Report on Concepts and Approaches to Implementing Corporate Accounting for Greenhouse Gas Emissions Allowances

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Global Industrial and Social Progress Research Institute

(GISPRI)

Contents

Background

The Kyoto Protocol, adopted at the Third Conference of the Parties to the United Nations Framework Convention on Climate Change in 1997, was a milestone in the prevention of global warming that established numerical targets for the quantities of greenhouse gases emissions by developed countries and countries in economic transition (Annex I countries). The objective of the Kyoto Protocol is to reduce the average emission amount by all Annex I countries by 5% or more from the base year[1] over the 1st five-year Commitment Period from 2008 through 2012, with differentiated objectives established according to the circumstances in each country and region. The Kyoto Protocol issues emissions allocation quantities (AAU: Assigned Amount Units) corresponding to the objectives for each country that has an emissions cap, and judges compliance by whether the emission amount during the Commitment Period is within the Assigned Amount Units held by the country in question. For compliance with the AAU, Annex I countries can also use the emissions reduction quantities obtained through the following three techniques, referred to as the Kyoto Mechanisms, to accomplishment their objectives in a manner identical to using their AAU, which enables the Annex I countries to attain their goals in the cost effective manner.

- JI (Joint Implementation): Annex I Parties can use the amount of emissions reductions (ERU: Emission Reduction Units) achieved through emission reduction projects implemented between Annex I Parties to achieve their objectives (Article 6).
- CDM (Clean Development Mechanism): Annex I Parties can use the amount of emissions reductions (CER: Certified Emission Reduction Units) achieved through emission reduction projects implemented in non-Annex I Parties by the Annex I Parties to achieve their objectives. (Article 12).
- ET (Emissions Trading): Annex I Parties can trade their Assigned Amount Units and emission reduction amounts[2]. Parties that have acquired their emissions allowances by trading can use their emissions allowances to accomplish their objectives. Oppositely, Parties that have transferred their emissions allowances will subtract the amounts from the amounts needed to accomplish their targets.

At the Seventh Conference of the Parties held in 2001, participating Parties reached agreement on various rules and guidelines of the Kyoto Mechanisms, which achieved the necessary conditions enabling each Parties to ratify the Kyoto Protocol. Although 74 countries have already ratified the treaty (as of June 4, 2002), the conditions required to put the protocol into effect has not yet been met.[3]

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[1] The base year is 1990, but among the Kyoto Protocol target gases (CO_2, CH_4, N_2O, PFC, HFC and SF_6) countries may use 1995 as the base year for PFC, HFC, and SF_6.

[2] Throughout this paper we will refer to Assigned Amount Units (AAU), Emission Reduction Units (ERU) and Certified Emission Reduction Units (CER) collectively as "emissions allowances." In addition to these units, the Marrakech Accords also stipulate Reduction Measurement Units (RMU) from sink (forest sequestrations) projects in Annex B countries; we have also included these in "emissions allowances."

[3] The Kyoto Protocol will become effective when 55 or more signatory countries, including those Appendix I signatory countries that accounted for at least 55% of the gross CO_2 emissions volume of all Appendix 1 signatory countries in 1990, have ratified the Protocol.

Even under such uncertain conditions, some firms have already independently begun to trade emission allowances. The cumulative number of trades worldwide is estimated to be between 100 and 150, with trading amount of approximately 55 million tons-CO_2E or more (June 2001, based on research by Natsource). In addition, greenhouse gases emissions trading was started in the UK as a national system in April 2002, and the EU is studying introduction of emissions allowances trading within the entire EU region beginning in 2005.

At the present time, however, there are no clear standards for how these greenhouse gases emissions allowances and their related products[4] should be considered and treated from an accounting standpoint.

In case that emissions allowances trading is introduced as a national system, firms that are responsible for meeting the emissions targets and emit greenhouse gases in amounts that exceed their target values must be obtained emissions allowances in some form that are equivalent to the excess amount[5]. Conversely, when a company holds emissions allowances in excess of its target it may sell them. It has been prospected that the market for greenhouse gases emissions allowances trading will grow from several trillion yen to several hundred trillion yen in the future.

Considering that emissions allowances will be traded directly among firms, and given the estimated future size of the market, we believe the extent to which a company holds emissions allowances will become an important factor influencing its financial position. The Global Industrial and Social Progress Research Institute has therefore conducted research since fiscal 2000, through its Research Committee for "Accounting and Verification of GHG Emissions Permits", to focus on the topics of how to consider and treat emissions allowances from the standpoint of corporate accounting, and the possibility of applying emissions amounts and emissions reductions certification under a third-party certification framework to the environmental reports that companies are currently preparing.

This paper is an extract of some of the thinking and approaches for corporate accounting for emissions allowances that were the result of the committee's research.

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[4] The greenhouse gases emissions allowances and related products currently being handled are chiefly the following categories.

Allowances and products are divided into emissions allowances that are substantiated by a national system, such as the emissions allowances under the emissions control system in the UK, and emissions allowances that are not substantiated by an international or national system. Many of the latter are verified in some form by a third party. Theoretically, there are both spot commodities and derivative products in the former the latter, respectively. "Spot commodities" indicate those allowances and products that have already been guaranteed by a public entity (for this paper, assumed to be spot commodities recorded in a "registry").

[5] At present, the UK recognizes participation by two methods, the "absolute sector," where emissions targets set in absolute quantities, and the "relative sector," which has targets in energy use or emissions per unit of output. The relative sector entities must acquire emissions allowances corresponding to their excess emissions when they are unable to achieve the energy use or emissions per units of output set as their targets.

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Summary

This report is divided into two parts. One section discusses the treatment of emissions allowances as spots[6], and the other deals mainly with derivative products. We conducted our examination concerning spot transactions during fiscal 2000, and investigated the issues related to derivative products in fiscal 2001[7].

Emissions allowances are traded mostly in situations where trades are completed in order to accomplish targets that have been determined either independently or through a quota system, and in situations where trades are completed for speculative purposes. In the former case, we assume that emissions allowances will be used as a resource having raw material-like characteristics, while in the latter case we believe they will be treated as resources having the characteristics of a financial instrument. We believe that from an accounting point of view, the treatment of allowances will differ depending upon the purpose for which they are used. In this report, we are interested primarily in making assumptions about and investigating the former. We will, however, present some new proposals regarding the latter instances as well.

I. Spot emissions allowances

Assuming that companies will use emissions allowances to accomplish targets that have been determined either independently or by a quota system, we believe firms will procure emissions allowances that correspond to the greenhouse gas emissions that exceed their firm's targets because they have the duty to explain their behavior to their company's stakeholders and /or because they must comply with the rules. Emissions allowances can be needed with their business activity increase, therefore they have characteristics similar to possessing raw materials. In addition, even assuming that firms hold the same quantity of emissions allowances, based on this concept we believe the money or services these allowances produce will differ depending upon the firm. We believe the size of the profit obtained will also vary. This type of characteristic is peculiar to operating assets/non-monetary assets, rather than financial assets. Emissions allowances can therefore be considered to be operating assets/non-monetary. Moreover, based on this approach, emissions allowances are classified not as tangible assets but as intangible property.

Under currently accepted accounting standards, intangible assets are normally valued at their acquisition cost. Accordingly, the acquisition cost becomes the book value at the end of the accounting period. When emissions allowances are held for speculative purposes, however, from the standpoint of disclosure of market value information at the end of the period, we can't deny valuing allowances at market value in the same manner as financial assets.

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[6] In this paper we will assume the emissions allowances recorded in a registry that conforms to an official national/international system such as a national registry or a CDM registry to be "emissions allowances as spots." During the stage before such a registry or means of verification have been prepared and registration is not possible, we refer to the emissions allowances verified by a third party as "VER (Verified Emission Reduction) spot commodities." VER will not necessarily become emissions allowances that will be effective for achieving the objectives of the Kyoto Protocol.
In addition, contracts to trade a specific quantity of emissions allowances in the future or contracts concerning the right to trade in the future are considered to be derivative products.

[7] For this reason, readers should note that in some cases the fiscal 2000 details do not reflect the latest information.

II. Emissions allowances derivative products

Derivative products generally include forward transactions, futures transactions, options and swaps. The same is considered to be true for emissions allowances trading as well. Of these, forward transactions and options are treated different depending upon whether or not the transaction satisfies settled net requirements, and the settled net amount is accounted for based on the accounting rules for financial instruments. Under current accounting standards, forward transactions that do not satisfy settled net requirements are accounted for as off-balance sheet items during the period until the physical delivery is completed, for example. Another school of thought on how to show the relationship between these kinds of credits and liabilities calls for using a contract standard. For options that are not settled net, when commodity delivery is planned to occur through the exercise of the option, accounting treatment for the purchase and disposal of a real physical asset should apply. For futures, the accounting standards for financial instrument should be applied.

On the other hand, many emissions allowances trades are expected to be made for hedging purposes. In these cases, we believe that hedge accounting should be applied regardless of whether the transaction is a forward transaction, a futures transaction or an option.

Ⅰ. Emissions allowances spot commodities

1. Discussion points concerning the accounting nature of "emissions allowances" and "emissions credits"

(1) Analytical viewpoint when examining accounting measurement

① The need to specify the attributes to be measured

Under current accounting practices, measurement methods differ depending upon the attributes to be measured. For example, based on the recognition of the "actual capital" and "loans and fictitious capital" classifications used for economic capital and the "physical investments (property)" and "financial investments (assets)" classifications for accounting-type investments (assets), an accounting model has been formed in which both exist together, with the valuation principle for assets being "cost" for the former and "fair value (market value)" for the latter.

If we provisionally assume that accounting does not take the "going concern" postulate as a premise, and instead suppose that users of accounting information and decision-makers who depend on accounting information always make decisions after including liquidation of an investment target as one decision option along with continuation of the business, we can also imagine an accounting model in which we measure all asset measurements using prices at the time of sale. With this type of sale price accounting, the need to specify the attributes to be measured would likely become considerably smaller. To the extent that our premise is the current accounting model in which a different measurement method is selected depending upon the attribute to be measured, however, we must first specify what kind of attributes the measurement target – in this case emissions allowances – possesses before we can begin to examine the accounting problems related to emissions allowances trading.

② Grounds for measuring financial asset (marketable securities) market value

In accounting – particularly for the paradigm of dynamic and accrual basis accounting – a common understanding exists that profit refers to "what is measured as surplus recovery of invested capital." From this idea the concept has formed that operating assets/non-monetary assets are valued using the invested capital, which is the acquisition cost, and if there is a flow of money in excess of the invested capital at the time the invested capital is recovered, this flow is measured as the "profit." Therefore assets that are not realized and are held at the end of a period are valued at cost.

In contrast, because it has been asserted that financial assets are measured using market value at the end of each accounting period and the difference in value is treated as a profit or loss, in contrast to the case of operating assets/non-monetary assets there must be special grounds for measuring financial assets at market value. There have been many scholars in Japan who have given theoretical consideration to the grounds for measuring financial assets at market value. When describing the grounds for measuring financial assets at market value, several theories examine this problem from the standpoint of how to understand the attributes of each asset or each transaction. Below we briefly examine some of the typical theories based on this point of

view[8].

(i) The subjective goodwill theory (Saito)

Because investment in a operating assets/non-monetary assets has goodwill value (future excess cash flow) that will differ depending upon who makes the investment and how the asset is used, the results of an investment in a operating assets/non-monetary assets cannot be measured until the cash flow is actually obtained. In contrast, because a marketable security always has only one value that is equivalent to the market price, and **goodwill value** does not exist regardless of who holds the security, the change itself in a marketable security's market value becomes the realized profit as a result of the already determined investment.

(ii)The fictitious capital theory (Ishikawa)

Fictitious capital is capital returned as profit earned from ownership (management activity is not directly necessary). Moreover, it refers to capital that is assumed to be fictitious but which actually exists by taking the form of a "product" that is the subject of buying and selling. Except through the value fluctuations of the "real capital" compared with it, fictitious capital does not directly affect value production. The only value that exists is the discounted price, and because prices fluctuate idle monetary capital seeks value differentials and is consequently drawn into the securities trading market. The price of fictitious capital is its fair value as the value of the return of the original capital, and a fictitious capital financial instrument is measured using its market value as the fair value. Furthermore, fictitious capital cannot be the purchase "cost," and is measured by the fair value at the time of purchase (when initially recognized).

(iii) The three asset classification theory (Kasai)

This theory classifies assets into standby assets, appropriated assets and delegated assets, based upon the assets' attributes; under this scheme marketable securities are classified as delegated assets. In contrast to appropriated assets, which are regarded as a "circulation activity" of capital, delegated assets are viewed as a "round-trip activity" of capital. The profit or loss of delegated assets involved in capital "round-trip" activity depends upon the time of profit and loss recognition standards. Therefore recognition on an accrual basis in the narrow sense, if keeping the accumulation method in mind, is appropriate. Marketable securities are a capital loan asset designed to take advantage of price differentials in the bond market, and the market value difference that occurs with the passage of time is recognized as a holding gain, with the marketable securities account increasing in value up to the market value. All of the profit that arises from a marketable security is a holding gain, and even when the profits are a gain on sale they are in essence holding gains.

(iv) The freely selectable capital (capital constraint assumption) theory (Morita)

This theory states that the sales criteria is used as the criteria for earnings recognition because invested capital is constrained by the asset in question, and changes into freely selectable

[8] Junji Ishikawa, "Basic Problems in Mark to Market Accounting," Chuokeizai-Sha, Inc., 2000, Chapter 1, Chapters 5-7

capital only when the capital constraint is dissolved by sale of the asset. As long as capital is constrained, an asset in question is valued at cost; on the other hand, assets for which capital is not considered to be constrained are valued at market. For assets an entity assumes it will sell, however, the invested capital is regarded as not being constrained. Because the capital is not constrained in marketable securities that will be sold, such assets are valued at market.

③ Initial recognition and subsequent measurement; direct measurement and accounting allocations

The first recognition and measurement of an asset (liability) by an accounting entity is referred to as initial recognition, and measurements made at later times – for example, measurements of the value of an asset (liability) at the end of each accounting period – are called subsequent measurements. The expression "direct measurement" refers to measuring assets (liabilities) using the quantity, estimates or assumptions at a point in time. Accounting allocations are recognition of the amount of change from an amount previously recorded. Model examples of such allocations include calculations of depreciation expense or cost of sales. Direct measurements and accounting allocations are classifications based on some information that provides the basis for the amount of the measurement[9].

The initial recognition is usually a direct measurement. When an asset is obtained by an exchange of means other than money and the value is measured by the book value of the transferring entity, however, this is not a direct measurement. Subsequent measurements are classified as either direct measurements or accounting allocations depending upon whether all of the factors related to the measurement are based on current information and assumptions. The accounting problems related to emissions allowances trading must be studied by separating the initial recognition and subsequent measurements into phases. But following such investigation into a specific measurement method, is direct measurement required or is accounting allocation appropriate? Even if accounting allocation is appropriate, it is still necessary to consider the question of whether allocations should utilize representative measurements, because direct measurement is difficult to achieve in reality.

④ Classifications of direct measurement

In FASB Concepts Statement No. 5, titled *Recognition and Measurement in Financial Statements of Business Enterprises*, the attributes of assets (and liabilities) are classified into five categories for "historical cost," "current cost," "present market value," net realizable (settlement) amount" and "present value of future cash flows."[10]

- Historical cost (historical income amount): For assets, the amount of cash or cash equivalents paid to acquire the asset. For liabilities, the amount of money received when an obligation is incurred. The historical cost or historical income amount is assumed to be a direct measurement only for measurements at the point in time when the asset or liability is initially recognized.
- Current (substitution) cost: The amount of cash or cash equivalents that would have to be paid to

[9] FASB, Corporate Financial Systems Working Group, *Present Value*, Chuokeizai-Sha, Inc., 1999, Chapter 1

[10] FASB Concepts Statement No. 5, Hiramatsu and Hirose, trans., *Recognition and Measurement in Financial Statements of Business Enterprises*, Chuokeizai-Sha, Inc., 1994, Paragraph 67

acquire the same or equivalent asset at the current point in time. For the initial recognition of cost, the current cost and historical cost are identical.

- Present market value: For assets, the amount of cash or cash equivalents that can be obtained by disposing of the asset through a normal disposal process. For liabilities, the amount of cash or cash equivalents an entity must pay to settle the liability at the current point in time.

- Net realizable (settlement) amount: For assets, refers to the estimated amount of cash or cash equivalents before any discounts that an entity can expect to realize by converting the assets into cash through a normal business process, excluding any direct expenditures required in order to complete the cash conversion in question. For liabilities, refers to the estimated amount of cash or cash equivalents before any discounts that an entity can expect to pay in order to repay the liability through a normal business process, including any direct expenses required in order to complete the repayment in question.

- Present value of future cash flows (or discounted value): For assets, the present value or discounted value of the projected cash flow that will occur in the future from converting the assets into cash through a normal business process, excluding the present value of any cash flow required in order to complete the cash conversion in question. For liabilities, refers to the present value or discounted value of the projected cash flow that is required in the future in order to complete the repayment through a normal business process.

Of these alternatives, historical cost (historical income amount), current cost and present market value look at the amounts that can currently be observed and are based on known information concerning present circumstances (present market conditions). On the other hand, the net realizable (settlement) amount and present value of future cash flows (or discounted value) are current measurements based on projections of future benefits or sacrifices[11].

(2) Emissions allowances attributes and accounting issues

① How will emissions allowances be used Emissions allowances as operating assets/non-monetary assets

When discussing emissions allowances, allowances allocated from the government free of charge, allowances received for a fee (“grandfathering”) and allowances obtained by auction as permits are all emissions allowances that enable the business entities in question to continue their original business and discharge within a permitted range the CO_2 that is inevitably generated in the course of conducting their business activities. This means, in other words, that the entities may conduct goods and services production and sales activities within the permitted range, or to put it another way, their added value production is limited to a level within the permitted range.

Because operating activities and the goods and service produced differ for each business entity,

[11] FASB, Corporate Financial Systems Study Group, *Present Value*, Paragraphs 87-88

the content and size of the added value produced differs. Therefore the returns obtained also naturally differ. Even if the different entities obtain the same emissions allowances, the size of the returns generated from the allowances will vary widely. In other words, the emissions allowances are judged to possess characteristics that will result in subjective goodwill.

In addition, when business entities or foreign firms reduce their emissions and can sell their remaining allowances to other firms, or when a certain level of emissions reduction volume is recognized and the rights to discharge the corresponding quantity of emissions are created (emission "credits" are generated), each business entity becomes able to conduct greater added value production and more goods and services will be produced.

Thus the additional CO_2 quantities that can be discharged by acquiring emissions allowances or credits such as government allocations will contribute to the added value creation activities of each business entity. The degree of that contribution, however, will differ depending upon each business entity. This type of emissions allowances attribute is an asset that falls within the purview of so-called subjective goodwill according to the subjective goodwill theory. In a word, such credits become operating assets/non-monetary assets.

② Distinction between emissions allowances as operating assets/non-monetary assets and financial instruments covering emissions allowances

It is assumed that emissions allowances will be traded in both the spot market and the futures market. In particular, it is assumed that the futures prices of futures market transactions will be marked to market on each market trading date, even for transactions other than those that presuppose transfers of the emissions allowances on negotiated maturity dates. Assuming there are active market participants, there will also be transactions in which buy orders and sell orders are settled net between participants before maturity. The buying and selling of put options and call options for emissions allowances is also being planned. An active market will guarantee the existence of market prices on every trading day, and will enable anyone with the desire to participate in the relevant market and the ability to meet margin requirements to enter and withdraw from the market at any time by settling net based on market prices. The products handled in such a market are "derivatives."

The definition of derivatives in Paragraph 10 of International Accounting Standard No.39, Financial Instruments: Recognition and Measurement, is as follows.

> *"A derivative' is a financial instrument or other contract with all three of the following characteristics: (a) its value changes in response to the change in a specified interest rate, security price, commodity price, foreign exchange rate, index of prices or rates, a credit rating or credit index, or other variable; (b) It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors; and (c) is settled at a future date."*

As this indicates, it is extremely important to differentiate between "emissions allowances" as operating assets/non-monetary assets and "derivatives," which are products designed in response to emissions allowances' price fluctuations.

③ Accounting for executory contracts and accounting for financial instruments

When emissions allowances are bought and sold in the futures market, transactions that are not settled net by the end of each accounting period but transfer the spot commodities at the maturity date just as in negotiated transactions are called forward transactions (forwards), to distinguish them from futures transactions (futures) that presume third-party participation in the market and settlement net.

One characteristic that is common to both kinds of forward and futures transactions is the time difference between the contract and the transfer of the spot commodities. Normally accounting makes the initial recognition when there is a spot commodity transfer, or at least some specific good flows between the parties to the transaction. Accordingly, when initial recognition is delayed until the spot commodities are transferred, both forward transactions and futures transactions will be off-balance sheet transactions from the signing date of the contract until the spot commodity transfer. A transaction that remains at the contract stage is called an executory contract, Under accounting practices premised on normal spot commodity transactions, executory contracts such as forward transactions and futures transactions are entirely off-balance sheet arrangements. We can solve this problem by introducing accounting measures that stipulate initial recognition at the time the contract is signed. The method that requires the initial recognition to be made when the contract is signed is called the “contract standard.”

If forward transactions related to emissions allowances are accounted for using the contract standard, the initial recognition will look something like the following.

Selling side	(Debit) Cash receivable	(Credit) Emissions allowances delivery obligation
Buying side	(Debit) Emissions allowances receivable	(Credit) Cash payable

The subsequent measurement at contract maturity is as follows.

Selling side	(Debit) Cash (Debit) Emissions allowances delivery obligation	(Credit) Emissions allowances (Credit) Cash receivable
Buying side	(Debit) Emissions allowances (Debit) Cash payable	(Credit) Cash (Credit) Emissions allowances receivable

If we account for the transactions using the contract standard, we can solve the off-balance sheet problem by initially measuring the credit and the liability as a cross-trade at the time the contract is concluded. Moreover, with the subsequent measurement at the contract maturity, the credit and liability that have been accounted for by double entry will offset and extinguish one another. This is generally referred to as “derecognition” Accounting with regard to derivatives assumes we can solve the off-balance sheet problem by accounting for transactions with the contract standard. Incidentally, the methods of handling derivative forward transactions and futures transactions are

different.
Paragraph 14 of International Accounting Standard No.39, Financial Instruments: Recognition and Measurement, stipulates the following.

> *"Commitments to buy or sell non-financial assets and liabilities that are intended to be settled by the reporting enterprise by making or taking delivery in the normal course of business, and for which there is no practice of settling net (either with the counterparty or by entering into offsetting contracts), are not accounted for as derivatives but rather as executory contracts. Settling net means making a cash payment based on the change in fair value."*

In other words, forward transactions that are not settled are initially recognized at the point in time when money or labor are provided and are accounted for the in the same way as acquisitions of normal operating assets/non-monetary assets, becoming off-balance sheet transactions during the period of time from the contract date until receipt of the underlying commodity. One means of solving this problem is "contract standard" accounting treatment. As derivatives, on the other hand, futures transaction premised upon net settlement are accounted for by applying "financial instrument accounting" standards. Under Japanese accounting standards, *"the net credit or liability that arises from derivative transactions involving real products (commodities) that are normally traded by net settlement is accounted for according to the Accounting Standards for Financial Instruments and Similar Items."* (Accounting Standards for Financial Instruments and Similar Items, Note 1).

④ The nature of emissions allowances intangible assets
What are "emissions allowances" operating assets/non-monetary assets? Considered at their simplest, we can't see them and they have no material substance, which makes them intangible assets rather than tangible assets.
Intangible assets are defined in Paragraph 7 of International Accounting Standards No. 38, Intangible Assets.

> *"An intangible asset is an identifiable non-monetary asset without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes."*

From our examination of emissions allowances so far, we believe this definition of intangible assets is applicable. Let us therefore look at the illustrations of intangible assets that are provided in Paragraph 8 of IAS No. 38.

> *"Enterprises frequently expend resources, or incur liabilities, on the acquisition, development, maintenance or enhancement of intangible resources such as scientific or technical knowledge, design and implementation of new processes or systems, licences, intellectual property, market knowledge and trademarks (including brand names and publishing titles). Common examples of items encompassed by these broad headings are computer software, patents, copyrights, motion picture films, customer lists, mortgage servicing rights, fishing*

licences, import allowances, franchises, customer or supplier relationships, customer loyalty, market share and marketing rights."

Items on this list that can be said to be strongly similar are fishing licences and import allowances (quantities). Both are assets that determine the upper limits that a business can use when conducting its activities. Both can be understood quantitatively. Furthermore fishing licences – particularly fishing rights that restrict the size of a catch – also possess a similarity on the point that they are concerned with consumption of the earth's natural resources.

By the way, the International Accounting Standards Joint Working Group of Trend-Setters noted in Paragraph 40 of Proposal No. 65, Agriculture, that although intangible assets with an active market are rare, examples of active markets in some countries can be noted, including markets for production allowances, water use rights and contaminant emissions allowances.

(3) Initial recognition discussion points

① Form of acquisition and initial recognition

Although acquisition for value (purchase) is generally taken as the form for initial recognition, other examples include gifts, private construction (manufacture), investment in kind, and exchanges. From the standpoint of accounting theory as it concerns measurement of acquisition value, there is the problem of how to measure the cash or asset (marketable security, etc.) that is transferred; that is, do you measure the fair value of the good that is sacrificed, or do you measure the fair value of the asset received? Furthermore, if there is no passage of time the fair value of cash is the face value of the cash itself. (With the passage of time, the problem of discounted present value arises.)

For purchases and private construction (manufacture), there are no problems using direct measurement based on the fair value of the sacrificed asset. For gifts, however, the acquisition cost is zero, while for a partial gift the acquisition cost will be valued at a low amount. Moreover, for investment in kind there are no problems in using the value of securities handed over as compensation. In the case of exchanges, problems will arise when the possibility of measuring the transferred asset (for example, the certainty of the measurement) is lower than that of the asset received.

On the other hand, what is the result when we directly measure the asset received by its fair value? If the asset received is a single item with a single value, there is no problem. Even in the case of purchases, however, the asset received usually has a range of prices. Consider when someone purchases a personal computer. The purchase price will vary widely depending upon whether the purchase is an Internet transaction, a catalog transaction or a purchase from a discount retailer. How can we possibly say what the personal computer's fair value (market price) should be? Therefore we assume the transaction price as the acquisition cost, using the price expended (sacrificed) in the actual transaction if the purchase is completed via the Internet, the catalog price if purchased through a catalog sale or the transaction price if purchased from a discount retailer. In other words, the fair value of the sacrificed asset is used for the initial recognition.

Furthermore, in consideration of a physical asset's convenience, in the case of an exchange, for example, there is also the theory that we should measure the value of the asset received or the asset transferred depending upon which has the higher certainty of measurement (generally the asset with the highest liquidity). The premise behind this theory is the assumption that the fair value of the asset received and the asset transferred ought to be consistent if the transaction is with an independent, impartial third party.
In situations where emissions allowances are allocated for free, or when a spot market for emissions allowances exists and the market price can be readily obtained, the problem becomes whether to make the initial recognition using the fair value of the emissions allowances or the sacrificed value (that is, zero).

② Emissions allowances acquisition cost
In the case of emissions allowances acquisitions, we might say that acquisitions through auctions, acquisitions through some method such as CDM, and grandfathering correspond to purchases, private construction (manufacture) and gifts, respectively. As stated previously, in the case of purchases and private construction (manufacture), no problems arise in the determination of the acquisition cost.
In situations where emissions allowances are allocated for free, or when a spot market for emissions allowances exists and the market price can be readily obtained, the problem becomes whether to make the initial recognition using the fair value of the emissions allowances to appropriate the donated profit, or to not add the donated profit and measure only the sacrificed value (that is, zero).
When we regard this as a management problem we would recommend uniformly accounting for the fair value of the assets received, because the problem with acquisitions for value and free acquisitions is that the cost of production (cost of goods sold) will be totally different, rendering them useless for judgment of efficient production.

Let's assume that in the situation where emissions allowances are allocated for free, conditions arise in which firms strive to reduce their emissions allowances and can sell their emissions allowances in the spot market. In this case, how shall we measure product cost? This may correspond to private construction, where the investment and expense of environmental burden reduction measures related to the effort to reduce emissions allowances will be totaled as a cost of production (emissions allowances cost as a manufactured product).

③ Acquisition cost of emissions quota-related derivatives
Although acquisition cost means the market price (fair value) at the time of acquisition, the cost of operating assets/non-monetary assets is a measurement of the invested capital. The fair value (market price) assumed to be a problem for the initial recognition is the purchase market price, not the disposal market price (current market value). On the other hand, for derivatives related to emissions allowances the initially recognized direct measurement attribute becomes the fair value as the disposal market price (current market value). Of course, this can be stated mainly from the "three asset classification theory" accounting theory, and for financial assets with an active market or where the purchase market and the disposal market are assumed to be the same, the

difference between the purchase market prices and disposal market prices are not clearly specified.

(4) Subsequent measurement discussion points

① Subsequent measurement of intangible assets

Paragraph 63 of International Accounting Standard No. 38, Intangible Assets, describes the following benchmark treatment for the subsequent measurement of intangible assets.

> *"After initial recognition, an intangible asset should be carried at its cost less any accumulated amortisation and any accumulated impairment losses."*

In other words, benchmark treatment is either normal amortisation or a write-down because of impairment. The former is an accounting allocation, while the latter is based on the application of direct measurement. In addition, Paragraph 64 also permits the following alternative treatment.

> *"After initial recognition, an intangible asset should be carried at a revalued amount, being its fair value at the date of the revaluation less any subsequent accumulated amortisation and any subsequent accumulated impairment losses."*

The IAS also recognizes asset revaluation – that is, measurement of market prices – as an allowed alternative treatment. This is the application of direct measurement: *"If an intangible asset's carrying amount is increased as a result of a revaluation, the increase should be credited directly to equity under the heading of revaluation surplus"* (Paragraph 76). The problem is, which direct measurement to use? If we look to accounting theory for the answer, we believe "current cost" should be used as the purchase market price.

② Subsequent measurement of emissions allowances

The depreciation methods such as straight line depreciation or declining balance depreciation that are normally used with tangible fixed assets have not been adapted to emissions allowances. The amount of emissions allowances consumed can be accurately measured from the consumption of permitted emissions volume, being attached as a component of the product or merchandise cost (cost attachment). When we examine this type of characteristic, emissions allowances appear similar to depletion assets and we can assume depletion – that is, a depreciation method that is proportional to emissions volume. Emissions allowances can also be considered to be similar to intangible inventory assets[12]. The similarity is especially close in the case where firms strive to reduce their level of emissions and the emissions allowances can be sold in the spot market. In this situation, the cost of production of the emissions allowances as a product becomes the cost of sales (product cost).

Write-downs and write-ups that make reference to market prices in the spot market for emissions

[12] The similarity to inventory assets is based on the suggestion of Makoto Yasumoto, a member of the Global Industrial and Social Progress Research Institute. When the attributes as an intangible asset are re-emphasized and the sale of emissions rights based on self-effort are assumed, the accounting treatment for software developed for the purpose of being sold to independent parties comes to mind.

allowances can also be imagined. Some industries such as banking have recognized this approach. But because, as a rule, allowances are vintage permits, it's hard to envision the carry-forward of large quantities of emissions allowances at the end of each period, and the importance of revaluation of the emissions allowances themselves is not very great.

③ Subsequent measurement of derivatives related to emissions allowances

For subsequent measurement of derivatives related to emissions allowances, the first assumption is that the accounting treatment will be modeled after the Accounting Standards for Financial Instruments and Similar Items.

(5) Discussion points concerning an "accounting treatment matrix" approach

As explained more fully in each individual discussion, for this report we have elected an exhaustive consideration by extending our analysis to an examination of emissions allowances accounting and creating an "accounting treatment matrix," placing issues in each cell. We then divided the problems into transactions for "consumption purposes" and transactions for "speculative purposes" depending upon the transaction objectives of the reporting entity, an idea that assumes different valuation criteria ("acquisition cost" for the former and "market price valuation" for the latter).

For our purposes, we can assume that consumption purposes as used here refers to spot transactions or forward transactions, while transactions for speculative purposes refers to futures transactions. When we keep both in mind as spot transactions, however, and classify the accounting standards according to the purpose of the transaction, the need arises to search for new grounds that go beyond the current accounting model combining acquisition cost and market price valuation. The reason is that when we assume that emissions allowances as commodities are "operating assets/non-monetary assets," we must note the nature of the current accounting model as it concerns the following operating assets/non-monetary assets.

For manufacturing, operating assets/non-monetary assets can be said to be for consumption purposes because they are supplied to product manufacturing. In the case of commercial businesses, however, operating assets/non-monetary assets are almost never processed but are bought and sold "as is." If we were to regard an asset as consumed when sold, normal buying and selling activity would be for consumption purposes. With commercial activity, however, at what point can we possibly clarify that a transaction is not intended for speculation, or at what point can we clearly say that a buying and selling transaction is completed with the intent of speculation? The same can be said even for manufacturing, making it is a matter of whether we can or cannot say that decisions on the quantity or timing of raw materials purchases have absolutely no speculative intent. If we assume we cannot clarify this intent, it means that what we call consumption purposes in this matrix can be made to apply to product manufacturing, and that we can suppose speculative purposes apply to trading in general.

Such an assumption means we will value all products at market value (not the lower of cost or market method, but also valuation increases) for buying and selling (commerce) that does not change the form of operating assets/non-monetary assets. This differs from the market price

valuation used for financial instruments, and will change acquisition cost and realization basis accounting as "calculations of surplus collection of invested capital." In other words, we will evaluate buying and selling in general that does not change the form of operating assets/non-monetary assets at acquisition cost, in the same manner as we evaluate investments of assets in product manufacturing, and change current accounting practices of acquisition cost and realization basis accounting, which book a realized profit at the time of sale, into operating assets/non-monetary asset market value basis accounting that values assets at market prices during the period they are held. Of course, a system of market value basis accounting for operating assets/non-monetary assets exists as an accounting theory. Moreover, because a market price valuation increase in this case shows the holding gain as a cost saving, it is the market value as current (substitution) cost. (Unlike financial instruments, which use current market prices as selling market value.) If one keeps this sort of full-fledged market value basis accounting in mind, however, then conversely it becomes acceptable to book holding gains or losses by valuing assets acquired for consumption purposes at market value, and the need to classify according to the transaction objective disappears.

Why did this idea of classification according to the purpose of the transaction arise? Perhaps it is an analogy, using the precedent of market price evaluation for financial instruments. After all, aren't the "existence of a fair market and fair market value" and the "presence or absence of a need for cost accounting" perhaps conditions that call this analogy to mind?

In other words, operating assets/non-monetary assets for which merchandise markets make it possible to buy and sell in the market at any time and revalue the assets using market values closely resemble financial instruments. Unlike financial assets, however, when operating assets/non-monetary assets are supplied for product manufacturing, cost calculations become necessary and cost valuation applies. (Of course, acquisition cost is by far easier to measure than current (substitution) cost.) If we take the precedent of financial instruments, the market price is theoretically the market value (exit market price), for which cost accounting is not adopted. For emissions allowances transactions that assume "the existence of a fair market and fair market values," we believe this will lead to the idea of separating transactions according to consumption purposes and speculative purposes, and using cost valuation for the former and market price valuation (current market value) for the latter.

There is another interpretation regarding the separation of consumption purposes and speculative purposes. This is the interpretation that views consumption purposes as an auxiliary activity of industries that deal with real products, and speculative purposes as an auxiliary activity of financial businesses. In this case, commercial firms engaged in buying and selling that does not alter the form of operating assets/non-monetary assets are engaged in an actual business whose purpose is consumption, but there is also the possibility of a contradiction arising because the intention itself of commercial firms that participate in commodity markets where commodity market prices exist may also be said to be seeking profits from speculation.

As the above discussion shows, the idea of dividing transactions between transactions for "consumption purposes" and transactions for "speculative purposes" based on the objective of the reporting entity and assuming different valuation criteria can be viewed as quite natural, but leads to the existence of major problems when we pursue considerations theoretically. At a time when a shift from an earnings-expense approach and acquisition cost basis accounting to an asset-liability

approach and market value basis accounting is being considered, however, the ideas in this report cannot disregard these issues.

2. Discussions of emissions allowances accounting

(1) Definition

> *"Emissions allowances accounting refers to measuring, recording and reporting from the perspective of physical quantities and financial results changes in the relationship of rights and obligations that arise from the trading of emissions allowances."*

Although this report reviews various arguments while keeping greenhouse gases in mind, we do not assume to set any restrictions on the definition of what emissions allowances are intended to cover. The reason is that we believe the discussions here can be utilized in every case, such as, for example, if waste product emissions allowances are traded.

In this report we do not specify any conclusions concerning what kind of characteristics emissions allowances transactions possess. We do include discussions about whether they are a product like inventory assets, or whether they are an intangible right like fishing rights or patents, or whether they are financial instruments. Whatever the character of emissions allowances may be, however, it is certain that the results from trading allowances will cause changes in the relationship between rights and obligations, and we assume emissions allowances accounting will focus on the series of functions to understand, record and report these changes.

For example, if there is a firm with 10t of emissions allowances, in all likelihood that firm will first measure the volume of its own actual emissions and record this in its account books. This is the record of the physical quantity. Then, should its own emissions volume decline to 8t, it may sell emissions allowances for 2t in the open market. At such time, the firm will record the transaction in monetary units, because it will experience a cash inflow. The journal entries at that time may look as follows.

(Debit) Cash ¥20,000 (Credit) Revenue from sale of emissions allowances ¥20,000

The firm then will gather information on the results of this series of actions into a report, have the results verified, and release the report. This series of corporate activities is emissions allowances accounting. One item we want to highlight at this juncture is that the change in the relationship between rights and obligations that cannot be measured in monetary units occurs at the beginning. Initially the firm understands that the actual emissions quantity is 8t, but this accomplishes the obligation to observe the emissions quota that has been placed on that firm. To put it another way, we can say that a change in its obligation as a Japanese firm has occurred.

Furthermore, even though receiving verification of the results is a step inseparable from accounting, we are still able to refer to the record of a series of activities that have not been verified as accounting. Under this definition, verification is outside the scope of the definition of emissions allowances accounting.

(2) Recognition

① Transactions subject to recognition

Transactions that will be the subject of emissions allowances accounting will include free allocations, purchased allocations (purchases through an auction), overseas markets, CDM, and derivatives, according to the differences in the method of acquiring the emissions allowances. We can also classify transactions as transactions for consumption purposes and transactions for speculative purposes, depending upon the difference in the purpose for acquiring the emissions allowances. Finally, it is vitally important to consider the problem of recognition timing for emissions allowances transactions by distinguishing the transactions as either transactions in the spot market or derivatives transactions.

② Transaction recognition timing

”Recognition” in accounting is a problem of the point in time “when” a certain transaction is recorded (measured) in the accounting books. The recognition of transactions concerning emissions allowances can be made at various points in time, including acquisition, consumption, disposal, lapse and end-of-period valuation.

Under current accounting standards, a transaction normally is not recognized as a transaction for accounting purposes when only an agreement to buy and sell is concluded. Generally a company recognizes a transaction when the transfer of a good such as a product or provision of a service is completed – that is, the point in time when there is a change in a unilateral right or obligation to transfer for the first time cash or other financial assets as compensation in accordance with the terms of the agreement. In the case where an entity acquires emissions allowances through trading in the spot market, the transaction is recognized for accounting purposes at the point in time when the right is transferred based on the purchase and sale agreement that was concluded, because the right that is traded is an intangible asset. When the situation presumes a transaction on the spot market, the conclusion of the contract and the transfer of the right are completed simultaneously because generally it is thought there is no time difference between the conclusion of the purchase and sale agreement and the time when the right is transferred. As this shows, for a transaction involving emissions allowances the transaction will be recognized by the attention given to the timing of the creation, transfer and extinguishment of the right.

Well, at what point in time should we recognize a transaction in the futures market that involves emissions allowances? Because there is a time difference between the contract and the transfer of goods in futures transactions involving emissions allowances, by extension of present accounting standards when considering futures transaction, the transaction is not recognized at the time of the contract and becomes an off-balance sheet transaction. Futures transactions (in the broad sense) include both forward transactions (forwards) and futures transactions (futures). Differences arise in the measurement method for both types of transactions, but there is also a school of thought that says, because both types of transactions normally are off-balance sheet until the maturity date under the “transfer standard,” by adopting the “contract standard” the transactions are reflected on the accounting books at the point in time when the contract is concluded (in practice, by the end of the reporting period).

③ Boundary problems

As the scope for recognition of emissions allowances transactions there is a "boundary" problem that concerns "how many gases should be recognized for emissions allowances?" This is a problem of which gases entities should be responsible for with regard to indirect emissions, in addition to the greenhouse gases that entities discharge directly. It's thought with regard to this issue that many points will change, depending upon how national quota systems designs evolve. For example, when an entity consumes electricity or heat, greenhouse gases are emitted when the primary energy resource is converted into electricity or heat (at the electric utility or heat supply company), which means the entity itself does not discharge such gases directly. The issue is should the recognition of emissions by that entity be extended to include these kinds of greenhouse gases? In addition, questions such as whether greenhouse gases from the combustion of gasoline when an entity subcontracts its distribution activities also present a boundary problem.

(3) Measurement of emission quantity and emission reduction quantity

① Physical quantity

There is no standardized technique in Japan for measurement of GHG emission quantities and emission quantity reductions. When it comes to measurement of emission quantities the main reason cited is the fact that there is a wide variety of GHGs and that the measurement of GHGs, particularly CO_2 and end-of-pipe measurement (monitoring) of gases such as SOx is technically difficult. Moreover, the fact that baseline calculations are required for any measurement of emissions quantity reductions simply adds to the confusion in these circumstances.

For SOx emissions allowances transactions in the United States, the measurements are carried out on the emission side at the point in time of the emissions and this data is used. Specifically a system is being constructed and operated by installing measuring instruments and systems in exhaust chimneys that take measurements every hour and transmit the measurement data online to the EPA (Environmental Protection Agency).

This kind of end-of-pipe measurement (monitoring) of GHGs is technically difficult, however, particularly for CO_2. Because measurement of the emission source at a point in time of emission is difficult, calculations based on conversions from input data using some type of coefficients are needed. With this approach, under current conditions emissions coefficients and the input quantity of raw materials and energy fuel are used to calculate the emissions[13]. The method of calculating the emission quantities of these GHGs is stipulated for each classification of activity that discharge GHGs by the enforcement ordinances for laws promoting measures to control global warming, based on discussions at the Greenhouse Gas Emissions Amount A Procedure Working Group at Japan's Ministry of the Environment. Recently the number of firms that have clarified the GHGs or volume of CO_2 they discharge has increased, based on the firm Environmental Reporting Guidelines, but almost all of these firms have calculated the figures by multiplying the quantity of electricity used or the volume of fossil fuel consumed by the above-mentioned emissions

[13] In the IPCC guidelines this is calculated as {quantity of greenhouse gases emissions = Ó (activity quantity) × (emissions coefficient)}, where the activity quantity indicates the amount of energy used, mileage traveled, etc.

coefficients issued by the Ministry of the Environment.

Internationally, uniform standards concerning these GHGs do not yet exist. Given this situation, in May 1999 the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) jointly began the "GHG Protocol Initiative," a research effort to promote the use of standardized methods in order to encourage measurement of GHG emissions and reporting activities.

Participating organizations and firms include the firms and groups executing the Gets2[14] simulation concerning emissions allowances transactions, emissions allowances transactions-related entities in the UK, the Netherlands and Norway, numerous leading firms and NGO, UNEP (United Nations Environmental Programme), and the U.S. Environmental Protection Agency. This GHGs Protocol is expected to have considerable influence on future measurement, verification, and examination. The protocol is also expected to serve as a base for guidelines not only in Europe but worldwide. The guidelines have now been made public, and the first stage of road tests based on the guidelines has been completed[15].

GHG performance measurement will becomes the prerequisite condition for participating in the emissions allowances transaction market. For company activities, performance will be related to various aspects such as manufacturing, process and energy efficiency, and specific waste reduction targets. Although this type of performance measurement is very effective, there is a risk that the performance measurements that firms have implemented will not agree with standards that will be enacted in the future. It may also be noted that various approaches now being executed will serve to increase this risk on the one hand while decreasing the comparability, reliability and effectiveness of information.

The guidelines made public recently are a series of international GHG standards proposals, which describe the measurement of inventory boundaries (direct/indirect emissions, ownership rights and control rights, and external consignment) or emission data, and the assumed values. In another area, discussions are currently underway on those parts of the guidelines concerning GHG emissions and carbon isolation throughout the entire product life cycle.

The report avoids any examination concerning technical aspects such as measurements, and utilizes the results while continuing to watch these activities.

② Unit prices

For measurement purposes, consideration of unit prices as an additional component besides the above-mentioned emission quantities will also be necessary.

When emissions allowances transactions are executed during a period, we anticipate that their measurement will initially be recorded using the amount of the cash outflow at the time of the transaction. Accordingly, this report also proposes that an opposing journal entry be made to provide a memorandum record just as is made for free acquisitions, but in this case it will not be much of a problem if the unit price is one yen or the market price.

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[14] Gets2 refers to an emissions quotas trading simulation conducted since January 2000 with the cooperation of the electric power industry group Euroelectric; the simulation encompasses 40 firms from six leading industries, spanning 16 countries in Europe.

[15] For this section of this paper, in May 2001.

When making end of period valuations, the unit price will depend on how the nature of the emission quota is decided. If one thinks of financial instruments, for example, market price valuation is considered appropriate, but for inventory assets or intangible assets, there is room for original cost valuations as well.

When making valuations using market prices, unit prices are determined without difficulty if the prices have been determined on an exchange. When transaction prices are not disclosed, however, the need to further discuss fair valuation arises.

Finally, when making cost valuations, if the creation of an emissions allowances transaction receipts and deliveries journal as described earlier is assumed it will become necessary to establish beforehand a prescribed calculation procedure based on the method of valuing inventory assets, whether it is the cost method, the first-in first-out method, the last-in-first-out method, the periodic average method or the moving average method.

3. Accounting treatment

(1) Details of each transaction — Methods for consideration of accounting treatment

① Free allocations

Free allocations (the so-called grandfathering method) assume some precedent for allocating SO_2 emissions allowances to electric utilities such as the SO_2 emissions allowances transaction system in the U.S., with the focus on consumption purposes only. Below we examine accounting treatment (i) at time of acquisition, (ii) at time of consumption, (iii) at time of disposal, (iv) at time of lapses and (v) at end of period valuation.

(i) Accounting treatment at time of acquisition

When emissions allowances are acquired through free allocation, the question of how to account for the acquired emissions allowances is a problem first of whether to recognize the asset on the debit side. Next, assuming the allowances are recognized as an asset, the problem becomes what entry to make on the credit side. The following three accounting treatments can be considered.

a) A method to add the emissions allowances allocated for free as an asset, and simultaneously book the amount to earnings

＜Journal＞ （Debit）Emissions allowances （Credit）Profit increase received

b) A method of adding the emissions allowances allocated for free as an asset, but not add the amount to earnings

＜Journal＞ （Debit）Emissions allowances （Credit）Emissions allowances offset entry

c) A method to handle the emissions allowances consumption volume on an off-the-books basis and not make any entries because the emissions allowances allocated for free are not accompanied by cash flow

＜Journal＞ No entries

With regard to option c), no journal entries are made because the allowances are received for free. In order to comply with the emissions allowances, however, or if the firm must also investigate whether to make additional purchases because it projects activities that will exceed its emissions allowances, this approach requires managing the emissions volume and emissions allowances on an off-book basis.

Alternatives a) and b) also assume the emissions allowances are acquired for fee. These methods take the approach that the allowances should be accounted for as company assets, because they have been acquired as things that have value.

When assets such as marketable securities or fixed assets are acquired through a gift, Corporate Accounting Principles, Balance Sheet Principle 5(F) states the following.

"The price on an exchange, the market value or a corresponding fair value amount at the time a

gift is received shall be used as the assumed acquisition cost."

If this provision is correspondingly applied to emissions allowances, this means they should be recorded at a fair value. In *Financial Accounting Theory* (Dobunkan), Toshio Iino makes the following statement concerning this accounting treatment for gifts.

"Today's basic accounting philosophy of an acquisition cost standard is based on the thinking that when acquiring something through rational consent, the amount paid for the recognized value of that item should be recorded and the balance sheet value should also be determined based upon it. According to this view, today's accounting theory requires that in the case of exceptional transactions such as gifts, the acquisition cost of the asset received is assumed to be a fair value amount such as the appropriate market price at the time of receipt. Moreover, if this type of acquired asset is assumed to have no acquisition cost and is not recorded on the accounting books, then financial statements prepared using such books will lead to erroneous judgments concerning the company's financial position and operating results."

The decision whether to account for the emissions allowances in assets or keep them off the balance sheet will influence various company valuation indicators used by third parties such as institutional investors and analysts. If we examine ROA (return on total assets compared to other companies in the same industry), for example, the index will be worse for a company that includes allowances in assets than for a company that does not add the allowances to assets. Differences will emerge from the viewpoint of risk management assessment as well. If a company actually possesses emissions allowances rights and conducts its manufacturing activities legally, the value of the asset should be recognized.

When we consider recent accounting trends, and the fact that the balance sheet approach has become the leading choice and firms are moving in the direction of showing off-balance sheet transactions on the balance sheet to the extent possible, we believe the preferable alternative is to add the fair assessment value of emissions allowances received to the asset side of the balance sheet.

Furthermore, the difference between Cases a) and b) is the difference between whether to recognize the received assets as earnings or whether to account for them through a contra account based on accounting techniques in order not to recognize them as earnings. This difference comes to the fore with the question of whether or not to expense the emissions allowances at the time they are consumed. That is, although revenue and expenditure will not differ if viewed over the long term, in the short term a difference will arise between the point in time at which earnings are added and the point in time when costs are recognized. Moreover, for Case b) it is possible to take tax aspects into consideration. When tax policy considerations do not enter the picture, this option is effective as a means to avoid the taxation of the rights that are distributed for free as earnings.

(ii) Accounting treatment when rights are consumed

Next let us examine the method of accounting treatment for the emissions allowances received in (i) above when the firm consumes the emissions allowances acquired by free allocation.

Because the emissions allowances are reduced by consumption, this approach amortizes the portion decreased by consumption.

a) When the firm's method of accounting for (i) books the emissions allowances as an asset and simultaneously charges the amount to earnings, by amortizing the amount of the emissions allowances equivalent to the consumption volume.

＜Journal＞ (Debit) Emissions allowances amortization (expense) (Credit) Emissions allowances

b) When the firm's method of accounting for (i) books the emissions allowances as an asset but does not charge any amount to earnings, and the emissions allowances are decreased by an offsetting entry in the contra account for the amount of the emissions allowances equivalent to the consumption volume.

＜Journal＞ (Debit) Emissions allowances offset entry (Credit) Emissions allowances

c) When the firm's method of accounting handles the emissions allowances consumption volume on an off-the-books basis and no journal entries are made for (i)

＜Journal＞ No entries

All of the above three methods of the accounting treatment can be considered. Here let us give some thought to the influence that the difference between a) and b) will have on the financial statements.

Case a) books an expense for emissions allowances amortization expense. Because this is usually considered to be a useful, indispensable element of production, this method treats the emissions allowances as one element composing cost of goods sold.

Cost Accounting Standard No. 3, Nature of Costs, makes the following statement.

"In a cost accounting system, "cost" is an entry that expresses in monetary value the consumption of a good or service that is understood to be related to a prescribed benefit from management activity."

(1) Cost is the consumption of economic value.

(2) Cost is the value imputed to a prescribed benefit produced by management activity), that is understood to be related to that benefit.

(3) Cost is associated with a management objective.

(4) Cost is a normal part of business.

Accordingly, if we assume we can consider emissions allowances to be inventory assets, we naturally should regard amortization expense as forming cost of goods sold. Even if we regard emissions allowances as intangible fixed assets, we can think of the amortized expense as forming the cost of goods sold, just as with other intangible assets such as mining rights.

If we choose Case b), no expense is booked and the decrease of the emissions allowances (asset depletion) is recognized by an opposing entry in the contra account. That is, with Cases

a) and b) there is a difference in the amount of earnings under (i), and a difference in the amount of the cost of goods sold will arise at the time of consumption of the allowances under (ii). If the products compose the end-of-period inventory assets they will be converted into an expense during the following periods, resulting in further differences in profit and loss in each period.
With regard to the amortization method, moreover, in the case of intangible fixed assets one method is to amortize the assets in equal amounts based on the straight line method. But amortizing allowances in amounts equivalent to the consumption volume, based on the unit-of-production method that is used for mining rights, is thought to be an appropriate method that suits actual circumstances.

(iii) Accounting treatment at time of sale

Although it is difficult to imagine a situation in which assets received through free allocation will be regularly sold, we can imagine instances in which emissions allowances become unnecessary because firms have reduced their emissions volume through concerted efforts or for some other reasons.

a) When the method of accounting for (i) books the emissions allowances as an asset and simultaneously books an amount to earnings, and the entity sells the allowances after amortizing the amount of the emissions allowances equivalent to the consumption volume.

＜Journal＞ (Debit) Cash & deposits) (Credit) Emissions allowances

or

(Debit) Loss on sale of emissions allowances (Credit) Gain on sale of emissions allowances

b) When the method of accounting for (i) books the emissions allowances as an asset but does not book an amount to earnings, and the entity sales the emissions allowances after decreasing them by an offsetting entry in the contra account for the amount of the emissions allowances equivalent to the consumption volume.

＜Journal＞ (Debit) Emissions allowances offset entry (Credit) Emissions allowances

(Debit) Cash & deposits (Credit) Gain on sale of emissions allowances

c) When the firm's method of accounting handles the emissions allowances consumption volume on an off-the-books basis and no journal entries are made for (i)

＜Journal＞ (Debit) Cash & deposits (Credit) Gain on sale of emissions allowances

The above three methods of accounting treatment can be considered.
Under Case a), the difference between the book value of the emissions allowances after amortization of the amount equivalent to consumption and the market price will be the gain or loss on sale of the emissions allowances. Under Cases b) and c), only the sale price amount will be certain to generate earnings. That is, there is a possibility that a loss on sale will occur when a firm selects the accounting treatment method in Case a), depending upon the market price, while a loss on sale will not be booked under the methods in Cases b) and c).

(iv) Accounting treatment for a lapse

In situations where banking is not possible and a right has lapsed, and the emissions allowances have been accounted for as assets, accounting treatment that meets the actual conditions is required because the quota's nature as an asset has been lost. That is, in Case a) the emissions quota will be sold, and in Case b) the rights represented by the emissions allowances will be extinguished by reversing journal entries for the emissions allowances and the emissions allowances offset entry. The difference between Cases a) and b) is that a loss will be recognized in a).

a) When an entity cancels emissions allowances under (i) that it has booked as an asset.

＜Journal＞ (Debit) Loss on cancellation of emissions allowances (Credit) Emissions allowances

b) When an entity extinguishes emissions allowances through a journal using a contra account in situations under (i) where it has booked emissions allowances as an assets but does not add the amount to earnings.

＜Journal＞ (Debit) Emissions allowances offset entry (Credit) Emissions allowances

c) In situations where an entity does not book assets under (i)

＜Journal＞ No entries

All three of the above methods of accounting treatment can be considered.

(v) End of period valuation

Finally, let us examine the situation in which emissions allowances do not lapse as assumed in (iv) above and remain on the entity's books at the end of the period, and are carried forward to the next period. First, in Cases a) and b) in which the allowances are booked as assets, two methods can be considered. Under one method, the entity does not change its valuation and retains the book value after confirmation of the outstanding balance, and under the second method, when there are market prices available from some source such as an emissions allowances market, the entity uses the market prices to change the valuation of the balance. The difference between the book value and the market price is recognized as a valuation profit or loss. Because there are no accounting journals with the former method, the accounting treatment to account for the valuation profit or loss under the latter method is shown below.

a) When the entity has booked the emissions allowances under (i) as assets.

＜Journal＞ (Debit) Profit on valuation of emissions allowances (Credit) Emissions allowances

Or

＜Journal＞ (Debit) Emissions allowances (Credit) Profit on valuation of emissions allowances

b) When the entity has booked the emission allowances under (i) as assets but does not book

the amounts as earnings.

When market value < book value

＜Journal＞ (Debit) Emissions allowances offset entry (Credit) Emissions allowances

Or when book value < market value

＜Journal＞ (Debit) Emissions allowances (Credit) Emissions allowances offset entry

So far we've examined cases to account for the valuation profit, giving consideration to various hypothetical possibilities. Now let us assume the case of free allocation as a premise for examples of consumption purposes only, beginning with a consumption purposes situation in which market price valuations are not well known. Under current accounting standards, if an entity assumes that emissions allowances have the accounting characteristics of inventory assets and has adopted the lower of cost or market method, it will book a valuation loss when the market price is lower than the book value, but will not book a valuation profit when the market price is higher than the book value. Moreover, when the entity considers the emissions allowances characteristics to be similar to those of an intangible fixed asset, under current accounting standards no valuation change is made.

When an entity accounts for emissions allowances off its accounting books, as in Case c), two methods may be considered. One method recognizes the outstanding balance at the end of each period, the other handles the allowances by continuing to keep them off the books. With the former, the case in which the valuation profit is booked and the case in which a contra account is used and the profit is not recognized can be considered, which are the same as Cases a) and b) above, respectively. With the latter, the entity will continue to not make any journal entries.

Furthermore, if the emissions quantity exceeds the emissions allowances, then for Cases a) and b) the emissions allowances naturally are zero, and in situations in which firms must pay a penalty for the emissions quantities in excess of their emissions allowances, the penalty amount must be booked as an accrued amount.

Table I-1. Summary of approaches for consumption purposes

	a) Cases that recognize earnings received by using a fair value amount when acquiring emissions allowances by free allocation	b) Cases that do not recognize earnings received by using a fair value amount when acquiring emissions allowances by free allocation	c) Cases that do not make any journal entries when acquiring emissions allowances by free allocation
(i) At time of acquisition	(Debit) Emissions allowances (Credit) Profit increase received ＜Explanation＞ Assets received are booked at a fair valuation amount. Grounds for booking earnings are conversion of the assets to an expense when they are consumed	(Debit) Emissions allowances (Credit) Emissions allowances offset entry ＜Explanation＞ Assets received are booked at a fair valuation amount. Reasons for not booking earnings include tax aspect considerations or not recognizing company profits (results)	No journal ＜Explanation＞ No journal created because assets received for free. However, emissions volume and emissions allowances are handled on an off-the-books basis
(ii) At time of consumption	(Debit) Amortization expense Cost of sales (Credit) Emissions allowances ＜Explanation＞ Recognizes amortization of amount equivalent to consumed volume as an expense. This expense is an indispensable factor for production and is regarded as a cost of sales	(Debit) Emissions allowances offset entry (Credit) Emissions allowances ＜Explanation＞ Amortizes amount of emissions allowances equivalent to consumed volume. Entity regards as reduction of assets called emissions allowances, and makes entry opposite to that in Case (i)	No journal ＜Explanation＞ Handles emissions volume and emissions allowances off the entity's accounting books, and understands the consumption volume
(iii) At time of sale	(Debit) Cash (Credit) Emissions allowances (Debit) or (Credit) Profit or loss on sale ＜Explanation＞ Difference between book value amortized for the amount equivalent to consumed volume, and the cash received becomes the profit or loss on sale	(Debit) Emissions allowances offset entry (Credit) Emissions allowances (Debit) Cash (Credit) Profit on sale ＜Explanation＞ Recognizes the reduction of assets called emissions allowances through reversal entry in contra account. Sale price becomes the revenue from sale of emissions allowances	(Debit) Cash (Credit) Profit on sale ＜Explanation＞ Sale price becomes the revenue from sale of emissions allowances

(iv) At time of lapse	(Debit) Loss on cancellation of emissions allowances (Credit) Emission allowances ＜Explanation＞ Uses the book value of lapsed emissions allowances to recognize extinguishment of rights (assets) as an expense	(Debit) Emissions allowances offset entry (Credit) Emissions allowances ＜Explanation＞ Recognizes the extinguishment of assets called emission allowances through lapse by using a reversal entry in the contra account	No journal ＜Explanation＞ No journal entry even for extinguishment of rights, because emissions volume and emissions allowances are handled on an off-the-books basis
(v) End of period valuation	(Debit) Loss on valuation of emissions allowances (Credit) Emissions allowances ＜Explanation＞ Books valuation loss when the end-of-period market value is lower than book value and entity makes reappraisals	(Debit) Emissions quota offset entry (Credit) Emissions allowances ＜Explanation＞ Reduces asset value using reversal entry when the end-of-period market value is lower than book value and entity makes reappraisals	No journal ＜Explanation＞ No journal entry because emissions volume and emissions allowances are handled on an off-the-books basis

② Allocations for a fee

In the following section, we consider the accounting treatment after making adjustments when the objectives of participants in auction transactions are

a) So-called trading purposes, in which unspecified, numerous participants in transactions in the market hold emissions allowances for the purpose of making a profit from short-term price fluctuations, normally through a considerable amount of repeated buying and selling

b) To use the rights to discharge 1t of GHGs (CO_2 conversion)

(i) Auctions

The “auction" under the SO_2 emissions allowances transaction system in the U.S. is a procedure for marketing the EPA reservation portion (2.8% of the annual allocation quantity) of emissions allowances through the Chicago Board of Trade at the end of March each year. This determines the national trading volume, and can be thought of as being similar to the issuance of federal government bonds circulated in the securities market.

For auction trading of GHGs as well it is assumed that when the gross volume of emissions allowances is fixed and circulates in a transactions market the price in the market will be formed by the participation of market players in the buying and selling of the allowances, who also take into consideration the accounting treatment.

It is anticipated that in addition to the above-mentioned spot market for auction purchases, other markets such as margin trading, loan transactions, swap transactions, spread transactions and options will develop and mature. In this case, for accounting treatment we believe it will be possible to refer to the accounting treatment for financial instrument for accounting treatment activities.

(ii) Requirement for accounting treatment of auction purchases

When thinking about the accounting treatment for auction purchases, we wish to use the accounting treatment for marketable securities as a base.

The valuation and accounting treatment for marketable securities has been established for each holding objective, using market price valuation as a base. When judging whether the ownership objective should be classified as “marketable securities” for trading purposes or as “other marketable securities" held for other purposes, to the best of one’s ability the final determination is made from the viewpoint of whether the intention of the individuals who participate in the transactions acquire the securities for trading purposes.

The conditions required as prerequisites are (1) the description in the company’s Articles of Incorporation stating the company is in the business of buying and selling marketable securities, and (2) the holding and investment of marketable securities by an independent, specialized department formed of individuals who are capable of conducting such trading activities on a daily basis. Given these requirements, the marketable securities held for trading purposes are in reality quite limited.

When the above-mentioned requirements do not apply, the securities classification becomes “other marketable securities.” This applies to the following cases, for example.

- When securities are acquired for the purpose of resale and the above requirements do not apply even though such trading serves management purposes to a certain extent
- When securities are not purchased for trading purposes, and the purchaser plans to simply sell the securities in the near future
- When securities are acquired for the purpose of obtaining a profit through long-term changes in market prices
- When securities are held for purposes such as a business tie-up, etc.

(iii) Characteristics of auction transactions from an accounting treatment perspective

a) When allowances are held for trading purposes

In cases where emissions allowances are held for trading purposes – that is, when unspecified, numerous participants in market transactions hold allowances for the purpose of making a profit from short-term price fluctuations, and usually engage in repeated buying and selling to a certain extent, it is assumed the firms do so with reference to the accounting treatment for marketable securities held for trading purposes.

b) When allowances are held for the purpose of expending the right to discharge 1t of GHGs (CO_2 conversion)

In contrast to Case a) when the holding objective of auction participants is for the purpose of spending the right to discharge 1t of GHGs (CO_2 conversion), it is assumed that the participants will examine the accounting treatment to disburse the rights equivalent to the consumption balance from the capital account to the profit and loss account, in order to reflect the consumption balance on the profit and loss statement for the period.

(iv) Accounting treatment

a) When allowances are held for trading purposes

- End of period valuation and treatment of the valuation difference

  When allowances are held for trading purposes, the entity will use the market price of the emissions allowances as the balance sheet price, just as it would for marketable securities held for trading purposes, and recognize the valuation difference as a profit or loss for the period. The reason is that this valuation difference shows the results of the entity's financial activities, and furthermore, when the entity fulfills most of the requirements for realization of the profit or loss it is thought to correspond to the realized profit or loss.

- Accounting treatment for impairment

  When there is a remarkable drop in the emissions allowances market price, the market price will be assumed as the balance sheet value except in situations where a strong expectation of a price recovery is recognized, and the valuation loss must be accounted for as a loss during the relevant period. In such cases, the determination regarding the drop in market price is based on impairment accounting for marketable securities that have market prices.

- Handling of emissions allowances volume

  The physical quantity balance of emissions allowances that are being held for trading purposes will be handled as the face amount showing the security that will is subject to the trading objective. Even in situations where the actual emissions allowances physical quantity allocation is separate, the entity does not sum the emissions quota physical quantities but handles them as separate accounts. Accordingly, it is assumed that changes in the actual emissions allowances physical quantity balances and these transactions will not mutually reflect each other directly.

b) When the objective for holding rights is to expend the rights to discharge 1t of GHGs (CO_2 conversion)

- End of period valuation

  When the purpose of holding is the use of emissions allowances, in situations where there is a market price for emissions allowances such allowances will be valued at the market price. As a general rule, following the application of tax effect accounting the amount is booked in shareholders' equity. Reflecting the investment results based on market price changes during ownership on the financial statements is considered to be appropriate. The valuation difference, on the other hand is booked in the shareholders' equity portion of the balance sheet and carried forward until the time when the rights are actually sold, expensed from the asset account and realized, because the entity has not fulfilled the requirements for realizing the value of the rights.

  Furthermore, when there is no market price because the market is immature or because trades are negotiated transactions, emissions allowances will be valued at their acquisition cost.

- Accounting treatment of the valuation difference

  To account for the valuation difference when the purpose is to use the emissions allowances,

the general rule is to use a method that books the total amount in the shareholders' equity section of the balance sheet. Entities can also apply a method that assumes continual application as a condition, by adding valuation gains to the shareholders' equity portion of the balance sheet and accounting for only valuation losses as a loss during the accounting period in which they occur. We believe that tax return adjustments will be necessary for these losses, however, assuming they are not included in expenses.

- Accounting treatment when there is remarkable decline in the financial position or creditworthiness of the company that issues the emissions allowances

When there is no market price based on market transactions, and the purpose for acquiring emissions allowances is to use them, it is appropriate to use the emissions allowances acquisition price as the balance sheet value as previously described.

Assuming there is a system that places various obligations on companies issuing emissions allowances, such as reporting their actual CO_2 emissions volume and quantity of emissions allowances held to the proper authorities each year, we believe the accounting treatment accompanying a decline in the financial position or creditworthiness of the issuing company should be handled as follows.

When an emissions quota issuing company meets either of the following situations, it shall be required to apply the following accounting treatment.

1) When there is a substantial decline in the real price because of a remarkable deterioration in the company's financial position

2) For reporting of actual volume of CO_2 emissions and the quantity of emissions allowances held when there is a remarkable drop in creditworthiness

That is, when an issuing company finds it difficult to comply with its emissions quantity because of deterioration in its financial position, or when an emissions allowances issuing company commits a substantial violation of its compliance obligation or discharges emissions seriously in excess of its quota and the equivalent amount will be eliminated from the company's CO_2 emissions quota for the following year, the company shall be required to reduce the value of its emissions allowances by an amount equivalent to said elimination and account for the amount as a loss (impairment loss accounting) for the relevant accounting period.

Specifically, when the real price declines remarkably because of deterioration in financial position, the company will multiply the net asset price per share calculated from financial statements of the issuing company by the ratio of the emissions allowances physical quantity acquired as a percent the total emissions quota physical quantity, and make a correction by reducing the acquisition cost. In this case, because an understanding of the total emissions quota physical quantity is required, it is assumed that in situations where this quantity is hard to understand the actual business conditions such as the financial position of the issuing company will be recognized to have deteriorated remarkably and will be valued based on a valuation of the stock that the company issues.

In addition, it goes without saying that requiring technical calculations and grounds for calculating substantial violations of compliance obligations or marked excess emissions will become applicable in situations that presume being able to understand as clearly as possible

the percentage by which the excess amount is over the initial emissions quantity, or what percent the next year's reduction ratio will be compared to this fiscal year's emissions volume.

In any event, because accuracy and reliability will be demanded for very systematically understanding and reporting emissions allowances, we believe that some form of guarantees will become necessary.

- Administering emissions allowances physical quantities

  The expenditure of a right to discharge 1t of GHGs (CO_2 conversion) – as a right of expenditure within the scope of the quota's physical quantity recognized at companies having free allocations of emissions quota physical quantities – is based on the assumption that normally the expended amount of emissions quota physical quantity is linked to the bookkeeping for amortization of usage rights. With regard to the bookkeeping details, at the time of the end-of-period valuation a greenhouse gases emissions quantity inventory is necessary for the emissions quota expenditure and the remaining emissions allowances physical balance. Furthermore, the physical quantity receipts and payments balances are recorded in the accounts books together with the monetary amounts, using a valuation method and valuation standard that are the same as the method for increasing and decreasing inventory assets. As described above, the end of period balances are assessed by dividing them into those that have a market price and those that do not, so that the amortization of the emissions quota for the period is reflected in the operating profit or loss.

The inventory asset valuation criteria and valuation method should be handled in accordance with the method the company adopts for its inventory asset materials account.

Furthermore, to the extent possible the accounting treatment for all of the above items is based on assumptions at the present point in time, and we want to prohibit items that only considered accounting treatment based on this. We believe the details for any future introduction of a system will naturally include points that will have to be changed.

③ Overseas markets

Recently there has been progress in the creation of a trading market for carbon dioxide (CO_2) emissions rights or system design as the result of private sector company initiatives, and CO_2 emissions rights trading has become more active. More than 100 transactions are said to have already been completed in Europe and the U.S. for a volume of approximately 200,000 tons, centered on trades between companies in the U.S. and Canada. Effected by this activity, Japanese firms have also turned their attention to researching such transactions and have begun to purchase emissions rights from firms in foreign countries.

At the present time, CO_2 emissions rights trading in foreign countries is for the purpose of using the rights to discharge 1t of GHGs (CO_2 conversion), with nearly all trades completed to purchase emissions allowances from firms that have already reduced the quantity of their CO_2 emissions through means such as energy conservation. The accounting treatment in such cases is as follows.

(i)For consumption purposes

	Accounting treatment		Notes
Acquisition	(Debit) Emissions rights	(Credit) Cash & deposits	Accounts for the purchase price and attendant expenses at the time the contract is closed as "emissions rights"
Consumption	(Debit) Amortization of emissions rights	(Credit) Emissions rights	Transfers amount corresponding to the expended balance from trial balance sheet to the profit and loss account
Sale	(Debit) Cash & deposits	(Credits) Emissions rights Profit on sale of emissions rights	Accounts for the transaction at time of sale
Lapse	(Debit)	(Credit) Emissions rights	Accounts for original cost as a loss when the emission rights become invalid
End of period evaluation	When there is a valuation profit (Debit) Emissions rights When there is a valuation loss (Debit) Loss on valuation of emissions rights	(Credit) Valuation profit on emissions rights (Credit) Emissions rights	When there is a mature emission rights market and a market price is formed, performs a market value assessment using the market price at the end of the period

For an immature transaction market, basically the acquisition price at the time the contract is closed is the book value, in which case we do not believe there is any need to perform a valuation substitution at the end of the period. When the transaction market is mature and market prices are being formed, however, accounting treatment is necessary for end-of-period valuations, accounting treatment of the valuation difference, and accounting treatment when there is a marked deterioration in the financial position or creditworthiness of the issuing company, just as we examined in "② Allocations for a fee" in the prior section.

Moreover, for administration of the emissions quota physical quantity, when preparing the end-of-period valuation both the emissions allowances expended amount and the balance in inventory are required. Depending upon what is prescribed for the method to handle emissions allowances acquired overseas as part of any future system, however, we believe a decision will be made on whether to use journal accounting identical to that used for emission allowances allocated domestically, or to account for them separately.

When the market for emissions rights matures, it will also become possible for firms to participate in buying and selling in overseas markets to acquire rights for trading purposes. In the case of these transactions as well, basically firms will adopt the same method of accounting treatment used in situations where their objective is to use the rights to discharge 1t of GHGs (CO_2 conversion).

(ii) Speculative purposes

	Accounting treatment	Notes

Acquisition	(Debit) Emissions rights	(Credit) Cash & deposits	Accounts for the purchase price and attendant expenses at the time contract is closed.
Sale	(Debit) Cash & deposits	(Debit) Emissions rights Profit on sale of emissions rights	Accounts for the transaction at time of sale
Lapse	(Debit)	(Credit) Emissions rights	Accounts for original cost as a loss when the emission rights become invalid.
End of period valuation	When there is a valuation profit (Debit) Emissions rights When there is a valuation loss (Debit) Loss on valuation of emissions rights	(Credit) Valuation profit on emissions rights (Credit) Emissions rights	Performs a market value assessment using the market price at the end of the period

In situations where the holding objective is to use the rights for trading purposes, end-of-period valuations, accounting treatment of the valuation difference and impairment accounting treatment are necessary, just as we examined in "② Allocations for a fee" in the prior section. Moreover, the emissions allowances physical quantity balance held for the purpose of using the rights to discharge 1t of GHGs (CO_2 conversion) must be distinguished and controlled separately, by handling it as a separate account.

In addition to the above, transactions on overseas markets will also include derivatives transactions such as acquisitions of emissions rights through the execution of CDM, futures and options.

④ CDM, etc.

Activities such as afforestation businesses being conducted in foreign countries through efforts such as CDM (Clean Development Mechanisms)[16] are now showing great promise as projects for reducing carbon dioxide. In emissions allowances transactions, a situation is visualized in which a certain prescribed reduction in the quantity of the emissions through some effort such as CDM is recognized and emissions allowances corresponding to that amount – that is to say credits – are created. Because we believe the emissions allowances consumption, sales, lapses and end-of-period valuations after the credits are generated will be handled in the same manner as the accounting for auction purchases, here we will discuss the accounting treatment for situations where credits are generated by some effort such as CDM.

If the purpose of afforestation activities is the single objective of creating credits, it is possible to book all of the costs related to the afforestation activities as emissions allowances acquisition costs when the credits are recognized. Because the objective of securing a supply source of logs or wood chips as paper and pulp raw materials usually is intermingled with other afforestation

[16] Whether to admit afforestation activities as CDM is one of the discussions for international negotiation.

activity goals, however, including the reduction of carbon dioxide, project cost accounting is necessary. Although it is possible to use an approach such as ABC (Activity-Based Costing) to accumulate the original costs to be the subject of cost calculations by service objective, the costs totaled in services with the goal of creating credits will become the acquisition cost at the time the credit is generated.

⑤ Speculative purposes

In cases where an entity decides to participate in emissions allowances transactions for the purpose of speculation, this assumes the existence of a mature emissions allowances market where market prices exist. Because transactions for speculative purposes that involve emissions allowances will secure holding gains with the passage of time, comparing the emissions allowances acquisition cost (including: long positions) or short positions with the current market price to understand the current amount of the gain is useful as information for speculative purposes. In other words, for transactions for speculative purposes it is necessary to compare the capital initially invested to the capital that can be recovered.

When an entity has purchased emissions allowances for speculative purposes in the spot market, the emissions allowances at the time of purchase are valued at acquisition cost. In cases where the entity sells the relevant emissions allowances prior to the end of the reporting period, the difference between the acquisition cost and the selling price is accounted for as the realized gain or loss on sale. Moreover, in cases where an entity is still holding emissions allowances acquired for speculative purposes at the end of the reporting period, it will revalue the emissions allowances originally valued at the acquisition cost by using the current market price. The entity can consider either a method to account for the valuation difference as a profit or loss for the relevant period, or a method to account for the valuation difference as a direct increase or decrease in shareholders' equity without the amount passing through the statement of profit or loss.

Because trades in the futures market will become derivatives either as futures or as options, generally the method used treats the net credit or liability created from allowances traded based on net settlement as the balance sheet value using the market price, and accounts for the valuation difference as a gain or loss for the period in question.

II. Derivative products

1. Basic thinking

(1) Point in time when emissions allowances spot commodities are generated

Table II-1 shows the time schedule for the generation and use (exercise of rights) of emissions allowances.

Table II-1. Time Schedule image of emissions allowances spot commodities[1]

Product	Start year	Year when product becomes effective for achieving objectives of Kyoto Protocol.	Year for exercising rights as emissions allowances (offset).
CERs	2002[2]	2008	2008
AAUs, ERUs, RMUs	2008[3]	2008	2008
VERs	～2007	Some products also become effective after 2008 if converted to AAUs, ERUs, RMUs, and CERs.[4]	Some products also become effective after 2008 if converted to AAUs, ERUs, RMUs, and CERs. In this case, 2008.

Notes 1. In discussions there was also a classification for emissions allowances based on Japan's national system (and emissions allowances stipulated by the national system in each country); for simplification we have omitted that classification here. Whether the emissions allowances uniquely stipulated by these national systems will become internationally effective or not will depend on factors such as the stipulations of those emissions allowances and domestic laws.

2. Depends upon international negotiations. At the earliest is thought that these will be issued retroactively to the amount for 2000 after COP8 in 2002.
3. Depending upon conditions for the Kyoto Protocol to become effective and the system in each country; there may also be some countries, for example, that issue these before 2008, the year in which AAUs will become effective.
4. Will also depend upon the system in each of the concerned countries and the character etc. of the VERs.

Emissions allowances have the character of operating assets/non-monetary assets, so emissions allowances will be traded as spot commodities. Therefore, in general at what point in time will emissions allowances be created as operating assets/non-monetary assets?
There are two ways of thinking regarding the point in time when emissions allowances are generated.

① Emission allowances spot commodities will be generated at the point in time when they become effective under the Kyoto Protocol.

For example, if it becomes possible to respond to and offset the quantity of greenhouse gases actually generated during the first Commitment Period, emissions allowances spot commodities will be generated in 2008 when the first Commitment Period begins.

② Emissions allowances spot commodities will be generated with the issue of emissions allowances certificates.

For CER, the point in time at which the CDM Executive Board issues the CER after receiving a verification (decision on emissions reduction quantity, etc) and certification (written guarantee of the actual emissions reduction results) for the CDM activity from the specified operational entity.

For JI, the point in time when the host country issues the ERU.

"Issuance of a document" refers not only to paper documentation but also includes, for example, recording in an account in a computer-managed registry.

Although the difference between ① and ② above was not clearly recognized at last year's study group, it was possible to recognize this difference at this year's study group through examination of the Marrakech Accords.

CER are the product for which differences arise under both definitions. As seen in Table II-1, it will be possible to issue CER after COP8 in 2002. Therefore when we consider CER that were issued up through 2007, they will not become a spot commodity under Definition ①, but under Definition ② they can be regarded as spot commodities without waiting until 2008 and will not be separately distinguished from CER issued after 2008. In the following statements, we have adopted Definition ②.

(2) Legal character of emissions allowances

Holders of emissions allowances will be considered to be holding direct control rights and exclusive control rights for a certain number of emissions allowances. As a general rule, the holders of emissions allowances will directly control their rights without regard to the intentions of other entities, and will be able to use and dispose of the emissions allowances freely. Moreover, when an entity owns certain emissions allowances, no other entity shall be able to assert rights of ownership to the same emissions allowances. Emissions allowances that fulfill this type of direct, exclusive control right will be regarded as one "real right." The idea has also been suggested that because these rights are intangible they are a kind of "incorporeal property right." From the standpoint that incorporeal property rights (intellectual property rights) are produced from the results of intellectual activities concerning technology and the arts, such as patents and copyrights, this will depend on whether emissions allowances are recognized to be rights born from the results of intellectual production, since they are assumed to be incorporeal property.

Given this sort of legal nature of emissions allowances (especially their character as real rights), in the case of CER, for example, when considered rationally the creation of the real right can be thought to occur at the point in time of issuance through an entry in a registry, because the registration enables the owner of the CER to hold or sell the CER in question. Moreover, although the similarity between emissions allowances and rights such as fishing rights was noted in the last report, because of the fact that fishing rights are regarded as real rights and provisions concerning

land are applied (Fishery Act, Article 23 Paragraph 1), third parties can oppose the rights based upon what is described in the registry. When we consider the similarity between emissions allowances and fishing rights, it may be appropriate to think that a third party will be able to oppose the rights based on their issuance based on registration.

(3) Emissions allowances registry system

For issuance of emissions allowances using registries, it's thought that the lowest emissions quota unit will be 1t-CO_2. It's also expected that a serial number will be attached to each individual 1t-CO_2. We believe that in this case, when emissions allowances are traded the serial number of each unit will provide the information on "units from number XX to number YY will be traded."
All of this information, including past history, will be checked electronically through a transaction log. In case of CER, for example, this will make it possible to use the serial number to confirm the information on which operational entity verified the CER when they the CER were initially issued. The specific technical mechanism will be decided at the next meeting of the auxiliary organizations and at COP8.

(4) Classification of VER and Permits

Another issue is whether to distinguish between emissions allowances VER based on national systems and Permits[17] such as the CER, AAU, ERU and RMU, which will become effective through the Kyoto Protocol.
The question of whether emissions allowances originally prescribed by national systems will become effective internationally is uncertain and will depend upon factors such as future trends and the character of the stipulations in question. Therefore it is best to examine the accounting treatment by distinguishing between VER and Permits.
We can use the discussion regarding identification of spot commodities and futures through Permits, however, to discriminate between VER spot commodities and futures. Therefore, we believe spot commodities for VER as well will be generated at the point in time when the actual emissions results are confirmed and registered in the control registry.
VER trading is currently being conducted in a number of countries. It is thought, however, that once CER come to be issued on a full scale the value of VER based on these national systems will decline rapidly, and that trades of VER that lack a strong possibility of conversion to Permits will difficult to complete. So the issue is, in cases where VER exist whose conversion into Permits at a certain conversion ratio is guaranteed, what is the character of these VER? While spot

[17] Permit: In this report, an emissions quota verified by a nationally or internationally recognized organization; used as the general term for AAU (Assigned Amount Unit; the unit for initial allocations of emissions quantities to countries), ERU (Emission Reduction Unit; the unit for emissions reduction volume generated by JI), CER (Certified Emission Reduction; the unit of emissions reduction volume generated by CDM) and RMU (Removal Unit; the unit of emissions reduction volume from sink PJ, which is to be distinguished separately from the others). In contrast to these, on the other hand, VER (Verified Emission Reduction) is used to distinguish the emissions reduction volume verified by a private entity rather than a nationally or internationally recognized organization. At the present time most transactions are VER.

transactions and futures transactions that use spot commodities as the underlying commodities will also include such VER, to simplify let us assume that we have spot commodity VER. The date when such VER will be converted into some type of Permit has probably been set. So although we have a VER as a spot commodity before this conversion, we must think about whether we should regard this as a real right that confers the right to convert the VER to a Permit, or whether we should regard it as a Permit with conditions precedent attached.

(5) Emissions allowances futures transactions[18]

When examining emissions allowances futures transactions, for the moment we should keep in mind Permits, particularly the CER that are expected to be generated from 2002 onward. With regard to VER that are already being traded as well, assuming that we will distinguish the account categories for accounting from emissions allowances as Permits, it is probably best if we apply the same futures accounting treatment used for Permits.
The transactions we can imagine as futures transactions in the broad sense that will make emissions quota as spot commodities the underlying commodity are ① forward transactions, ② futures transactions (narrow sense), ③ options transactions and swap transactions.

① Accounting treatment for forward transactions and the buying and selling of operating assets/non-monetary assets
A forward transaction is a futures transaction that assumes delivery of the emissions allowances spot commodity at a negotiated time or at contract maturity. More specifically, it is a transaction that promises to deliver specified emissions allowances at a specific time in the future and at a previously contracted price. Such contracts are not standardized, and the conditions are determined by negotiations between the parties concerned. Forward transactions are distinct from futures transactions (in the narrow sense) that are organized and standardized on exchanges or by other means, which are scheduled to be settled net.
Emissions allowances sales contracts are dual obligation contracts in which the seller promises to transfer the emissions allowances to the buyer, in return for which the buyer promises to pay a charge, and a relationship between the credit and liability is created by the contract. Forward transactions, however, require a long period of time from the conclusion of the sales contract to the delivery of the spot commodities.
When the change to the real right (ownership right) based on the sales contract (credit contract) occurs is assumed, by commonly accepted theory and judicial precedent, to be the time when the parties agree upon the credit contract. Because a transfer of the property rights during the stage in which cash payment and registration of the transfer are not completed contradicts common sense, however, recent influential arguments assume that the change of the property right is created at the point in time of delivery, registration or cash payment.

[18] Generally transactions referred to as futures transactions are transactions that use this expression in the broad sense; futures transactions in this broad sense are called derivative products for commodities and financial transactions. Forward agreements (forwards), futures transactions (futures) (narrow sense), options and swaps are included in derivative products.

Accounting practice focuses on the transfer of the goods or service that are the object of a sale, and for accounting purposes the relevant transfer (acquisition and sale) is recognized and measured at the time when there has been movement of a good or service between the parties to the transaction. In addition, if there is a transfer of earnest money at the time of the contract, this is accounted for by the buyer as advanced money (prepayment) and by the seller as an advance received. When viewed at this point in time, we can say the accounting treatment agrees from the start with recent influential thinking based on law. In a forward transaction, however, in situations where the time period between the signing of the contract and the transfer of the spot commodities is long and the recognition and measurement of the transaction is delayed until the transfer of the spot commodities, the transaction remains in an off-balance sheet status during the time after the signing of the contract until the spot commodity transfer. In other words, a problem arises in which the credit and liability relationship on a legal basis is not being measured from the standpoint of the accounting.

Therefore a method of initially measuring both the credit and the liability when both are created at the time of the contract and showing the relationship between the credit and the liability that is created by a contract that establishes a “cash account receivable” and an “obligation to delivery emissions allowances” for the seller and establishing an ”emissions allowances account receivable” and “obligation to make cash payment” for the purchaser can be considered These claims and obligations offset and extinguish one another at the time of delivery of the spot commodities (contract maturity). This type of accounting treatment is called a “contract standard” (contract accounting). Under current accounting practices, however, for unfulfilled contracts for operating assets/non-monetary assets only the transfer of the advanced money (prepayment) is measured, and the contract standard has not been adopted.

The initial measurement of spot commodity emissions allowances at the time of transfer is measured by the consideration (contract amount and accompanying expenses) under both current accounting practices and contract accounting. The end-of-period valuation is valued using the relevant acquisition cost, given that the emissions allowances are operating assets/non-monetary assets. With regard to the problem of determination of the acquisition form and acquisition cost, and the problem of measurement of the market price concerning the operating assets/non-monetary assets at the end of the operating period, please refer to the previously mentioned sections.

② Decisions to apply accounting standards concerning forward transactions and financial instruments

So far with regard to forward transactions, based on the assumption there is no net settlement we have assumed that no financial instruments are created, and we have assumed unfulfilled contracts concerning spot commodity assets. Now let us reject this assumption and examine the problem of what accounting treatment we should apply in situations where net settlement is planned even for negotiated transactions or when forward transactions exist that make it possible to settle net.

With regard to this situation, Japan’s Comments on the Draft Standard Financial Instruments and Similar Items notes that *“among derivatives transactions related to spot products (commodities), net claims or net obligations that arise from products that are traded using normal net settlement*

shall be accounted for in accordance with the Accounting Standards for Financial Instruments and Similar Items." So it would appear that for net settlement accompanying forward transactions as well, accounting standards that are the same as those described below for futures transactions (in the narrow sense) will be applied. Therefore let us now investigate the logic that forms the background to this thinking, while confirming the relationship between the definition of a financial instrument and forward transactions.

The definition of a financial instrument given in Paragraph 8 of International Accounting Standard No. 39, Financial Instruments: Recognition and Measurement, is as follows.

> *"A financial instrument is any contract that gives rise to both a financial asset of one enterprise and a financial liability or equity instrument of another enterprise.*
> *A financial asset is any asset that is:*
> *(a) cash;*
> *(b) a contractual right to receive cash or another financial asset from another enterprise;*
> *(c) a contractual right to exchange financial instruments with another enterprise under conditions that are potentially favourable; or*
> *(d) an equity instrument of another enterprise.*
> *A financial liability is any liability that is a contractual obligation:*
> *(a) to deliver cash or another financial instruments to another enterprise; or*
> *(b) to exchange financial instruments with another enterprise under conditions that are potentially unfavourable."*

When one reads the above definitions carefully, from financial asset definition (b) and financial liability definition (a), all futures contracts to purchase or sell operating assets/non-monetary assets (commodities) are consistent with this definition. This leads to the opinion that application of accounting treatment concerning the creation of financial instruments and financial instruments is appropriate. With regard to this interpretation, however, Paragraph (2.14(e)) of the JWG Draft Statement on Financial Instruments and Similar Items states that "*this interpretation of the definition overlooks the other leg of the transaction, which requires delivery of non-financial items.*" This clarifies the point that forward transactions are not naturally financial instrument transactions. As can be understood by looking at the accounting treatment concerning contract accounting described previously, with forward contracts involving operating assets/non-monetary assets, the assets and liabilities related to the financial assets that are incidental to the assets and liabilities concerning operating assets/non-monetary assets arise concurrently.

Well then, what is the reason that accounting standards concerning financial instruments are applied even to forward transactions when they are settled net? In the case of futures transactions in the broad sense, the reason is that these are cases of forming contracts that are attended by the creation of financial instruments that are not considered necessary for ordinary buying and selling of operating assets/non-monetary assets. If we apply the accounting treatment for normal purchases or sales to such transactions, this will lead to long term off-balance sheet problems concerning the financial items. Therefore Paragraph 204 of the JWG Draft Standard on Financial Instruments and Similar Items states, *"An enterprise would have a consistent policy in place for concluding that a contract meets these conditions. This policy need not specify each individual*

contract to which it relates but would be stated in a manner such that it is clear at the inception of any contract whether that contract is for such purposes." In order to distinguish between the situations in which the accounting for operating assets/non-monetary assets is applied and the situations in which the accounting for financial instruments is applied, and to ensure that the normal accounting standards concerning the buying and selling of operating assets/non-monetary assets are applied, this assumes a situation where firms are not intending the generation of cash flow accompanying market price changes or that the possibility of cash flow generation is minimal (if this is assumed to not be the case, the accounting standards for financial instruments will apply).

To continue, in Paragraph 205 the JWG provides illustrations of contracts that are not considered to be for normal purchase or sale requirements.

> *"(a) a contract that requires periodic cash settlement of changes in value or that is otherwise settled net periodically, including individual contracts that are part of a series of sequential contracts intended to accomplish ultimate acquisition or sale of a non-financial item;*
> *(b) a contract that will probably be settled net;*
> *(c) a contract containing an option enabling the counterparty to force net cash settlement. In such circumstances, the enterprise would not have the ability to ensure delivery;*
> *(d) a contract that has a price based on changes in the fair value of a variable that is unrelated to the item being sold or purchased (such as an equity index);*
> *(e) a contract denominated in a foreign currency that is neither the currency of the primary economic environment in which any substantial party to the contract operates, nor the currency in which the price of the non-financial item that is acquired or delivered is routinely denominated in international commerce (for example, the US$ for crude oil transactions); and*
> *(f) a contract for delivery of a non-financial item, with immediate repurchase or sale, and a contract settled by offsetting with the same counterparty (sometimes referred to as a "bookout"), unless the enterprise's business is that of buying or selling non-financial items (for example, a commodity trader)."*

Furthermore, Paragraph 206 states, "*Management's purpose in entering into a contract for physical delivery to meet the normal purchase or sale requirements of the enterprise would be evident from the nature of its business operations and its purchase and sale practices within current business conditions. If an enterprise settles net contracts that it has previously treated as being for normal purchases or sales, or settles net contracts with similar terms and conditions, this would call into question whether future contracts of a similar nature are for normal purchases or sales,"* which requires that one have a clear view of the firm's intent.

③ The meaning of settling net

At this point we should confirm the meaning of settling net. The JWG Draft Standard on Financial Instruments and Similar Items, Paragraph 197 describes this as follows.

> *"'Settled net by a financial instrument' means settling a contract by delivering a financial*

instrument in an amount reflecting the difference between the fair value of a non-financial item and the fair value of the consideration to be exchanged for the non-financial item. A contract can be settled net by a financial instrument if any of the following circumstances exist:

(a) the terms of the contract explicitly or implicitly permit either party to settle net by a financial instrument:

(b) there is an established market mechanism, or side agreement, outside the contract that facilitates settlement net by a financial instrument; or

(c) the non-financial item that is the subject of the contract has interchangeable (fungible) units, which are exactly the same as those for which an active market exists. (For example, natural gas deliverable at Sabine Pipe Line Co.'s Henry Hub in Louisiana, USA, is considered to be the same as Henry Hub natural gas traded on the New York Mercantile Exchange (NYMEX)."

Paragraph 198 further states,

"An established market mechanism includes any pre-existing institutional arrangement that permits either party to eliminate its net position and, thereby, to be relieved of all rights and obligations under the contract without incurring a prohibitive penalty or other cost. For example, an enterprise entering into a contract to purchase a commodity on a futures exchange has the ability to enter into an offsetting contract on that exchange so that the enterprise is no longer obligated to receive a physical delivery of the commodity. Similarly, the existence of brokers who stand ready to buy and sell commodity contracts that relieve the enterprise of its rights and obligations under the contract for a non-prohibitive fee also constitutes an established market mechanism. In contrast, an off-exchange contract to sell the purchased commodity to a third party would not result in settlement net since this does not relieve the enterprise of its rights and obligations under the original contract."

Even if Paragraph 197 (a) applies to forward contracts, we believe this has in mind the circumstances that enable net settlement, and that 197 (b) has in mind mainly futures transactions in the narrow sense. Although based on 197 (c) many purchases and sales of operating assets/non-monetary assets might meet the condition ""settled net," based on the latter part of Paragraph 198 transactions that do not relieve the entity from the original contract concerning the physical delivery of the spot commodities will be excluded.

④ Contract clauses and settling net requirements for forward contracts

When taking the example of CDM to ponder the question of when emissions allowances forward transaction contracts can be executed, various points in time can be considered. These include consent for the business in question after parties to a transaction have submitted their applications for CDM activity to both related treaty nations, the point when the activity in question becomes effective following processes such as investigation of the transaction requirements by the specified operational entities, and registration by the CDM Executive Board. Whichever point in time is used, when we consider the generation of spot commodities through the CER issuance, do

we assume that until that point in time it is an executory contract to deliver spot commodities and that the contract is an off-balance sheet item until delivery, or should we apply contract accounting from the point in time when the parties entered into the contract? In cases where this forward contract fulfills the “settled net” requirement, however, the accounting treatment for financial instruments is assumed to apply, and the accounting treatment becomes identical to that applied to the futures transactions (narrow sense) described below.

Furthermore, in the event the emissions allowances that are expected from the business activity in question and described in the contract are not generated and verified as initially estimated, and the issued CER are fewer than described in the initial plan, this will create problems such as default of obligation and the duty to pay compensation for damages. These indemnity and obligation relationships are a problem that depends upon the details of both parties’ contracts, and the accounting treatment of items such as the penalty will also be handled according to the contents of the contract.

With regard to the relationship between contracts such as a penalty contract at the time of default or the contract concerning delivery to a third party prior to contract execution and the “settled net" requirement, let’s refer to what is stated in the JWG Draft Standard on Financial Instruments and Similar Items. To begin with, Paragraph 200 describes the relationship to a penalty contract or similar agreement as follows.

> *”The existence of a clause stipulating that in the event of non-performance a penalty or other cost will be payable in an amount that is fixed at the inception of the contract does not constitute settlement net by a financial instrument. However a payment that is directly based on changes in the price of the items that are the subject of the contract does constitute settlement by a financial instrument, unless there is an additional penalty or other cost that is prohibitive. The presence of a nominal handling fee, in addition to the settlement payment, would not be considered to be a prohibitive penalty or cost.”* Paragraph 201 further states, *”A penalty or other cost is considered prohibitive if it is an amount that is expected to be significant enough throughout the remaining term of the contract to make the possibility that the non-financial item will not be delivered remote. The assessment of whether a penalty or other cost is prohibitive would be carried out only at the contract’s inception.”*

Next, with regard to assignment to the third party before performing delivery of the operating assets/non-monetary assets (in this case, the emissions allowances spot commodities), Paragraph 202 states as follows.

> *”A requirement that one or both parties to a contract may assign its rights or obligations to a third party only after obtaining permission from the counter-party does not, of itself, preclude the contract from meeting the criteria for settlement net. An assessment of the substance of the assignment clause is necessary. If the chance that the counter-party will withhold permission to assign the contract is remote, the mere existence of the clause would not preclude the contract from meeting the criteria for settlement net. However, if there is more than a remote chance that the counter-party will withhold permission to assign the contract, it is precluded from meeting the criteria for settlement net.”*

Moreover, although this is a special point, even when a purchaser concludes at the very beginning a side agreement concerning payment to the supplier that assumes delivery to a third party, Paragraph 199 notes that *"… delivery to a third party, at which time the contracting parties settle payment, does not constitute settlement net of the original contract. The fact that delivery is to a third party does not affect the original contract between the purchase and the supplier."*
Furthermore, in situations where parties agree to settlement net subsequent to the contract's inception, *"… the contract would be accounted for in accordance with this Draft Standard from the time such an agreement is made."* (Paragraph 203).

⑤ Futures transactions (narrow sense) and market price valuation
Assuming there are active market participants, buying and selling orders can be expected to be carried out between exchanges and participants and futures prices to be marked to market on every market trading day, which will result in transactions that are settled net among the market participants. These are futures transactions in the narrow sense. An active market guarantees the existence of quoted market prices on every trading day and, assuming that participation in the market concerned is desirable, will enable everyone to enter the market by depositing margin funds at the exchange as well as enable parties to withdraw from the market through net settlements based on quoted market values.
As a type of derivative as described above, the accounting standards for financial instruments will be applied to futures transactions premised on this kind of settlement net. "Derivatives," which refers to derivative financial instruments or derivative spot commodity products, are contracts by which the value arising from the rights and obligations of the underlying product will change according to changes in the underlying value, determining the underlying value and the notional principal or settlement amount.
In the futures market for emissions allowances, the emissions quota spot commodity becomes the underlying commodity and the emissions quota price becomes the underlying value; the emissions quota futures price will fluctuate corresponding to this underlying value and will be marked to market on each market trading day. Based upon the changes in the futures' price, a right to receive cash (a financial asset) is created if the settled net conditions are positive, and an obligation to pay cash (a financial liability) is created if the settled net conditions are negative. From an accounting perspective as well, a valuation profit is booked as a financial asset, and a valuation loss is recognized as a financial liability. As the underlying commodity, no accounting measurement is made of the emissions allowances themselves.
Because the fact that the quoted market value is reflected every day as the net of the claims and liabilities means that the transactions will be valued at the quoted market value even on the final day of each period, this is referred to as market valuation of the acquisition cost. The difference between the valuation profit and loss over the accounting period will be booked on the income statement.

⑥ Option and other transactions
Trading is also carried out in put options and call options that use spot emissions allowances as the underlying commodity. Because situations in which entities have purchased options means

that currently the buyers are accumulating experience concerning emissions quota trading, frequently such entities account for the option purchase expense as “investigation and research expense” or “research expenditures.” Furthermore, when these expenses are recognized as research expenditures the full amount is booked as an expense at the time of the expenditure. They can also be recognized as a development expense and booked on the balance sheet as deferred assets, however.

In the case of an option that has a financial instrument as the underlying commodity, a purchased option becomes a financial asset and a sold option becomes a financial liability when accounted for in accordance with Japan’s Accounting Standards for Financial Instruments and Similar Items. Because option prices change every trading day, options are valued at the quoted market price at the final day of each reporting period and the valuation profit (loss) will be accounted for on the income statement.

In the case of emissions quota-related options, however, because emissions allowances are assumed to be operating assets/non-monetary assets (commodities) a purchased option is not necessarily a financial asset, and an option sold does not necessarily become financial liability. Because these options are derivative spot commodity products, this will be determined by whether the options fulfill the condition “can be settled net” as described previously in detail. Various alternatives can be considered as the requirement for settlement net of the option. For example, the existence of an options market and cash settlement by a sale and purchase of the option itself, or settlement net through a sell-back and buy-back when the option is exercised, without delivery of the spot commodity assets. For cases of emissions quota options that fulfill the settlement net requirements, the accounting treatment for financial instruments is applied without any changes. When actual conditions do not agree with the settlement net requirements and delivery of the spot commodity through the exercise of the option is planned, however, the accounting treatment for a purchase and sale of a operating assets/non-monetary assets will be applied. Because the application of accounting for purchases and sales of operating assets/non-monetary assets to options is rarely discussed, let’s delve further into this accounting treatment.

The option fee payment composes part of the acquisition cost of spot commodity assets acquired when an option is exercised. Therefore when an entity acquires an option it accounts for the option as an “emissions allowances option asset” or a “prepayment”; when it exercises the option, the entity transfers this amount to “emissions allowances” and adds the emissions allowances’ acquisition cost as a spot commodity (based on the contract price). Moreover, in cases where an entity does not exercise the option the option fee payment becomes a loss.

Because it is anticipated that an accounting period longer than one fiscal period will pass until an option is exercised, during this accounting period “impairment accounting” is thought to apply. In other words, when the market price of the option fee has declined substantially the entity will record a valuation loss concerning the emissions quota option asset. If impairment is not recognized, the entity will carry forward the option acquisition compensation without any changes.

An option fee received composes part of sales revenue when an option is exercised. Therefore when an entity receives an option fee it accounts for the amount as an “emissions allowances option liability” or as an “advance.” When it exercises the option, the entity transfers this amount to profit on sale of emissions allowances and adds this to profit on sale of emissions allowances as a spot commodity (based on the contract price). If the entity does not exercise the option, the full

amount of the option fee received becomes profit.

With regard to options for which delivery of the spot commodities is planned, this accounting treatment regards the buying and selling of the option itself and the exercising of the option as one transaction concerning the buying and selling of a spot commodity asset. By the way, in contrast to this type of interpretation, it is also possible to assume the transaction for the option itself and the transaction to buy and sell the spot commodity asset through exercising the option to be separate transactions. Therefore let us consider the accounting treatment in situations that are in accord with this interpretation.

The accounting treatment for both the option fee payment and the option fee receipt is identical to the above-mentioned accounting treatment until the option is exercised. When the option is exercised, however, the option fee payment is not added to emissions allowances' acquisition cost but is treated as a lump-sum expense; on the other hand, the option fee received is realized as earnings. In other words, the character of the option is like a "right to acquire spot commodity assets," and the transaction for the option itself is looked at as "the buying and selling of that right." Accordingly, when the period for exercising the right has ended and the option has not been exercised, at termination of the right the option fee payment is accounted for as an expense and the option fee received becomes a profit.

Because the amount of emissions allowances-related option transactions at the present time is small, it is also thought to be acceptable to include this amount with amounts for other options and not disclose it separately on financial statements. The issue of viewing emission allowances-related options as qualitatively important, distinguishing them from other options and disclosing them independently on the balance sheet should also be studied.

Furthermore, as swap transactions, transactions in which rights entities can use in the first Commitment Period are exchanged for rights entities can use in the second Commitment Period can also be assumed.

⑦ Applications of hedge accounting

If we assume that an entity wants to hold emissions allowances for speculative purposes, the difference from any change in the futures price should immediately be taken as a profit or loss for the period in which the change occurred. In the case of emissions allowances-related transactions, however, it's thought that in many cases purchases of futures emissions allowances as forward transactions, purchases of futures options from the futures market, or purchases of futures through negotiations or the market are intended to supplement emissions allowances shortfalls at the time when firms have reached the first Commitment Period, and as a hedge to offset or avoid any price change loss when a sudden rise in the spot commodity emissions allowances is expected. Such purchases correspond to a "hedge of a planned transaction."

The general rule for hedge accounting is the so-called "deferred hedge," which requires that *"the profit or loss or valuation difference related to the hedge mechanism that is valued at market shall be accounted for under the deferral method as an asset or a liability until the profit or loss that is the object of the hedge is recognized"* (Japan's Accounting Standards for Financial Instruments and Similar Items, 5-4-1). When an entity has applied hedge accounting, for transactions for which the accounting standards for financial instruments are applied – whether forward transactions, futures transactions or option transactions – when the financial asset and financial liability are

recognized the entity will not record the market valuation differences as a profit or loss for that period, but will defer them as a “deferred hedge profit or loss” until the emissions quota spot commodity transaction is completed.

2. Emissions allowances forward transactions

(1) What is a forward transaction?

A forward transaction (forward contract) is an agreement by which the parties to a purchase and sales promise to buy and sell a specific product at a specified future time for a price that has been decided beforehand, off of an exchange. That is, in a forward transaction the purchaser accepts an obligation to buy a specific asset at the decided price on the future date promised at the time of the contract, and the seller accepts the obligation to sell the specific asset. For example, when the market price on the designated future date is below the promised amount (contract price), the purchaser suffers a loss (the contract price minus the market price) and the seller receives a profit. The differences from a futures transaction (future) defined in the narrow sense are the fact that a forward contract is a negotiated transaction, there is no margin requirement or mark-to-market system related to forward transactions, and there is no settlement before the contract maturity date. Products that can be the subject of forward transactions are numerical values, including currencies, marketable securities, spot commodity products, specific interest rates, marketable securities' prices, prices of spot commodity products, foreign exchange rates, various kinds of price and ratio indices, and credit indices. A typical example of a forward transaction is a forward exchange contract transaction. Other examples are interest rate forward contracts and exchange rate forward contracts.

If we try to imagine a forward transaction for emissions allowances, we can envision a transaction in which a buyer and a seller contract to purchase or sell emissions allowances at a specified date in the future for a currently promised amount of money. One current example of a transaction that has actually been carried out is the DuPont-MEICO Permits transaction that was described on p.32 as a contracted transaction based on the national system in the UK. As described there, this transaction is an exact forward transaction for trading 2002 Permits in 2001.

(2) Accounting treatment for forward transactions

According to Japan's accounting treatment standards for financial instruments, executory contracts such as forward transactions are recognized and measured not at the time the contract is concluded but when the transaction is executed. The Comments on the Draft Standard Accounting Standards for Financial Instruments stipulate that *"as a rule, the monetary claims and liabilities related to the provision of compensation for the buying and selling of products or for services are recognized upon completion of the delivery of the goods or provision of the service in question."*

Moreover, Paragraph 14 of International Accounting Standard No. 39, Financial Instruments: Recognition and Measurement, stipulates the following. *"Commitments to buy or sell non-financial assets and liabilities that are intended to be settled by the reporting enterprise by making or taking delivery in the normal course of business, and for which there is no practice of settling net (either with the counterparty or by entering into offsetting contracts), are not accounted for as derivatives but rather as executory contracts."* Settling net means making a cash payment based upon

changes in fair value. In other words, forward transactions that do not provide for settlement net are initially recognized at the point in time when the good or service is provided, in the same manner as the treatment for normal acquisitions of a operating assets/non-monetary assets; a new transaction does not arise during the period of time between the agreement to the contract and the delivery. That is, the period of time between when the contract is concluded and the delivery point is longer than that for normal buying and selling transactions.

On the other hand, the idea has also been put forward claiming one way to solve the problem of transactions being kept off-balance sheet when there is a long time between the contract date and the date when the good or service is received is to introduce an accounting procedure to recognize and measure the value at the time the contract is concluded. This method for taking the first measurement in this manner at the time the contract is agreed upon is called the "contract standard."

Below we illustrate accounting treatment using several examples. With regard to accounting treatment using the contract standard, however, under currently accepted accounting standards the contract alone is not recognized because it is assumed there is no balance sheet competency in the claims and liabilities.

(3) Accounting treatment using specific examples for the contract date and delivery date

(Example 1)
Company A has signed a contract to purchase 100 tons of 2010 vintage emissions allowances from Company B for ¥500/ton and paid ¥10,000 of the price as earnest money.

① Accounting treatment at time of contract

＜ Journals based on currently accepted accounting standards ＞

Company A (Purchase side)

(Debit) Advanced money	10,000	(Credit) Cash	10,000

Company B (Sale side)

(Debit) Cash	10,000	(Credit) Advance received	10,000

＜ Journals based on contract standard ＞

Company A (Purchase side)

			(Debit)
Right to receive			
			(Credit)
Cash			10,000
emissions allowances	50,000	Cash payment liability	40,000

Company B (Sale side)

(Debit) Cash	10,000	(Credit) Obligation to deliver	
Right to receive cash	40,000	emissions allowances	50,000

② Accounting treatment at time of delivery

＜Journals based on currently accepted accounting standards＞

Company A (Purchase side)

(Debit) Emissions allowances	50,000	(Credit) Cash	40,000
		Advance money	10,000

Company B (Sale side)

(Debit) Cash	40,000	(Credit) Emissions allowances	50,000
Advance received	10,000		

＜ Journals based on contract standard ＞

Company A (Purchase side)

(Debit) Emissions allowances	50,000	(Credit) Right to receive missions allowances	50,000
Cash payment liability	40,000	Cash payment liability	40,000

Company B (Sale side)

(Debit) Obligation to deliver emissions allowances	50,000	(Credit) Emissions allowances	50,000
Cash	40,000	Right to receive cash	40,000

(4) End-of-period valuation of forward transactions

Based upon the market price accounting introduced in the fiscal year beginning April 1, 2000, even transactions involving derivatives that have not been settled at the end of the accounting period are now regarded as having been settled, and the market price valuation difference at the end of the accounting period is charged to the income statement.

The example given for Q3 in “Financial Instruments Accounting Q&A” (Japan Institute of Certified Public Accountants Administrative Guidelines, September 2000) gives the accounting treatment for marketable securities sales transactions (transactions that have marketability) that exceed the normal delivery period and are assumed to be forward transactions. This example is introduced below in order to examine the end-of-period valuation of emissions allowances forward transactions.

(Example 2)

Company A has signed a contract to sell to Company B common stock of Company C, with delivery after one month. Company A’s fiscal year-end is before the delivery date. Assume the contract price is 100, the price at the fiscal year-end is 105 and the price at the time of delivery is 120, and the book value of Company C’s common stock on the balance sheet of Company A is 40. Furthermore, the market value of the forward contract is 0 at the time of the contract, 5 at the fiscal year-end and 20 at the time of delivery.

① At the time of contract

Company A (Seller)

No journal entries

Company B (Buyer)

No journal entries

② At end of period

Company A (Seller)

(Debit) Loss on forward contract	5	(Credit) Forward contract	5
Other marketable securities	65	Valuation difference on marketable securities	65

Company B (Buyer)

(Debit) Forward contract	5	(Credit) Profit on forward contract	5

③ Start of next period

Company A (Seller)

(Debit) Forward contract	5	(Credit) Loss on forward contract	5
Valuation difference on marketable securities	65	Other marketable securities	65

Company B (Buyer)

(Debit) Profit on forward contract	5	(Credit) Forward contract	5

④ At time of delivery

Company A (Seller)

(Debit) Cash	100	(Credit) Gain on sale of marketable securities	80
Loss on forward contract	20	Other marketable securities	40

Company B (Buyer)

(Debit) Other marketable securities	120	(Credit) Cash	100
		Profit on forward contract	20

In cases where the period of time from the contract date until the delivery date is much longer than normal, both the buyer and the seller recognize the purchase and sale contract as a forward contract on the contract date and value the unsettled forward contact at market value as a derivatives transaction at the fiscal year-end, and charge the valuation difference to the income statement. On the other hand, the seller will continue the accounting treatment for marketable securities for settled contracts according to the holding classification until the delivery date.

Now let us examine an emissions quota forward transaction based on this case.

However, while other marketable securities in the above-mentioned case are valued at market prices at the end of the period as financial assets, the emissions allowances themselves are

considered to be “operating assets/non-monetary assets” and the holder does not value them at market at the end of the period.

（Example 3）
Company A signs a contract to sell 100 tons of 2010 emissions allowances to Company B at a price of ¥500/ton.
Contract date September 30, 2009
At end of period December 31, 2009
Market price ¥53,000 Market price of forward contract ¥3,000
At time of delivery October 31, 2010
Market price ¥55,000 Market price of forward contract ¥5,000

Assume the book value of the emissions allowances on Company A’s balance sheet is ¥45,000 on the contract date.

① At time of contract
Company A (Seller)
No journal entries
Company B (Buyer)
No journal entries

② At end of period
Company A (Seller)

(Debit) Loss on forward contract	3,000	(Credit) Forward contract	3,000

Company B (Buyer)

(Debit) Forward contract	3,000	(Credit) Profit on forward contract	3,000

③ Start of next period
Company A (Seller)

(Debit) Forward contract	3,000	(Credit) Loss on forward contract	3,000

Company B (Buyer)

(Debit) Profit on forward contract	3,000	(Credit) Forward contract	3,000

④ At time of delivery
Company A (Seller)

(Debit) Cash	50,000	(Credit) Gain on sale of emissions allowances	10,000
Loss on forward contract	5,000	Emissions allowances	45,000

Company B (Buyer)

(Debit) Emissions allowances	55,000	(Credit) Cash	50,000
		Profit on forward contract	5,000

We have now compared the accounting treatment for emissions allowances forward contracts with marketable securities that possess marketability as shown above. This treatment is thought to be sufficiently applicable to transactions involving Permits after 2008 if the market matures. Normally many forward transactions are carried out as negotiated transactions; in such cases the market prices are theoretically calculated using the discounted present value method. In fact, however, market prices are not necessarily computed in accordance with the theoretical value.

Although forward exchange transactions are a representative type of forward transaction, such forward exchange transactions form foreign exchange rates through negotiated transactions in the foreign exchange market between financial institutions such as banks (inter-bank market). Therefore when an ordinary firm enters a forward exchange contract, it enters a contract at a foreign exchange rate based on market prices by specifying the currency, amount of money and date of delivery with a financial institution. Although we do not illustrate these forward exchange contract transactions here because the accounting treatment for various cases is different depending upon the relationship between the point in time of the transaction for the original debt (for example, purchase of a foreign currency, etc.) and the forward exchange contract, and there is a possibility for problems to become extremely complex, basically the accounting treatment is the same as that for the Example 2, where a forward exchange contract that is unexecuted at the end of a period is valued at the market price and the valuation difference is charged to the income statement.

(5) Possibility of applying hedge accounting

As with other financial instruments, the purposes for using forward transactions can be roughly divided into three categories: hedges, speculation and arbitrage.

Because forward transactions are usually negotiated transactions and have the advantage of flexible terms and conditions, they are frequently used, for example, to hedge the exchange rate risk of foreign currency-denominated transactions and to lock in cash flow in order to ensure a certain amount of profit.

In the case of firms that are thinking of purchasing emissions allowances through forward transactions when they project there is a large possibility that their own emissions allowances will be insufficient in the future, there are probably also some cases of firms undertaking transactions to fix the cash outflow for the emissions allowances purchases. Because emissions allowances overall are projected to be insufficient in the fiscal year when the Commitment Period ends in particular and market prices will rise because of the market supply-demand relationship, or when market prices are easily forecast to become cheaper if there is a sense of surplus, firms will be likely to hedge the market price fluctuation risk and enter forward transactions to establish their future cash flow. Of course, there will probably also be firms that use emissions allowances forward contracts for speculative purposes as well. It is believed, however, that firms that enter forward contracts for hedging purposes will use accounting treatment that applies hedge accounting and reflects actual conditions if the requirements for hedge accounting are fulfilled.

The Accounting Standards for Financial Instruments and Similar Items make the point that *"hedge accounting refers to special accounting treatment to reflect the results of hedges in accounting, by*

recognizing the profit or loss related to the hedged item and the profit or loss related to the hedging mechanism in the same accounting period for hedge transactions that fulfill specified requirements" (We have omitted here the requirements enumerated for the application of hedge accounting).

With regard to Example 2 examined earlier, when the futures contract in question has specified the hedge for the marketable securities that are the item to be sold by the seller, hedge accounting can be applied. Moreover, when the forward contract in question fulfills the requirements of a hedge concerning a planned transaction for the purchaser, hedge accounting can be applied. The accounting treatment when the hedge accounting in Example 2 is applied is shown below.

① At time of contract

Company A (Seller)

No journal entries

Company B (Buyer)

No journal entries

② At end of period

Company A (Seller)

(Debit) Deferred hedge loss (Asset)	5	(Credit) Forward contract (Liability)	5
Other marketable securities	65	Valuation difference on marketable securities	65

Company B (Buyer)

(Debit) Forward contract (Asset)	5	(Credit) Deferred hedge profit (Liability)	5

③ Start of next period

Company A (Seller)

(Debit) Forward contract	5	(Credit) Deferred hedge loss	5
Valuation difference on marketable securities	65	Other marketable securities	65

Company B (Buyer)

(Debit) Deferred hedge profit	5	(Credit) Forward contract	5

④ At time of delivery

Company A (Seller)

(Debit) Cash	100	(Credit) Profit on sale of marketable securities	60
Other marketable securities	40		

Company B (Buyer)

(Debit) Other marketable securities	100	(Credit) Cash	100

※Strictly speaking, at the time of delivery the seller will sell at the market price and the profit on sale will be 80; the hedge loss arising from the forward contract is 20, and the relevant sale profit is

adjusted to 60. In addition, the purchaser also purchases the other marketable securities at a market price of 120, but the hedge profit from the forward contract is only 20 and the relevant book price and is adjusted to 100.

As seen in this example, when an entity applies hedge accounting it does not reflect the profit or loss arising from the forward contract in its end-of-period financial statements and discloses the off-balance sheet transaction as an on-balance sheet transaction by showing both the asset and the liability when they arise. Given that the valuation difference of the hedged object and the means of hedging at the end of a period are not necessarily recognized in the same accounting period, hedge accounting seeks to make up for the weakness of principle-based accounting treatment that does not reflect the actual conditions of the hedge in the accounting results to book the correct profit or loss.

We believe that hedge accounting should be applied if the requirements for hedge accounting are met, because emissions allowances forward transactions are contracts with the intent of a hedge. In such cases the accounting treatment of the market valuation profit or loss of the forward contract at the end of the period will not influence the profit or loss, just as described above.

Below we describe the hedge accounting in the case of (Example 3).

Furthermore, because the emissions allowances that are the original assets are not considered a financial instrument, market price valuations like those for marketable securities are not performed

① At time of contract

Company A (Seller)

No journal entries

Company B (Buyer)

No journal entries

② At end of period

Company A (Seller)

(Debit) Deferred hedge loss (Asset)	3,000	(Credit) Forward contract (Liability)	3,000

Company B (Buyer)

(Debit) Forward contract (Asset)	3,000	(Credit) Deferred hedge profit (Liability)	3,000

③ Start of next period

Company A (Seller)

(Debit) Forward contract	3,000	(Credit) Deferred hedge loss	3,000

Company B (Buyer)

(Debit) Deferred hedge profit	3,000	(Credit) Forward contract	3,000

④ At time of delivery

Company A (Seller)

(Debit) Cash	50,000	(Credit) Profit on sale of	

Emissions allowances	45,000	emissions allowances	5,000

Company B (Buyer)

(Debit) Emissions allowances	50,000	(Credit) Cash	50,000

3. Emissions allowances futures transactions

(1) What are futures transactions?

At this juncture let us assume we are dealing with futures transactions (futures) in the narrow sense. Laws that have been enacted in Japan as legislation concerning futures transactions include The Commodity Exchange Law, The Securities and Exchange Law, and The Financial Futures Trading Law. Let us begin our examination by first looking at several definitions related to futures transactions. Article 2 Paragraph 6 of The Commodity Exchange Law defines futures transactions as *"transactions by which the parties concerned promise to deliver a product and its consideration at a specified time in the future, and transactions that can be settled by a transfer of the monetary balance when the product that is the target of the commodity in question is transferred or bought back"* (No. 1), and further defines such transactions as *"transactions in which the parties concerned promise to transfer a monetary sum that is calculated based on the difference between a price contracted in advance (contract price) and the actual price of the commodity in question at a specified future point in time."* (No. 2).

Futures transactions are also defined in Article 2 Paragraph 13 of The Securities and Exchange Law: *"'Marketable securities futures transactions' are trading transactions by which the parties to a purchase and sale promise to deliver a marketable security and its consideration at a specified time in the future in accordance with the standards and procedures stipulated by a securities exchange, and transactions that can be settled by a transfer of the monetary balance when the marketable security that is the target of the trade in question is transferred or bought back."* Futures transactions therefore assume the existence of a market where trading is actively conducted, and are characterized by the following points.

- Futures transactions are transactions that are settled at a specified time in the future.
- Futures transactions are transactions that promise to exchange the commodity that is the target of the trade in question and its compensation on the contracted transfer date.
- Futures transactions are transactions that can be settled by transferring the monetary balance a the time the commodity in question is resold or bought back.

Furthermore, "resale" refers to selling the thing that was purchased without taking physical delivery and settling net. The expression "buy back" means oppositely purchasing the contract without transferring the physical products, and extinguishing the contractual relationship when a promised sale remains unsettled.

(2) Accounting treatment of futures transactions

While Permits and VERs are considered as the trading items for emissions allowances futures transactions, here we will examine the accounting treatment for futures transactions by assuming the existence of a market where we do not distinguish between these two – that is, we will assume

the existence of market prices. When emissions allowances futures transactions are based on the premise of settlement net, the Accounting Standards for Financial Instruments and Similar Items will apply to the transactions as derivatives. Under the Accounting Standards for Financial Instruments and Similar Items, as a general rule the net claims and liabilities arising from derivatives transactions are carried on the balance sheet as amounts based on market prices, and any valuation differences are charged to the income statement as a profit or loss in the period in which they occur, except for such transactions that are related to hedges. That is, if the settled net condition is positive based on the price fluctuation of the emissions allowances futures, the right to receive cash is created and the valuation profit is booked as a financial asset. Conversely, if the settled net condition is negative, an obligation to pay cash is created and the valuation loss is booked as a financial liability.

(3) Buyer's accounting treatment of emissions allowances futures

（Example）
Company A contracts with an emissions allowances brokerage firm to purchase 100 tons of emissions allowances futures at a price of ¥500/ton, and pays ¥1,500 to the brokerage firm as consignment guarantee money. At the end of the accounting period the price of the emissions allowances futures has risen to ¥550/ton. Afterwards the market price does not change, and Company A settles net at ¥550/ton through a reverse trade.

① Accounting treatment on contract date

(Debit) Margin money paid	1,500	(Credit) Cash	1,500

② Accounting treatment at end of accounting period

(Debit) Emissions allowances futures assets	5,000	(Credit) Profit on emissions allowances futures	5,000

(¥550－¥500)/ton × 100 ton = ¥5,000

③ Accounting treatment on settlement date when reverse trade is made

(Debit) Cash	6,500	(Credit) Emissions allowances futures assets	5,000
		(Credit) Margin money paid	1,500

Because settlement net at the end of the accounting period is positive based on the change in the price of the emissions allowances futures, a right to receive cash is created. The valuation profit is booked in financial assets on the balance sheet as an emissions allowances futures asset, and the emissions allowances futures profit is booked on the income statement.
In the example, because the price on the settlement date when the reverse trade is completed has not changed compared to the price at the end of the accounting period, no profit and loss is generated on the settlement date. Assuming the price on the settlement date exceeds the price at the end of the accounting period, however, Company A will book a profit on emissions allowances

futures to the income statement, and if the price on the settlement date is below the price at the end of the accounting period, the company will book a loss on emissions allowances futures.

(4) Seller's accounting treatment of emissions allowances futures

（Example）
Company B contracts with an emissions allowances brokerage firm to sell 100 tons of emissions allowances futures at a price of ¥500/ton, and pays ¥1,500 to the brokerage firm as consignment guarantee money. At the end of the accounting period the price of the emissions allowances futures has risen to ¥550/ton. Afterwards the market price does not change, and Company B settles net at ¥550/ton through a reverse trade. Furthermore, in this example we will ignore the additional margin money that would accompany the generation of a valuation loss.

① Accounting treatment on contract date

(Debit) Margin money paid	1,500	(Credit) Cash	1,500

② Accounting treatment at end of accounting period

(Debit) Emissions allowances futures loss	5,000	(Credit) Emissions allowances futures liability	5,000

(¥500－¥550)/ton × 100 tons = ▲¥5,000

③ Accounting treatment on settlement date when reverse trade is made

(Debit) Emissions allowances futures liability	5,000	(Credit) Cash	3,500
		(Credit) Margin money paid	1,500

Because settlement net at the end of the accounting period is negative based on the change in the price of the emissions allowances futures, an obligation to cash is created. The valuation loss is booked in financial liabilities on the balance sheet as an emissions allowances futures liability, and the emissions allowances futures loss is charges to the income statement.
In the example, because the price on the settlement date when the reverse trade is completed has not changed compared to the price at the end of the accounting period, no profit and loss is generated on the settlement date. Assuming the price on the settlement date exceeds the price at the end of the accounting period, however, Company B charge a loss on emissions allowances futures to the income statement, and if the price on the settlement date is below the price at the end of the accounting period, the company will book a profit on emissions allowances futures.

(5) Application of hedge accounting to emissions allowances futures transactions

The Accounting Standards for Financial Instruments and Similar Items make the point that *"hedge accounting refers to special accounting treatment to reflect the results of hedges in accounting, by recognizing the profit or loss related to the hedged item and the profit or loss related to the*

hedging mechanism in the same accounting period for hedge transactions that fulfill specified requirements." Thus firms should note that when applying hedge accounting they must fulfill the requirements stipulated by the Accounting Standards for Financial Instruments and Similar Items when using hedge transactions and other requirement at times they are not using hedge transactions.

What kind of cases can we imagine as situations where emissions allowances futures transactions are used as a hedge mechanism? When firms have plans to obtain emissions allowances in the future as spot commodity assets, they will naturally think about what means they can employ to alleviate their market price change risk if they anticipate the price of emissions allowances to rise. One means firms will consider is purchases of emissions allowances futures (hedging mechanism). The object of the hedge in this case is the scheduled transaction to purchase the emissions allowances spot commodity asset in the future. The accounting treatment for this type of hedge object and hedge mechanism (deferred hedge) is shown in the example below.

(Example)

Company C is concerned about a rise in the price of the 100 tons of emissions allowances it is planning to purchase at the end of 2008. In order to hedge this transaction during the current period (2007), the company purchased emissions allowances futures for 100 tons at ¥500/ton, which have an expiration date at the end of 2008. This scheduled transaction has an extremely high probability of being executed, and also fulfills the requirements for hedge accounting. At the accounting period-end (end of 2007) the price of the emissions allowances futures has risen to ¥550/ton. Company C purchases the 100 tons of emissions allowances at the end of 2008 as planned, at a price of ¥600 yen/ton, which it pays for in cash. The settlement price for emissions allowances futures that have their settlement date at the end of 2008 is ¥600/ton. For this example we will disregard the margin deposit.

① Accounting treatment on the emissions allowances futures contract date (2007)

No journal entries

② Accounting treatment at end of accounting period (end of 2007)

(Debit) Emissions allowances futures assets	5,000	(Credit) Deferred hedge profit (liability)	5,000

(¥550－¥500)/ton × 100 tons = ¥5,000

③ Emissions allowances purchase (end of 2008)

(Debit) Emissions allowances	60,000	(Credit) Cash	60,000

④ Settlement of emissions allowances futures (end of 2008)

(Debit) Cash	10,000	(Credit) Emissions quota futures assets	5,000
		(Credit) Deferred hedge profit (liability)	5,000

The deferred hedge profit is determined as (¥600－¥550)/ton × 100 tons = ¥5,000.

⑤ Transfer of hedge profit or loss (cumulative amount) to acquired assets (end of 2008)

(Debit) Deferred hedge profit (liability)	10,000	(Credit) Emissions allowances	10,000

When the planned transaction that will be covered by the hedge is a purchase of emissions allowances assets, the deferred hedge profit or loss is added to or subtracted from the purchase price for these assets and the acquisition prices for the relevant assets is reflected in the profit or loss for the period by charging it to the income statement as an expense. For example, if the emissions allowances will be used for manufacturing, through cost accounting the emissions allowances acquisition price will become a product cost and will be included in the cost of goods sold when the manufactured items are sold.

Next let's consider the case of a firm that holds emissions allowances as spot commodity assets on the assumption it will sell them in the future and uses an emissions allowances futures transaction as a means for hedging when it wants to reduce its market price fluctuation risk. The subject of the hedge in this case is the price of the emissions allowances as the owned spot commodity assets. The accounting treatment for this type of hedge object and hedge mechanism (deferred hedge) is shown in the example below.

（Example）

Company D owns 100 tons of emissions allowances (book value ¥40,000), which it plans to sell at the end of 2008. Worried about a price drop before its sells, however, in order to hedge this transaction during the current period (2007) the firm sells 100 tons of emissions allowances futures at ¥500/ton, which have an expiration date at the end of 2008. This scheduled transaction has an extremely high probability of being executed, and also fulfills the requirements for hedge accounting. At the accounting period-end (end of 2007) the price of the emissions allowances futures has risen to ¥550/ton. Company D sells 100 tons of emissions allowances at the end of 2008 as planned, at a price of ¥600 yen/ton, which it receives in cash. The settlement price for emissions allowances futures that have their settlement date at the end of 2008 is ¥600/ton. For this example we will disregard the margin deposit.

① Accounting treatment on the emissions allowances futures contract date (2007)

No journal entries

② Accounting treatment at end of accounting period (end of 2007）

Debit) Deferred hedge loss (liability)	5,000	(Credit) Emissions allowances futures liability	5,000
(¥500－¥550)/ton × 100 tons =	¥5,000		

③ Emissions allowances sale (end of 2008）

(Debit) Cash	60,000	(Credit) Revenue from sale of emissions allowances	60,000

(Debit) Emissions allowances cost (expense)	40,000	(Credit) Emissions allowances	40,000

④ Settlement of emissions allowances futures (end of 2008)

(Debit) Emissions allowances futures liability	5,000	(Credit) Cash	10,000
(Debit) Deferred hedge loss (asset)	5,000		

The deferred hedge loss is determined as (¥550－¥600)/ton × 100 tons = ¥5,000.

⑤ Transfer of hedge profit or loss (cumulative amount) to related profit or loss (end of 2008)

(Debit) Revenue from sale of emissions allowances	10,000	(Credit) Deferred hedge loss (asset)	10,000

If the planned transaction covered by a hedge will immediately generate a profit and loss such as revenue from the sale of emissions allowances, when the firm executes the transaction in question it will account for the deferred hedge profit or loss as a profit or loss for that period. In this case, as a general rule the account name is profit or loss related to transactions covered by a hedge (In this example, revenue from sale of emissions allowances).

4. Option transactions

(1) What are option transactions?

Option transactions are transactions to buy and sell a right to buy or a right to sell, at a predetermined price on a specified future date or during a specified period of time, the item covered by the option. The right to buy is called a call option, and the right to sell is called a put option.

The purchaser of a call option or put option obtains the right to buy or the right to sell by paying an option premium to the seller of the option. When the purchaser does not exercise the right, the transaction involves only the option premium. When the purchaser exercises the right, however, it becomes a transaction to exchange the subject item at the initially determined price.

The definition of a derivative option transaction can also be applied to emissions rights trades. At present, the call option VERs transaction between Cosmo Oil Co., Ltd. and a firm in Australia can be cited as a transaction that has actually been booked.

(2) Accounting treatment of option transactions

With option transactions concerning emissions allowances as well, when a transaction can be settled in cash an option purchased becomes a financial asset just like any other financial asset, and an option sold becomes a financial liability. The accounting treatment for the transaction after the contract date is described below.

(3) Accounting treatment on the contract date and on the end-of-period accounting date for specific examples

（Example 1）
Company A buys call option for 100 tons of emissions allowances futures, which gives it the right to contract to purchase 100 tons from Company B at ¥500/ton, and pays an option premium of ¥60/ton. On the end-of-period accounting date the option price has risen to ¥65/ton.

① Accounting treatment on the contract date

Company A (Purchasing side)

(Debit) Emission allowances futures option	6,000	(Credit) Cash	6,000

Company B (Selling side)

(Debit) Cash	6,000	(Credit) Emissions allowances futures option	6,000

② Accounting treatment at end-of–period accounting date

Company A (Purchasing side)

(Debit) Emissions allowances futures option	500	(Credit) Profit on emissions allowances futures option	500

Company B (Selling side)

(Debit) Loss on emissions allowances options	500	(Credit) Emissions allowances futures option	500

(4) Specific examples of accounting treatment on the resale date or right exercise date

（Example 2）
After the steps in (Example 1),
Company A resells the option because the option premium has risen to ¥80/ton. (①);
Company A exercises the right and net settles because the emissions allowances futures price has risen to ¥590/ton. (②);
Company A does not settle net when it exercises the option right and acquires the emissions allowances futures. (③)

① Accounting treatment at time of resale

Company A (Purchasing side)

(Debit) Cash	8,000	(Credit) Emissions allowances futures option	6,500
		Profit on sale of emissions allowances futures option	1,500

Company B (Selling side)

No journal entry

② Accounting treatment when right is exercised

Company A (Purchasing side)

(Debit) Cash	9,000	(Credit) Emissions allowances futures options	6,500
		Profit on sale of emissions allowances futures option	2,500

Company B (Selling side)

(Debit) Emissions allowances futures options	6,500	(Credit) Cash	9,000
		Loss on exercise of emissions allowances futures option	2,500

③ Accounting treatment when right is exercised

Company A (Purchasing side)

(Debit) Futures emissions quota	59,000	(Credit) Cash	50,000
		Emissions quota futures option	6,500
		Profit on exercise of emissions allowances futures option	2,500

Company B (Selling side)

(Debit) Cash	50,000	(Credit) Futures emissions quota	59,000
Emissions quota futures option	6,500		
Loss on exercise of emissions allowances futures option	2,500		

(5) Possibilities of applying hedge accounting

Although hedge accounting is thought to be applicable to options transactions, we have omitted an explanation of this topic here because the transaction accounting overlaps with the accounting treatment for forward transactions.