast normally incorporates the economic, financial, technical regulatory and political circumstances within which a firm operates. Under the system, participating companies can claim the credits (ERUs from JI; CERs from CDM) from the achievements in their JI or CDM projects. While the caps and trade system has an implication of trading the fixed amount of EAs among the participants, the baseline and credit system has an implication of creating EAs against the allocated EAs. Besides these two options, various kinds of policy mix can be designed. Based on the examples in the UK and Canada and the review of the current conditions in Japan, this paper will suggest what kind of system may be suitable to Japan in the next section.

3. Suggestions for Designing Japanese Domestic Emissions Trading System (JETS)

Actions to reduce GHG emissions are expected to create both economic costs and benefits. In general, however, economists expect national emissions reductions to be more costly without the ET. Some, but not all, sectors of the economy would be affected. Caps on GHG emissions combined with the ET could cause the prices of fossil fuels (such as natural gas, gasoline and electricity generated from coal) to rise enough for consumers to seek improvements in the energy efficiency of their homes and transportation. On the other hand, the administrative costs to the government of establishing and operating a well-designed ETS could be low.¹⁵ Once the rules are established, an ongoing ETS could be independent and financially self-supporting within any commodity market through small levies on trades.

Although the ET cannot solve climate change, it is a tool to help reduce GHG emissions to the agreed levels less costly. The ET can work well for large emitters, but it cannot easily cover many other significant sources of GHG. The ET can complement other important measures in addressing climate change, including mandatory and voluntary emissions reductions at specific sources, and diversions away from fossil fuels to cleaner energy sources.

The ETS will provide companies with a low-cost method to reduce their GHG emissions. However, they are still reluctant to participate fully in the system by accepting caps allocated

¹⁵ This is still controversial. Many say that the administrative costs for ETS are higher than other methods like environmental taxes.

by the government. Although the ETS gives a low-cost measure to cut GHG emissions to them, if no political measures are taken in terms of creating incentives for them to try the ETS, the participation in the ETS is just an extra burden for the companies. In order to make the ETS a successful measure to achieve Japan's emissions reduction target, some incentives should be created. To this extent, the UK and Canadian DETSs seem successful judging from an active participation of companies to the system. Therefore, it may be useful for Japan to consider the cases what if Japan designs the JETS based on the UKETS and/or the Canadian ETS.

A. Policy Mix: ET & Tax- Government-Private Sector Consultation- (UK-like system)

● Policy Mix—Which taxes should be used in the system?

The idea of policy mix seems possible to apply for the design of JETS. The question arises what kind of tax should be used in creating the policy mix. In the UK, Climate Change Levy (CCL) is a new tax measure designed to help the UK meet its legally binding commitment to reduce GHG emissions.¹⁶ It is like a carbon tax. In Japan, in parallel to the discussion on the establishment of the JETS, the possibilities to impose environmental taxes by creating new ones or modifying existing ones to regulate GHG emissions by companies have been discussed at MoE and National Tax Administration Agency (NTAA). However, *Keidanren* opposes the idea of imposing new taxes on GHG emissions claiming that the taxation on the companies in critical sectors may reverse the increasing economic recovery trend. It means that the private sector will not accept extra burden willingly without some incentives. Then, it is necessary to discuss how to create incentives for those in critical industrial sectors to accept regulations. At this moment, electric, steel and petroleum products industries are the top three GHG emitters in Japan.¹⁷ Reflecting this fact, the current energy-related regulations in terms of taxes are heavily on these sectors. With the revision to energy taxes, the economic burden on these sectors may increase. In order to generate electricity and heat, these industries use

¹⁶ http://www.hmce.gov.uk/forms/notices/ccl1.htm#P87_3136 ; CCL is an environmental tax which came into force on April 1, 2001. The UK can achieve its Kyoto target with BaU scenario. However, because of the burden-sharing-agreement of the EU, the UK will need to reduce 12.5% from the base year.

¹⁷ In terms of primary energy consumption in 2001, out of the Japan's total GHG emissions of 1,213,657.66 t-CO₂, electric sector emitted 315948.66 t-CO₂ (26%), steel industry emitted 129314.05 t-CO₂ (11%), and petroleum products industry emitted 54,439.98 t-CO₂ (4%). In other words, almost 44% of Japan's total GHG emissions come from these three sectors.

fossil fuels –oil and coal. According to the revised Oil and Coal Tax Laws of October 2003,¹⁸ the use of coal, which was not taxed before, will be taxed.¹⁹

	- Oct 2003	10/2003 -03/2005	2008
Coal ²⁰	0	230 JPY/tonne	700 JPY/tonne
LPG	670 JPY/tonne	-----	1080 JPY/tonne
LNG	720 JPY/tonne	-----	1080 JPY/tonne

In addition to this, on crude oil and petroleum products, the tax rate of 2,040JPY per kilolitre will be imposed. Because of the increase in taxes on these fuels, the tax burden on these energy-intensive industries can be enormous.

● **Proper taxation may create incentives for participation and technology innovation**

However, this trend of the increasing tax burden on these major industries can be a good opportunity to create new incentives for companies to put more energy on their efforts to cut GHG emissions. If MoE and METI can make some arrangements with MoF and NTAA on using the new oil and coal taxes as a method to create incentives for these sectors to accept caps on their GHG emissions, companies may find it attractive to develop and implement energy-saving methods further. Like the UKETS, based on the agreement with the government, if a company reaches its target, the amount of oil and coal taxes it pays as their contributions to Special Oil Account (SOA) will be reduced by a certain amount. Besides, this company can get government subsidies for R&D of more energy-efficient technologies. If it cannot reach its target or refuses to make an agreement with the government, a company will pay the tax in full. If companies are allowed to use the ET as a measure to fulfill its requirements, the incentives for them to participate in JETS will be much higher because the ETS gives them a low-cost option. Like the UKETS, the JETS can provide the companies with both “carrots and sticks.” If companies can reduce their GHG emissions as they are

¹⁸ <http://www.enecho.meti.go.jp/info/coal/zeihou.pdf> ; Article 9; Revenues from this tax consists of the major part of Special Oil Account of Japan.
¹⁹ <http://www.enecho.meti.go.jp/info/coal/index.htm> ; LPG and LNG taxes will be increased as well. As for LPG, from 670JPY per tonne to 1,080JPY per tonne; As for LNG, from 720JPY per tonne to 1,080JPY per tonne.
²⁰ Under this tax, the use of coal in the steel industry is exempted from taxation since it is used for making cox.

allocated, even though the amount of tax revenue will be lower, this will help Japan reach its national GHG emissions reduction target and boost companies' will to develop more energy-saving technologies. If companies cannot reach their targets, the government will still secure the tax revenues from oil and coal taxes.

If this kind of system comes into being, as the UKETS shows, a compliance mechanism is automatically in place.²¹ Regarding the oversight entity for the JETS, since MoE and METI work on the design of the DETS and MoF/NTAA has authority to manage taxes, there may be a possibility for these ministries to form a single entity for the purposes of monitoring, evaluation, oversight, and enforcement of penalty collections. Even though the designing of such a system may be time consuming, the administrative cost of the system may be lower once the system starts to function. If so, this can be a “win-win” solution, using a low-cost option for GHG emissions reduction- ET.

● **Incentive for Financial/Tax Authority to Accept the Deal**

This kind of idea may provoke objections from ministries because of the concerns related to the revenue from taxes. Recently, the size of the tax revenues of Japan has kept declining every year while the amount of total spending has kept rising. This means that Japan keeps accumulated public debt year by year. Because of this ongoing situation at the financial authority, it is very unlikely for MoF and NTAA to accept any deals that lead to the loss or decline in tax revenues further. The financial authority also needs some incentives to accept such a deal, which is not an easy task.

In this case, as the EUETS initially covers the 5 major industries, it is possible to propose to implement the ETS only in three largest emitting sectors (electricity, petroleum products, and steel) initially, and see if it is feasible to expand to other industrial sectors and operate in Japanese society in relation to other policy and social issues. In other words, these top 3 emitting industries will be examined as the test cases for the system management. MoF and NTAA will also join the parties that make agreements with companies. Based on the agreement made between the government group and each company, the ministries will hold the control over the company's tax payment. If a company achieves its given target or more than the target, it can receive a tax break by an agreed rate or amount. If it cannot achieve it or

²¹ For the case of Japan, it is still necessary to determine the “proper” level of penalties, oversight entity, and pattern of tax formation.

refuse to make an agreement with the government group, it will have to pay tax in full or even at an increased ratio/amount as penalties for incompliance.

This is an applied version of the UKETS. In the UK, even if a company cannot reach the agreed target, it does not have to pay more than the full amount of the CCL. However, under this applied version, in case of non-agreement or incompliance to the agreement, a company may have to pay more than 100% of a proposed tax. It may be possible to name it like “climate tax.” By doing this, the tax authority may agree to give tax incentives in the system design by knowing that there will be opportunities for them to collect extra amount of tax that may not otherwise. In addition, even though MoF/NTAA are not the entities that directly work on environmental issues, they can recognize themselves and be recognized that they are working on environment, especially climate change issues, actively. This could be a good incentive for MoF and NTAA to accept the deal to cut tax and allocate more resources/money from SOA in order to flourish the JETS.

However, if Japan designs the JETS based on the UKETS, there will be another requirement in order to have an international scope from the beginning, especially for the linkage with the EUETS. For example, in terms of the coverage of the system, the UK has wider scope than the EU. The overlapped sectors, such as the electricity, will be covered within the EUETS. However, the treatment of other sectors not covered in the EUETS remains unclear. Like the UKETS, Japan should establish clear direction how to treat them in the JETS in terms of the tradability with other systems. If there will be such modifications, a newly emerged JETS will have international compatibility, namely a mutual link with the EUETS, and in preparing for IET starting from 2008, it can establish solid foundation and status internationally through such a link.

B. Canada-like System (Private Sector/ Market Initiated System)

Based on the accumulated experiences through PERT, GERT and bilateral ET done by companies, with a close cooperation with the private sector and local governments, the federal government started to design a nation-wide ETS in Canada in October 2003. Prior to that, the agreement on fundamental conditions on the establishment of the ETS was reached between the federal government and the private sector. According to that agreement, Canada designs its DETS compatible with the emerging IETS. Moreover, unlike the EUETS and the UKETS

that contain some possibilities to put some limitation on the use of the options under the KM to credit-based methods, the Canadian ETS will not include any other quantitative limitations on the performances of the companies than those agreed under the KP and the Marrakech Accords in terms of the use of the KM. In other words, in Canada, companies can earn the EAs from JI/CDM projects or through the ET and use them to complement their reduction target as much as they want. Through its ETS, even though it is encouraged, companies may not need to implement any costly domestic efforts. For the companies, using the ETS is the least costly measure to reduce GHG emissions of their own. Under the Canadian ETS, only the foreseeable cost they may have to pay is 15 Canadian dollars per t-CO₂ at maximum.

B-1. Why Canada Goes well?

Unlike the case that the government establishes the whole system without consulting with the private sector, the voices of the private sector was heard extensively through their participation in the government committee on the system design. By doing so, even if it may be quite time consuming to consult with various stakeholders, the government will not be likely to face any harsh oppositions later. However, over a UK (EU)-like system, why can Canada implement such a system, which may not reduce its actual GHG emissions? It is said that, even if some companies cannot reduce their emissions under the caps, some others will achieve their goals. The overachievers can sell their extra to the underachievers in the form of EAs. In non-capped industries, which are now allowed to trade EAs in the DETS, efforts have been made to reduce their GHG emissions in their businesses. In total, by letting the market mechanism taking initiatives in GHG emissions reduction efforts, the level of emissions as a county may decrease. This is possible because there will be no quantitative limit on the use of the ET in fulfilling the requirements by the companies. In addition, the government plays a simple role to collect 15 dollars fines in case companies with caps cannot fulfill their targets whatever they do. By linking with Chicago Climate Exchange (CCX)²², the ET has already taken care of by the private sector through market principles.²³ These systemic arrangements boost companies' incentives to participate in the ETS.

For companies in Japan, the Canadian ETS may seem very attractive. It is a *laissez-faire* system with minimum government involvement. In addition, the market will find them the

²² <http://www.chicgoclimatex.com>: US-based pilot emissions trading market run by private sector companies from major industries.

²³ This case may be an interesting case for Japan that shows how Canada links its domestic emissions trading system with the US market where the US does not seem to join in the Kyoto framework.

lowest cost options for reducing GHG emissions. For the government, although it needs to make some political commitments, such as allocating caps on each companies and modifying laws, if the market is administered and run by the private entities, its administrative cost will be low. Carbon auditing within the DETS will be done by private entities, and probably, registry works will be done by the private as well based on each of their expertise. Based on the registry data collected, with the help of private entities that have skills, the government will need to manage the national registry. In Canada, every participant in the DETS plays the roles based on what it can do well. Trading is taken care by experienced trading companies in the private sector; accounting and registry is taken care of the chartered accountants; local specific settings are taken care by each local government; and international negotiation and nation-wide system management are taken care by the federal government. Here, everyone knows what it should do in the DETS clearly. Because it is created through public-private sector (multi-stakeholder) cooperation but managed by the government, I would call this arrangement “Semi top-down and semi bottom-up” approach.

B-2. Market-oriented system –Is it feasible in Japan?

● Unpreparedness of Japan –Absence of Sufficient Knowledge

However, compared to Canada, Japan has not accumulated experiences in organizing the ETS. In Canada, the attempts have been made since 1996 provincially and nationally based on public-private partnerships. Although the national system design was made quite recently, through the experiences, the federal government has also accumulated knowledge and skills in managing the ETS. Several companies have experienced bilateral, cross-Atlantic ET deals with German companies. In addition, the companies in the US have also been interested in using the CCX actively. In Japan, however, none of the entities is quite experienced yet. Within the government, discussions have continued for a while, but the government has not reached on agreement on how to attain the national target in cooperation with local entities and companies. Although MoE and METI have run their own pilot phase projects, they seem not to have enough knowledge and skills to manage the ETS.²⁴ For Japanese companies, there is no such a neighbor or a CCX-like established market. Several companies have implemented company-wide ETS and/or JI/CDM projects in order to obtain EAs. However, these activities have been done on individual basis. In order to establish a well organized

²⁴ Of course, it is possible to criticize that it is impossible to manage the system without knowing what kind of system they will manage.

ETS, more experiences and skills should be accumulated. More than anything, based on the SO2 ETS, the US and Canada accumulated knowledge to operate in the ET business.²⁵ Preparedness of the private and public sectors for a DETS is definitely different between those in Japan and those in Canada.

- **Different socio-economic conditions**

Japanese companies may not face as free environment as those in Canada do in the system settings. In Canada, its ETS seems to be a *laissez-faire* style where market principles dictate the outcome of the efforts made by the companies. The Canadian ETS does not set any quantitative limit on the use of the ET in achieving the targets for each company. In an extreme case, a company may purchase EAs in order to cover its emissions reduction target by 100% without implementing domestic measures. In terms of the system setting, the federal government allows companies to do such extremes. Under the “semi-top-down,” the federal government establishes nation-wide framework, and with the “semi-bottom-up,” the companies decide what they do concretely. On the regional level, the governments of each region play the similar roles played by the federal government.

In Japan, the societal arrangement is not like this. Although the companies have market power with their economic status in the world, the system in general is ultimately designed by the government. Moreover, the market system is also regulated tightly with laws and complicated rules. This allows the government to maintain a certain level of control over the performances of the companies. As for the local governments, they do not have significant influence on the nation-wide policies nor have authorities to decide what should be done in their own prefectures and/or cities. Despite its extremely high potentials, the market system does not seem to operate fully. Under such a situation, it may be very difficult to implement a Canada-style ETS. It is very likely that the government of Japan limits the use of the ET by companies in achieving their targets. Under such a situation, the fully market dictated system like that of Canada will not work properly. The key is how much the government trusts the market. Under the current settings, the system where companies have free hands in the market will not be realized.

²⁵ Actually, the designers of the EUETS studied it very carefully.

- **Japan's high potentials for success in a Canada-like system & Need for the Pre-installed International Compatibility**

Although there may be far more to go before setting up a Canada-like ETS, Japan definitely has high potentials to be successful in such a system. First, in the post-war era, Japanese companies have accumulated enormous amount of knowledge, skills, and reputations in the global market. In addition, the government knows how to handle this big economy. Even if the EAs are treated as financial derivatives or commodities, the market can adjust to new products quickly and handle them well soon. However, it is still necessary for all participants to start forming an entity, which consists of government agencies and companies, which will become the JETS in near future. In other words, it is critical to establish a trading ground like the existing stock exchange market. The commodities or products traded at this market floor are the EAs, whether they are generated through implementing JI/CDM projects abroad or the overachievement in domestic efforts. In order to manage this kind of market, we need to include many different elements, such as well-established regulatory entity, credit auditing system, capacity of the trade dealers and government regulators, rules of this market that must be compatible with international ones, and a registry system.²⁶ In order to make the JETS internationally compatible, these kinds of adjustments need to be done quickly. If other DETSs are open as it is, it will be possible for companies to have a variety of choices, such as in which market to operate the ET, and with which entities to trade. It is exactly how the existing financial markets are operating daily. Compared to the UK-like system, this system applies far more market principles to its design.²⁷ Even though it may take time to establish such a fully market-oriented ETS in Japan, based on its reputations in the world economy, capacities and experiences accumulated in international trade and business, it is worth for Japan, both the government and businesses, to try it as early as possible.

C. Use Special Oil Account as Incentives for Private Sector Participation (policy mix)

²⁶ I bring these ideas from the concepts of international financial market operations (stocks, securities, bonds, etc.—all financial instruments traded internationally in every minute.)

²⁷ This definitely attracts the interest of companies to consider the use of domestic emissions trading market as one of their major options for GHG emissions reduction. (Great incentive for them)

As a major source of the incentives for companies, Special Oil Account (SOA), which was revised in October 2003 with the scope of tackling global warming, can play an important role in designing the JETS. In 2002, upon the ratification of the KP, Japan accepted its obligation and therefore, several policy adjustments have been made. The revision of the SOA is one of them. In order to tackle the global warming seriously, in close collaboration with MoE, METI started its process to revise the composition of the revenue and spending of the SOA in 2002. One of the major changes in the revised version is the taxation on the imported coal.²⁸ Coal was not taxed previously, but considering the amount of CO₂ emissions from burning coal, in order to secure the financial source on dealing with global warming effectively, METI and MoE reached the conclusion that the imported coal should be taxed like crude oil, LNG and LPG. With this revision, coal, which is used for power generation, will be taxed at 700 JPY/ton, the tax rate on LNG will be raised from 720JPY/ton to 1080JPY and the tax on LPG will increase from 670JPY/ton to 1080JPY/ton.²⁹ As a result, according to METI, the increase in tax revenue in 2003 will be 14 billion JPY and, in FY2007, the level of the increase will be projected at approximately 80 billion JPY, which will be used to the projects on mitigating greenhouse effect run by METI and MoE.

Table 1 shows the balance sheet for the fiscal year 2002. It shows that almost 60% of the total allocation was spent on the measures to stabilize the supply of oil (promoting oil development, fortifying the oil reserves, etc.). The rest was spent on the measures to enhance the efficiency in the oil supply and distribution, and those to improve the structure of energy supply and demand.³⁰

²⁸ Only coal used for power generation will be taxed. Coal used in the production of steel will not be taxed.

²⁹ The size of tax on these commodities starts to increase from October 2003 and reach the upper limit by the end of FY2007. (<http://www.enecho.meti.go.jp/info/coal/index.htm>)

³⁰ <http://www.meti.go.jp/policy/sougou/yokessan/040305tokkai02.pdf>

Table 1: Special Oil Account FY2002

Revenue	(Billion JPY)	Expenditure	
General Account	445.625	Measures to stabilize oil supply	261.138
Redemption	0.043	Measures to rationalize the Production and Distribution of Oil	28.275
Extra from the previous FY	496.789	Measures to improved the structure of energy supply and demand	162.697
Misc.	1.854	Administrative costs	3.285
TOTAL	944.313	TOTAL	455.397

*<http://www.meti.go.jp/policy/sougou/yokessan/040305tokkai02.pdf>

Under the new SOA, although the measures to stabilize the level of oil supplies remain one of the major spending targets as the way to establish a stable foundation for energy security, some portion of this revised SOA is used to deal with global warming, particularly on the measures concerning to the energy-oriented GHG emissions reduction. Table 2 shows how the climate change related issues are treated in METI projects by observing the changes in the allocations to the projects from the new SOA in FY2003 and 2004.³¹

³¹ <http://www.meti.go.jp/kohosys/press/0004820/2/031224enechou.pdf> (for FY2004) and <http://www.meti.go.jp/topic/downloadfiles/e20829kj.pdf> (for FY2003)

Table 2: Allocation from Special Oil Account to METI Climate Projects
(billion JPY)

Kyoto Mechanisms Related			Other		
	FY2003	FY2004		FY2003	FY2004
International Cooperation in enhancing energy efficiency through JI/CDM	1.5	2	Innovation of the projects on climate mitigation technologies	16.4	16.3
Domestic measures on the rationalization of the energy use	0.5	0	clean coal technology research	4.1	7.4
Domestic emissions trading system related	0.3	1	Private Sector Model plans	n.a.	1
Local level initiatives on mitigating global warming	0.2	n.a.			
Capacity building/Awareness of	0	0.2			
Misc.	0	0.9			
Total	2.5	4.1	Total	20.5	24.7
FY2003 TOTAL: 23			FY2004 TOTAL: 28.8		

* <http://www.meti.go.jp/kohosys/press/0004820/2/031224enechou.pdf>

Table 3 shows the changes in the allocations on climate mitigation measures at MoE from a new SOA.³² As it shows, in numbers, the decision to put more financial resources from “new” SOA on the measures to tackle global warming is realized on MoE side as well.³³

³² See http://www.env.go.jp/earth/gijyutsu_k/02_c/mat_01.pdf for detail of the spending.

³³ Actually, 12.5billion is allocated to MoE from Special Oil Account in FY2004. Originally, 13 billion JPY was asked. (http://www.env.go.jp/guide/budget/h16/h16juten-1/ref_01.html)

Table 3: Allocation from Special Oil Account to MoE Climate Projects

		FY2003	FY2004			FY2003	FY2004
Local measures on climate change	Climate friendly Urban	0	1.2	Kyoto Mechanisms related	CDM/JI survey	0.6	0.8
	Projects for promoting local	0.4	0.7		CDM/JI Capacity Building	0.21	0.25
	Climate technology implementatio	0.7	1.02				
	Eco-friendly cars Promotion	0.3	0.6				
	Effective use of excess	0	0.2				
	Introduction of Super-Low Sulfur Oil	0	0.69				
	Other issues	0	0.2		Other issues	0.6	0.6
	sub-total	1.4	4.61		sub-total	1.41	1.65
	Energy-related climate business promotion and development of climate mitigation technologies	Counter-global warming business model incubator	0		0.25	Multi-sector approach on CO2 Reduction	Support for the activities to prevent global warming
Counter-global warming technology development		0	1.634				
Market-oriented technology to mitigate global		0	0.5				
Global warming measures to waste management		0.5	1				
Other issues		1.6	1.4	Other issues	0.6		0.5
sub-total		2.1	4.784	sub-total	1.01		1.35
				Misc.	0.08		0.106
Grand Total FY2003: 6			Grand total FY2004: 12.5				

However, it is still unclear how the money asked and allocated to each project under METI and/or MoE is used and whether the increased spending on global warming mitigation measures literally means the increase of the welfare/interest of the companies. In other words,

even though MoE spends 12.5 billion on the measures to mitigate global warming from the SOA, it does not necessarily mean that the burdens on companies, especially those in electricity, petroleum products, and steel sectors, will decrease.

Under the revised SOA³⁴, their burdens may actually increase compared to the former one. In the revised one, instead of adding the tax on coal and increasing the rate on LPG and LNG, the rates of the tax on crude oil and oil tariff are lowered.³⁵ However, even after the revision, it is projected that the revenue in the SOA will increase by 80 billion JPY in FY2007. It means that the total amount of the tax payments made by companies will be increased.³⁶ If all spending made by METI and MoE go back to these industries to help them innovate energy saving technologies and mitigating GHG emissions, for these industries, it may be a big incentive to start something new, such as the participation in the JETS. This can be said because of the amount that would be used for incentives measures based on the SOA is much bigger than the annual amount of the subsidies of 43 million pounds within the UKETS.

In order to let the big three industries participate in the JETS, it is necessary to create some ways to reduce their financial burdens. One of the best ways is to reduce their contributions towards the SOA in terms of tax incentives. Although METI may oppose the idea so fiercely, it seems not impossible because more than half of the revenue of the SOA remains as the balance carried forward to the next year's account. In other words, at the end of every fiscal year, the enormous surpluses within the SOA have been created. Then, the question arises why not cutting the burdens of the private sector by this amount? It does not seem necessary to keep approximately 500 billion JPY per year for energy security purpose. In addition, at the end of 2004, Japan National Oil Corporation, which attracted the allocation of 261.138 billion JPY in 2002, ends its mandate. It means the amount of money allocated to its works can be cut and re-allocated as a source of incentives for BIG 3 emitting sectors to participate in the JETS. Moreover, even though both METI and MoE plan to ask more portion of the SOA, the portion of the total amount used on the counter-global warming measures against the total spending of the SOA is still less than 2%. Because of the abundance of money in the SOA, besides reducing the financial burdens of the related industries, it may be

³⁴ Most of the revenue of Special Oil Account comes from the tax on crude oil, tariff on crude oil and so on, which are the taxes on the energy supplier and petroleum industry. Its sum is 445.625 billion JPY for FY2003, which is quite a big burden on industries.

³⁵ However, compared to other fossil fuels, petroleum products still face much higher taxes.

³⁶ As its official view, Keidanren claims that the energy tax burden on the companies are already excessive.

also possible to raise the percentage of the allocation on the global warming measures, particularly on those developed and implemented by the private entities, from the SOA.

However, it is not a good idea simply to return “over-charged” or “surpluses” to each company equally whatever it has done in the GHG emissions reduction efforts. First, it is unlikely for METI to accept the deal that reduces the tax revenues further. Second, regarding the fairness, the equal re-distribution of the excess funds may not be accepted by the companies that have made significant efforts to cut their GHG emissions level. Tax authorities would like to maintain or increase the tax revenue while companies would like to reduce their tax payments as much as possible. Moreover, if companies can get refund or need to pay a certain amount of taxes, they want fair treatment reflecting what they have done. What kind of system can fulfill both requests at the same time?

In the UK, there is such a system. Its UKETS seems to be successful to include both financial concerns and environmental concerns in one system. In the UK, each company and the government makes a bilateral contract in participating in the UKETS. If a company fulfills its requirement in reducing its GHG emissions, the amount of its CCL payment will be reduced to 1/5. If a company does not like to make a contract or cannot achieve its goal, it needs to pay the CCL in full. In addition, for the areas that CCL does not cover, the UK government pays subsidies (43 million pounds annually) to let companies improve energy-efficiency. In Japan, instead of creating a new tax like the CCL, it may be possible to use the SOA as the financial source to boost incentives for companies to participate in the JETS and the source of subsidies for companies on R&D of more energy-saving technologies. Companies in three major sectors have already contributed significantly to the SOA in Japan. Any extra spending will be a great burden for them. Therefore, it may be interesting to apply a UK (EU)-type arrangement in Japan. Each company makes a contract with the government concerning the caps on its GHG emissions, the tax arrangements and possible incentive measures for technology development. If a company is successful in reducing its GHG emissions below its cap, the amount of its contribution to the SOA will be reduced by a certain amount or from the carry-over within the SOA, a company will receive subsidies for R&D of more energy-saving technologies, which allows Japan to keep taking a lead in the sphere of energy-efficient technology. Like the UKETS, it seems to be a “win-win” solution for both the government and companies. The question will be the size of the tax break or the

R&D subsidies in case a company achieves its goal. In the UK, the rate is 80% and 46 million pounds annually. In Japan, in order to decide it, it is necessary to discuss closely among various stakeholders, including the concerned ministries, companies, and NGOs.³⁷

Besides, it may be also possible to increase the rate of the total allocation on the global warming measures from the SOA. The current ratio of the allocation to the total amount of the SOA remains less than 2%. Considering the abundant surpluses on the balance sheet created every year, it does not seem very difficult to increase the ratio. If the increased amount will be spent as subsidies to companies, which decide to participate in the JETS, on their measures to mitigate global warming, this could be a great incentive for the companies. Combined with the UK (EU)-like system mentioned above, this new idea can boost the interest of the companies in participating in the ET. As the case of the tax cut, there is still far more to discuss, such as how much extra allocation will be made, and how many percent will be the appropriate level. If the government as a whole can provide the private sector with attractive options, this will boost the incentives for the companies to participate in the JETS actively.

D. Critical Components for System Design:

In designing the JETS, several issues should to be discussed as well. First, the coverage issues need to be solved in the process, deciding on which industries to be covered, how many percentages of the total emissions will be allowed to trade, and which gases should be included. Many have said that these matters depend upon the year to launch the domestic ETS. However, since the IETS comes into being in 2008, I would say, until the 2008, limit on CO₂, and then, from 2008, cover other GHG all together. In this way, experiences and skills gained from carbon accounting or something may be applied easily to the accounting of other targeted gases. In many of the ongoing domestic ETSs in other countries, including EUETS, this style is chosen in their designs.

D-1. Ideas for Allocation –Use of Financial Market Concept: LIBOR

³⁷ In the UK, when the current system was established, intense multi-stakeholders dialogues were conducted on various issues, such as tax arrangement and institutional arrangement.

Issues related to the allocation need to be discussed as well. While a method of the allocation, such as grandfathering, unit-based, and auctioning, is a very important element, the frequency of reviewing the allocation should be decided in the system design. The question is how often the allocation should be done within the 5-yr commitment period, such as 2008-2012. Major choices are to allocate every year within the 5-yr commitment period based on the annual reviews of performances or every 5 years (“one-shot allocation” for 5 years term). To reduce administrative costs, “one-shot” option would be better. To reflect companies’ efforts in reducing their emissions to the size of allocation, allocate the EAs every year even though this will be costly in terms of the administrative cost. If there is an intention to make an ETS like a financial market, it may be possible to borrow the design from the international financial markets. For example, in order to avoid the liabilities-assets mismatch caused by the gaps between the interest rates at the time of lending and the current rates, international financial market invented the use of LIBOR (London Inter-Bank Offered Rate), which is the standard rate used for derivative transactions based on the average bank interest rates at 11am every business day.³⁸ It is used to avoid any negative effects on investors’ welfare from rapid interest rate fluctuations. In other words, it is one of the tools used in the financial markets to deal with uncertainty. Since the climate change issues face lots of uncertainties, such as climate patterns, uncertainties in science, and political uncertainties, the use of the concept of LIBOR on the decisions of the EA allocation may be interesting. In case of the lending based on LIBOR, the interest rate on lending will be reviewed every 6 months in order to adjust the current rate at a proper level.

This system can be applied to solve the problem of unfairness in the allocation. First, the initial allocation will be set for each company as the base allocation with a LIBOR-based contract, which includes periodical review of the performances of each company in GHG emissions reduction efforts, say, every 18 months or 2 years. Based on the performances by each company during the period, the amount of the allocation will be modified for each company over their initial level. If a company reduces its emissions better than expected through domestic measures, including the implementation of more energy-saving technologies, allocate more tradable EAs for the following period.³⁹ Such a system may

³⁸ British Bankers Association (BBA)- <http://www.bba.org.uk/>

³⁹ In measuring the efforts made by companies, to some extent, companies’ efforts in RPS and forest carbon sinks should be considered in the process of the allocation. (Another point for discuss on “coverage issues.”)

boost private sector's willingness to participate in the JETS and invest more resources in technology innovation simultaneously.⁴⁰

However, there are also some problems to solve. For example, in order to implement such a system, the importance of the initial allocation will be enormously high for companies. Harsh arguments can be foreseen on the initial allocation. In order to convince each company, it is necessary to create criteria for deciding the allocation level.

D-2. Financial/Insurance Mechanism for JETS – JEF or J-PCF

One of the reasons why the private sector is reluctant to participate in a DETS would be the remaining uncertainties for the future of the system. For example, it has been said that there are not many sellers of the EAs in Japan because the energy-saving technologies have already reached the highest level in the world and therefore, it would be not likely to obtain extra EAs through domestic measures. If there will be no credible sellers of the EAs, the system may not function as it should be. Moreover, despite its potential to provide companies with a cheap option to reduce emissions, the ET is still an uncertain, risky business. As one of risk abatement measures, the government will be a purchaser of the EAs that are obtained by the companies that implement JI/CDM abroad. Actually, the MoE of Japan seems to consider this option in order to boost the willingness of the companies to invest more on JI and CDM projects.⁴¹ By doing so, as a risk aversion method, companies can sell the EAs if they feel uncertain about the system. This is like the World Bank's Prototype Carbon Fund (PCF)⁴². Japan can make something like Japan Environment Facility (JEF) or Japan Prototype Carbon Fund (J-PCF) in order to become a major purchaser of the EAs.⁴³ Up to now, there is no such structure yet.

As mentioned above, the participation in the ETS in general still entails risks for the companies. If there is an entity that can cover the losses from participation, the willingness of

⁴⁰ According to Nikkei on April 26, 2004, London International Petroleum Exchange (IPE) will list CO2 emissions permits on the stock exchange. By linking with CCX in the US, IPE will take care of the emissions trading deals in Europe (using economic transaction). Once the market becomes stable, IPE will start to list forward financial commodities and other derivatives on the stock exchange in future. (LIBOR concept may be introduced to this trading market)

⁴¹ Denki Shinbun March 18, 2004.

⁴² About the PCF, <http://carbonfinance.org/pcf/>; Currently, its participants are 6 countries (Canada, Finland, the Netherlands, Norway, Sweden and Japan) and 17 companies. For the list, see <http://carbonfinance.org/pcf/router.cfm?Page=Partic>

⁴³ Development Bank of Japan (DBJ) can become such an entity- Japan Carbon Fund (JCF) in Japanese DETS. For the detail of activities at DBJ, see <http://www.dbj.go.jp/japanese/environment/finance/program.html>. Also, about the METI project to create JCF, see <http://www.meti.go.jp/report/downloadfiles/g30519b03j.pdf>

the companies to use the ET may be higher than now. As an idea, with close collaboration among the ministries, Japan may be able to create a financial mechanism for the JETS and the KM, which works as the insurer of the system. If a company makes a big loss from the participation in the ET or other instruments, a certain amount of the losses will be compensated by this financial mechanism (JEF). This fund can also be used as a source of the subsidies for companies that work on the R&D of energy-saving technologies. This enables Japan to maintain its status as a world leader in energy-saving technologies. For this purpose, the excesses in the SOA could be accumulated as the source of this insurance. In addition, this entity, supported by the ministries and some interested financial institutions and companies, will become a specialized agency for the GHG ETS, KM, and carbon accounting. If JETS has such an entity based on the government-private cooperation, many of the existing concerns will be solved.

D-3. Transparency Issues –Application of Financial Market Regulation

Transparency in the DETS is indispensable to attract the investments and participations from the private sector (and later, international participants). Unfortunately, so far, all the ongoing efforts around the world face the same problem –lack of transparency in procedure, allocation, and so on. Then, it is necessary to find ways to enhance transparency of the ETS. For this purpose, a well-established verification system based on solid monitoring and evaluation needs to be built. Again, the practice in the financial markets provides us with hints. In financial markets, transparency issues are always discussed as one of the most important criteria to attract investments from investors. Management has to be transparent; the process of issuing IPOs (Initial Public Offerings) has to be transparent, and annual credit reporting procedure has to be transparent. In order to respond to these needs and verify that they manage the company well, companies run thorough internal and external auditing. Particularly, because of its strictness and neutrality, the external auditing is a way to obtain credibility in transparency of the company in the eyes of investors. In designing the JETS, in order to enhance transparency of its business conduct, it is important to establish a secretariat of the JETS with internal auditing mechanism. In addition, it is crucial to create the group of external auditors, consists of private accountants, lawyers, and other experts, in order to improve transparency of the system and its operation. Besides, it is also important to establish monitoring & evaluation team and rules within the secretariat for credible verification of the

system. By doing so, in the eyes of the participants in the JETS, the transparency and the credibility of the system will be enhanced significantly.

D-4. Homework for Corporate Management

In designing the JETS, companies also need to grasp what they have done concerning the GHG related matters. (i.e. production patterns and methods, energy efficiency in production, corporate-wide efforts on environment, etc.). By grasping which section(s) of a company emits how much of what, the management will easily know what they need to do to cut the GHG emissions. For this purpose, it is important to create emissions inventory system in each company and consider what kind of “inside” options are available to reduce emissions in terms of cost, potential and barriers. At the same time, managers should figure out how to put the ET into the management options regarding corporate governance, risk management, available technology and technology in development. Just organizing environment-related events for the image purpose is not enough. Environment issues are not only for some eco-minded people but also for corporate personnel in general. In order to respond to societal needs, companies should create specialized division within the corporate headquarters on company-wide registry, ET, carbon accounting, and corporate environmental strategy planning.⁴⁴ There are far more to do for the companies as their efforts to tackle climate change.

D-5. Need of International Scope for the System

In the process of designing the JETS, it is important to make it internationally applicable. Although the main purpose of the paper is to provide suggestions for the creation of the JETS, it is also important to look at what the IETS will be like in relation to the JETS.

● Hot-Air and Credits

Once the KP comes into force, if a solid and well-organized DETS will be in place early enough, Japan is likely to benefit significantly from the participation in the IETS. In order to maximize the slice of the pie of the benefits, Japan needs to provide the IETS with ways to

⁴⁴ Panasonic has the department of Society Relations in its HQ that specializes in assisting NPOs, financing environment projects, managing corporate-wide projects on environment, and monitoring and evaluating project done internally and by other entities that Panasonic has funded.

manage the market with high liquidity based on its domestic experiences and accumulated skills.

Under the KM, there is a system called “carry over,” which allows a country whose level of emissions is below the target under the KP to carry over its surplus of the EAs. A country such as East European countries and CIS has a possibility to carry over the surpluses and sell them in IETS. (Hot air) Particularly, since East European countries and CIS countries own enormous hot air (excessive EAs), it is crucial for Japan to plan ahead of time how to obtain as many of their AAUs as possible. Undoubtedly, East European countries will be automatically included in the EUETS. Therefore, for Japan, the target countries are Russia and Ukraine. (The amount of the hot air that Russia possesses is assumed to exceed the level of demands from the world) Once “hot air” will be started to be traded in the market, the price of the EAs may decline enormously and rapidly, which may make the ET more attractive for companies as a cheap option. However, on the other hand, excessive dependence on hot air will create a new problem that the limited number of the countries can control the IETS, which makes it difficult to establish a highly-liquid market. As a result, the benefit for the participants from participation will be definitely lower than expected. If hot air will be traded in the IETS, its treatment should be done with caution and the rules need to be established in advance.

● **Link with IETS and Other Domestic Systems**

Before the emergence of the IETS in 2008, Japan should design and implement JETS as solid as possible. In order to diversify the sources of the EAs, it is necessary to seek more opportunities to implement “good” CDM projects in order to secure and increase the supply of CERs as well as diversify the countries of origin of the credit suppliers as much as possible. Fortunately, many Japanese companies have shown their interest in supplying EAs.⁴⁵ In addition, as one of the ways to let the private sector accumulate experiences and skills to operate in the domestic and international ETSs, like the Canadian case, besides the participation in the pilot phase of the JETS, the government would let companies participate in other preceding DETSs abroad, like the EUETS, and accumulate experience and knowledge in managing the ET, if other DETSs allow them to do so, by acknowledging that

⁴⁵ As Marco G Monroy, President of MGM International, mentions, the amount of high quality CDM projects is limited. Therefore, if you plan to participate in a system, you need to be in a hurry. (<http://www.mgminter.com/ingles/index2.html>)

Japan's commitments clearly aim at attaining the Kyoto target.⁴⁶

● Can foreign entities participate in JETS?

This is a big issue to discuss in designing the JETS. Due to the increased level of globalization, multinational corporations have operated their businesses globally. However, the speed of structural adjustment, including legal framework, is not fast enough to catch up the economic and market trends. In many countries, both developed and developing, problems of globalization have been observed. Multinationals need to analyze local laws and negotiate with local authorities in order to operate in foreign countries. This makes their administrative costs very high. On the other hand, the lack of legal adjustment to international economic activities causes various kinds of flaws in the system, including transfer pricing. The situation around the design of a DETS is not the exception of this problem.

In Japan, there are many foreign, multinational companies doing their business. In addition, there are significant size and number of cross-border trades. The same will happen in the ETS. For example, until recently, the EU Commission planned not let foreign companies to participate in EUETS for a while. Now, non-EU entities can participate in the EUETS as long as they established the branches within the EU. In order to get access to the EUETS, the JETS will need to make such an arrangement.

In its systemic design phase, in order to allow foreign entities to participate in the JETS, if Japan decides to design its DETS based on the UK (policy-mix) style, various re-adjustment and re-structuring need to be done. For example, tax laws need to be changed in order to apply them to foreign companies in the JETS. This tax-related issue may also affect the level of willingness for domestic companies to participate. In order to ensure that level field in the market, some complicated tax adjustments will need to be implemented. This will mostly likely to raise the government's administrative costs. Incentives will be gone.⁴⁷ On the other hand, under Canadian-like DETS where the market rules the system, the degree of adjustment may be much smaller than the UK-like system setting. No tax incentive needs to be considered. Foreign participants, like domestic ones, buy and sell EAs at a market price.

⁴⁶ Kristian Tangen (CEO, Point Carbon): It is important for Japan to find the stable suppliers of emissions permits/allowances and create a market with high liquidity. Regarding the market, it is important to seek possibilities to establish a mutual link with EUETS. <http://www.ghg.jp/comment/comment.html#001>

⁴⁷ In addition, this fortifies the image of Japanese market as closed, discriminating, and inaccessible as it has been criticized by foreigners.

Although the transactions may seem very easy, this setting still needs some rules for participation, such as how much they can trade, which currencies will be used, compatibility of the credits traded internationally, and how the transactions made with foreign companies would help Japan achieve its national target. It is not an easy task for any country. An easy arrangement is, as the EU does, to require all entities to establish their branches in Japan. In this case, although it has been criticized that Japanese market is not open as it should be because of the regulations, no dramatic restructuring of the laws and the system is needed.

However, Japan should not create a closed system just because it is easy for the government to manage and it will allow it to protect domestic interests. The JETS will be designed in order to link it with the IETS upon its official establishment. In doing so, open-market structure needs to be implemented. In financial markets, everybody can buy and sell financial commodities, such as bonds and stocks, freely in any markets like New York Stock Exchange or London. This is possible because there are universal rules in place in these financial markets. The ETS needs such rules in order to operate internationally, which will provide the global participants with much lower costs to comply with the targets in reducing GHG emissions. Rather than make things more complicated by restructuring laws and domestic systems, let market rule the system. (This will provoke developing countries criticisms that rich countries will dictate the system based on their economic wealth.)

One of the other options is to install a systemic cushion between the international regime and domestic ones. (More closed model) For example, because of trading, the EAs remained in a country will be counted as a part of the achievements made by the country as a whole. If a country still has extra EAs to sell to foreigners through the IETS, it can do so. On the other hand, if a country still needs EAs to achieve its national target, it can buy them from another country. Under such an arrangement, the DETS will function as a window or an entity to operate the ET globally. In this sense, no single company will be allowed to operate cross-border trading or no foreign participants are in the DETS. A company needs to make transactions within the DETS. Extra credits will be stored in the national registry or some entity. Then, these credits will be traded among DETSs internationally in order to help each other comply with their national targets. This is a two-step approach. This may avoid complexities caused in IETS, but limit opportunities and options for the companies to find least costly ways to reduce their GHG emissions. In addition, in order to let this system work,

all other DETSs must operate in the same way. Otherwise, Japanese companies will definitely lose their competitiveness in international market for the EAs.

The IETS will be in place under the KM from 2008. It is the agreed matter under the Marrakech Accords. Therefore, while designing the JETS in full speed, Japan needs to consider the systemic arrangement of its present system to make it competitive in the emerging IETS. Considering the closeness of the X-day for the official start of the IETS, now is the time to finalize the design concepts for the JETS.

- **Prepare for Various Possibilities for Future Climate Framework**

It is also crucial to consider various possibilities of the emerging international framework. Under the KP, developing countries do not face any commitment requirements in terms of reduction of GHG emissions. In addition, although the US has emitted the most so far, it is not likely to participate in the Kyoto framework. Therefore, in order to analyze how profitable it is for Japan to participate in the international system, it is important to make assessments on issues, including the cases with the US participation and a possibility that developing nations will be subject to any obligations concerning the reduction of GHG. This is important because those issues will change future prices of the EAs, which will definitely affect the effectiveness of the ETS. To make the IETS one of the major systems to mitigate climate change, the participation of the US and other major nations is necessary. Free market structure may attract the US's participation, and a structure that facilitates the flows of financial resources and top-notch technologies will attract developing nations. Even though the IETS derives from the KP, there should be a great flexibility to apply the idea of IETS even outside of the Kyoto Framework because the main goal is to mitigate climate change, not ratify the KP.

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