

## Strategy for Global Warming Countermeasures in Europe and Implications for Japan

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### Objective

European countries have been discussing and introducing provisions aimed at attainment of its Kyoto targets positively even though it's not clear that the Kyoto Protocol will come into effect soon. In the early 1990s (before establishment of Kyoto Protocol), the Scandinavian countries were the first to take action on this, when they established specific energy related taxation to counter global warming (hereinafter referred to as "carbon tax"). The number of countries adopting carbon taxation increased after the 3rd Conference of Parties (COP3) to the UN Framework Convention on Climate Change (UNFCCC) at Kyoto in 1997. In addition, some countries initiated studies, trials, and actual instatement of schemes for application of the Kyoto mechanisms and for domestic emissions trading after COP3. This situation forms the background for the scheduled instatement of an emissions trading scheme within the European Union (EU) in 2005. There is a growing possibility that, as the particulars of this scheme become clear, its instatement will have some kind of impact on related measures in the various member countries as well as application of the Kyoto mechanisms by non-EU countries.

This report consequently begins with an overview of the body and background of policy measures to counter global warming in Europe. While presenting and analyzing the orientation for the future, it then attempts to identify areas meriting examination by Japan, considering the strategy behind European measures to combat global warming.

### Conclusions

**1.** Greenhouse gas (GHG) emissions in the EU were 2.3 percentage points below the base year emission level in 2001. The trend since 1990 has moved from flatness to slight increase in recent years. Even with the instatement of the additional measures now under consideration, the level is forecast to exceed the target by 0.8 points around 2010. In spite of the ongoing improvement of energy efficiency after the oil crises and the prospects for a further shift to natural gas, the European Commission is proposing another reinforcement of measures to combat global warming.

### **2. Course of global warming countermeasures in the EU thus far**

- (1) The first global warming countermeasures to be taken in the EU were the carbon tax established by the Scandinavian countries in the early 1990s. Besides countering global warming, the tax was part of the movement for tax reform in correspondence with the economic integration of Europe. It incorporated provisions for mitigation of the impact on the industrial sector to avoid causing a burden gap with neighboring countries. This period also saw proposal of a common carbon tax throughout Europe for the same purpose, but inability to reconcile the interests of various countries have thus far prevented this tax from becoming a reality.
- (2) After adoption of the Kyoto Protocol, countries such as Germany and the United Kingdom introduced carbon taxation (Climate Change Levy), one after the other. Besides mitigation of the burden on certain sectors, the objective included application of revenue to funding for social insurance. At the same time, several countries tested or introduced schemes for domestic emissions trading and application of the Kyoto mechanisms. In short, various approaches began to be taken toward attainment of Kyoto targets.
- (3) EU is going to launch an emissions trading scheme in the industry sector in 2005. The aim is to heighten the efficacy of efforts to attain the EU's Kyoto target while keeping the distribution of the related burden equitable. Particularly notable is the participation in this scheme by Central and Eastern European countries that are being newly admitted into the EU. This will provide access to low-cost emission quotas for existing EU member countries. Although there are apprehensions about ability to attain the target at present, the participation of these countries will open up options including CDM projects.

### **3. Features of strategy in EU countermeasures for global warming**

- (1) The EU is examining and adopting schemes that are grounded in the equitability among the member countries and the international competitiveness of the EU as a whole. Underlying this feature are certain socioeconomic characteristics, i.e., economic integration and the high proportion of inter-regional trade (with other EU members).
- (2) In taxation to counter global warming, steps are being taken to set tax rates and adjust energy taxes to prevent the opening of gaps within member countries. In addition, countries are making provisions for tax reductions and exemptions in the industry sector.
- (3) In recent years, carbon tax has been used as a source of funding for the policy issue of alleviating the burden of social insurance costs.
- (4) Since COP3, the focus has shifted from carbon tax to policy measures aimed at making attainment of the Kyoto target surer and more economical, through active use of means such as the Kyoto mechanisms and emissions trading encompassing the countries of Central and Eastern Europe.

### **4. Differences between Japan and the EU, and implications**

In this area, Japan differs considerably from the EU, as follows: 1) most of its trading partners do not have to meet the Kyoto Protocol targets; 2) it has already achieved a high level of energy efficiency; 3) it has less margin than the EU for fuel switching; and 4) the economic impact of domestic measures is larger as a result. In the view of these differences, the following can be cited as key points of the Japanese strategy.

- (1) Instead of reinforcing the existing policy measures that lack rationality and introducing carbon tax, it should place policy emphasis on a wide-ranging and flexible application of the Kyoto mechanisms to mitigate the economic impact while heightening the efficacy of efforts to attain its targets.
- (2) It should conclude memoranda of understanding (MoU) and otherwise strengthen ties with countries hosting CDM/JI projects in order to increase prospects for smooth execution of such projects and acquisition of emission reduction credits at low cost.
- (3) It should promptly make studies of incentives for application of the Kyoto mechanisms by enterprises and clearly define their orientation in specific terms.

This end carries implications for the current review of existing policy and the Guideline of Measures to Prevent Global Warming. Specifically, it is important to assess existing measures from the standpoint of countermeasure costs and the practicality of target attainment efforts, to place extensive application of the Kyoto mechanisms at the heart of the framework, and to set about the task of constructing the actual schemes.

## **Commentary**

### **1. Trend of and future outlook for GHG emissions in the EU (Figure 1 and Figure 2)**

In 2001, combined emissions of greenhouse gases (GHG; totals for six types of gas) in the 15 member countries of the European Union (EU) were 2.3 percentage points below the base year level (1990 for carbon dioxide, nitrous oxide, and methane, and 1995 in many countries for the three chlorofluorocarbons). They have consequently declined to a level requiring a further decrease of 5.7 points for attainment of the Kyoto target. In addition to the steady improvement of energy efficiency since the oil crises, the factors behind this trend include a further increase in this efficiency in recent years due to the reunification of Germany and a development in the energy supply and demand climate, i.e., the rapid shift to natural gas in the United Kingdom and other countries.

However, GHG emissions in EU increased in both 2000 and 2001, and the GHG emissions projection was revised upward in 2003. In response, the European Commission has pointed out the need for additional policy measures in the effort to attain the Kyoto target.

### **2. Development of global warming countermeasures (Figure 3)**

#### **1) Initial phase (early 1990s)**

The first substantial measures to counter global warming in the EU member countries were the carbon taxation in the Scandinavian countries in the early 1990s. In this phase, a proposal was also made for the institution of a common EU carbon taxation (in 1992), but this has not yet been realized because of an inability to reconcile the interests of the member countries. In advance of COP3, the industrial sector also took voluntary action to reduce emission.

## **2) After COP3**

Following the adoption of the Kyoto Protocol at COP3, Germany, the United Kingdom, and Italy established carbon taxation. At the same time, countries embarked on studies and trials of application of the Kyoto mechanisms contained in the Kyoto Protocol.

## **3) Approaches for the pledged deadline**

Subsequent developments included the institution of a carbon tax and start of a partnership for voluntary efforts in Denmark, establishment of an emissions trading scheme in the United Kingdom, and instatement of provisions for application of Kyoto mechanisms such as ERUPT (Emission Reduction Unit Procurement Tender) and CERUPT (Certified Emission Reduction Unit Procurement Tender) in the Netherlands. In 2005, a scheme for inter-regional emission trading scheduled to be launched in the industry sector.

In 1997, when it was decided to shelve the proposal for a EU-wide carbon tax, a proposal was made for a revision of the minimum energy tax rate, and this was adopted in 2003. Also notable are the common EU frameworks for the promotion of renewable energy, combined heat and power (CHP), and energy conservation that have been proposed and are moving into the phase of execution.

## **3. Carbon tax and the EU emission trading scheme (EUETS)**

### **1) Trend and characteristics of carbon tax**

GHG taxes have thus far been introduced in eight EU countries (Sweden, Norway, Finland, Denmark, the Netherlands, Germany, the United Kingdom, and Italy). Although the rates, subjects, and other items differ depending on the country, the revenues are utilized as a source of general account budget in all.

In the initial phase of imposition, the carbon taxes were introduced as part of larger programs of tax reform in many countries with the economic integration in the EU in mind. In such cases, the institution was premised on maintenance (or increase) in the level of tax revenues, and measures were taken to prevent an increase in the total tax burden by implementing income tax cuts or energy tax reductions. Similarly, provisions for sizeable reductions or exemptions were made for the industrial sector out of concern about the competitiveness of industry sector. In countries introducing carbon tax more recently, they have been positioned as a financial resource for lightening the burden of social insurance costs as the reason for instatement (this is generally referred to as a "double dividend").

### **2) EUETS**

In January 2005, EU is going to start a common emissions trading scheme (i.e., EUETS). The subjects of allocation under the EUETS are installations producing GHG emissions above a prescribed scale, including power generation. The requirements for allocation under this scheme are the preparation by each country of a national allocation plan (NAP) that is in conformance with the Protocol targets, and observance of the rules setting forth the conditions of inter-regional competition (especially as regards "state aid"). Application of CDM/JI credits is under the moderate restriction of conformance with the principle of supplementarity (precedence of domestic measures) expressed in the Kyoto Protocol, but there are to be legal provisions giving enterprises clear incentives for the implementation of such projects.

Meanwhile, the ten Central and Eastern European countries admitted into the EU in 2004 will also participate in the EUETS. This will furnish the current member countries with ready access to the low-cost emission quotas of these new members through the scheme (although the matter will be influenced by the NAPs).

Further in the future, the launch of the EUETS is likely to have an impact on the international emissions trading market as well. Formerly regarded as independent players, the Central and Eastern European countries will be closely linked to the EU, and this will limit access to them from non-EU countries. This, in turn, raises the possibility of a decline in prospects for execution of JI projects by EU enterprises in Russia and other host countries, and a limitation of sales of initial allocations for the EUETS. Japan, too, will probably have its transactions and JI project with Central and Eastern European countries limited. It will have full access only in the case of CDM projects and countries such as Russia, and there is a growing possibility that it will be affected by the monopolization of the market by Russia.

## **4. Strategy for GHG countermeasures in the EU and future outlook**

The following can be cited as the key features of countermeasures for global warming in the EU as described above.

- (1) The EU is studying and adopting schemes that are grounded in the principle of equitability among member countries and enhancement of the international competitiveness of the EU as a whole. Behind this orientation lie certain socioeconomic factors, i.e., the movement toward economic integration and the high proportion of trading between member countries (see Table 1).

- (2) In taxation to counter global warming, steps are being taken to set tax rates and adjust energy taxes to prevent the opening of gaps with other members in keeping with the aims noted in 1) above. Additional policy measures are the provisions for tax reductions and exemptions in the industry sector, the proposal of a common carbon tax, and directives for a minimum tax rate in energy taxes. As this indicates, harmonization of the tax burden has been a constant concern. In recent years, carbon tax has been selected as a means of obtaining funds for the burden of social insurance cost.
- (3) Lately, the focus of the climate policy has shifted from carbon tax to market-based policy measures aimed at making attainment of the Kyoto targets surer and more economical, through active use of means such as the Kyoto mechanisms and emissions trading encompassing the countries of Central and Eastern Europe. Moreover, the future holds the prospect of coordination between the EUETS and the energy/carbon tax schemes, and reinforcement of strategy for attainment of national policy goals (as regards global warming countermeasures and other issues) and maintenance of the competitiveness of EU member countries relative to non-EU countries (see Figure 5).

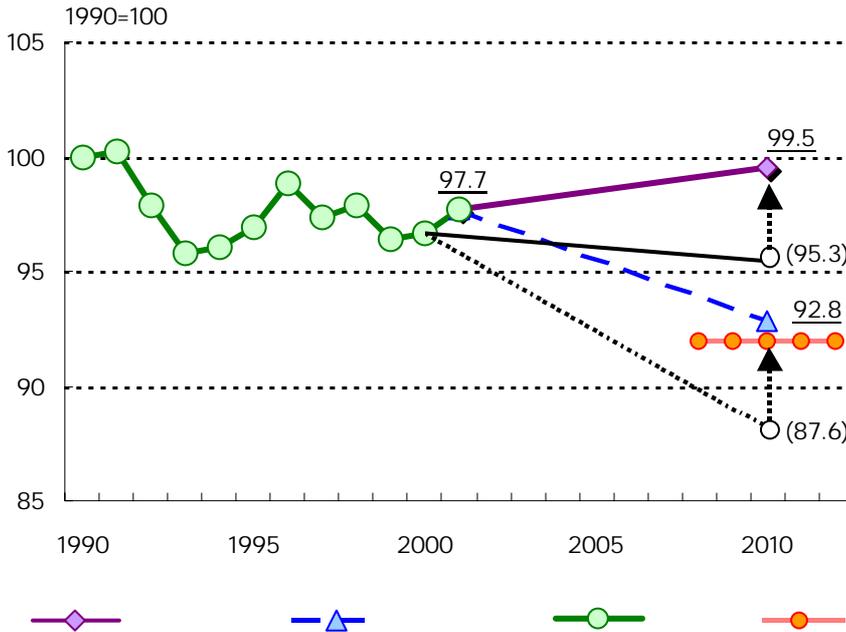
## **5. Differences between Japan and the EU, and implications (Figure 6)**

In this area, Japan differs considerably from the EU, as follows: 1) most of its trading partners do not have to meet Kyoto target (see Table 1); 2) it has already achieved a high level of energy efficiency (see Figure 2); 3) it has less margin than the EU for fuel switching; and 4) the economic impact of domestic measures is larger as a result. In the view of these differences, the following can be cited as key points of the Japanese strategy.

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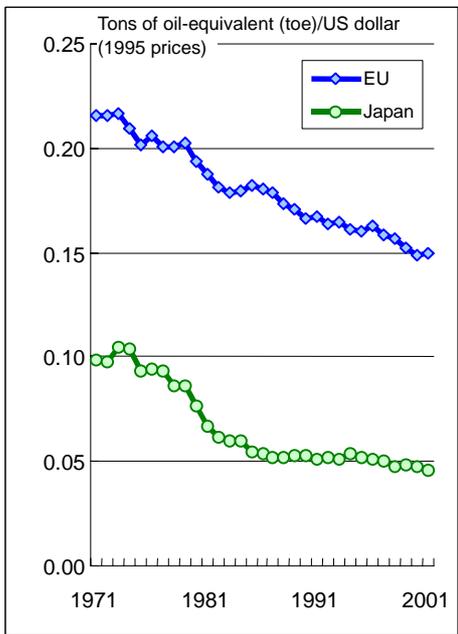
Figure 1 GHG Emission Trends and Projections in the EU



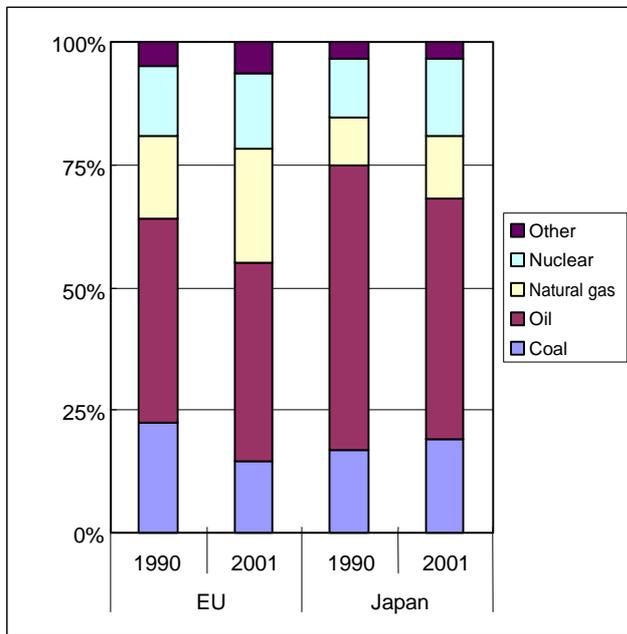
Source: EEA (European Environment Agency), Greenhouse gas emission trends and projections in Europe: Final Draft, 2003.12

Figure 2 Comparison between Japan and the EU in respect of energy efficiency and energy source mix

[Primary energy supply per unit of GDP]



[Breakdown of primary energy supply by fuel]



Source: Prepared with data from IEA, "Energy Balances of OECD Countries"

Figure 3 Development of global warming countermeasures in the EU

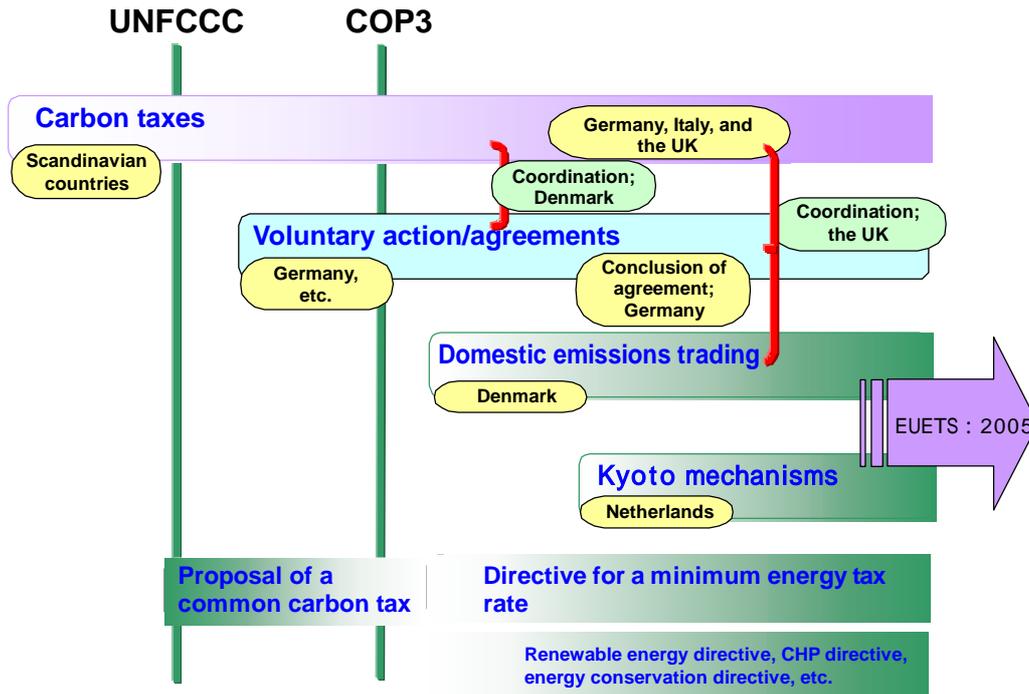
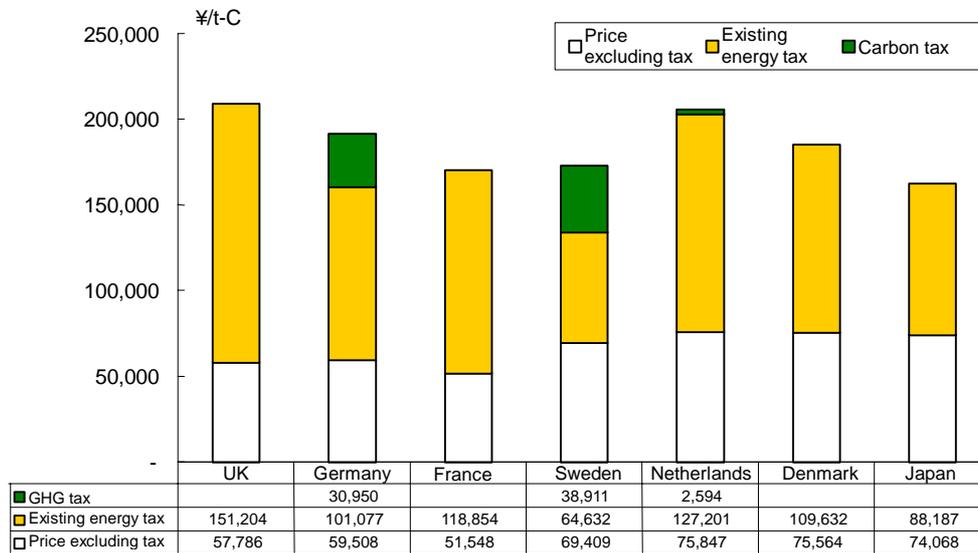


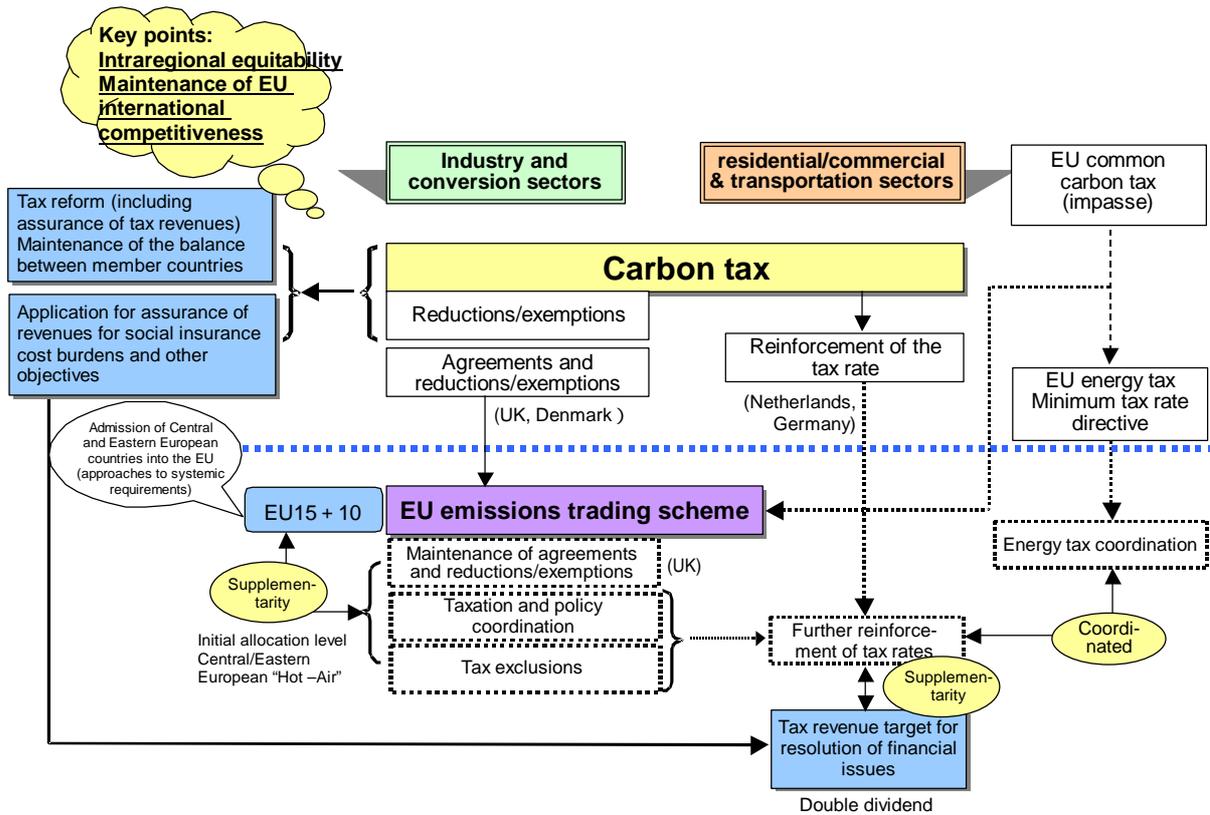
Figure 4 Comparison of Energy related taxes in key European countries



Source: prepared with data from various documentation

Note: data for unleaded gasoline

Figure 5 Coordination of EU global warming policies



Note: Dotted-line boxes indicate events anticipated to occur in the future.

Table 1 Direction of Trade by destination country/region

Exporting country/region	To the US	To developing countries	To the EU	To Japan	To other regions
EU	7.6%	20.3%	62.9%	1.9%	7.2%
(Subtotal: Germany)	8.3%	23.5%	58.2%	2.4%	7.6%
(Subtotal: UK)	13.2%	20.3%	55.3%	2.2%	9.0%
Japan	29.5%	48.0%	17.3%		5.2%
US		42.2%	22.4%	10.0%	25.5%

Source: Takao Aeba, "Kigyo no Ondanka Taisaku Sokushin ni Mukete" ("Toward Promotion of Global Warming Countermeasures among Companies"), "Chosa" ("Survey"), Development Bank of Japan (DBJ), No. 53, May 2003  
 Original source: IMF, "Direction of Trade Statistics"  
 (Note) Figures indicate average over the period from 1990 to 2001

Figure 6 Current status in the EU and Japan

	EU	Japan
<b>GHG emission trend and background</b>	<ul style="list-style-type: none"> <li>• Reduction trend toward the target</li> <li>• Promotion of a shift to natural gas</li> <li>• Improvement of efficiency through the reunification of Germany</li> <li>• Continuation of the trend toward rationalization into the long term</li> </ul>	<ul style="list-style-type: none"> <li>• Shift from a trend of increase to one of flatness in recent years (distance from the target)</li> <li>• Delayed construction of nuclear power plants</li> <li>• Change in the trend of efficiency from flatness to decline</li> </ul>
<b>Degree of difficulty in attainment of Kyoto Protocol targets (cost)</b>	<ul style="list-style-type: none"> <li>• Possibility of considerable coverage through inter-regional measures</li> <li>• Inter-regional trade rate of nearly 70%; relatively small external economic influence</li> <li>• Low cost rating as compared to Japan</li> </ul>	<ul style="list-style-type: none"> <li>• High cost of efforts based on domestic measures alone</li> <li>• Strong economic influence due to increase in countermeasure costs because transaction partners are mainly countries without Kyoto target</li> </ul>
<b>Focus of policy measures (economic aspect)</b>	<ul style="list-style-type: none"> <li>• Equitability among EU countries</li> <li>• Attention to international competitiveness on the regional (EU) level</li> </ul>	<ul style="list-style-type: none"> <li>• Need for reduction of the economic burden as far as possible in light of the high cost of domestic countermeasures and the trade relations</li> </ul>
<b>Actual status of policy measures</b>	<ul style="list-style-type: none"> <li>• Burden sharing agreement</li> <li>• Industrial sector approaches for carbon taxes</li> <li>• Transition from the common carbon tax concept to the energy tax directive and EUETS instatement</li> <li>• Sharing of policy targets for renewable energy, CHP, etc. (Directive)</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of sector-specific targets in the Guideline and reinforcement of existing measures (including green-tax, RPS, etc.)</li> <li>• Voluntary action plans</li> <li>• Pilot projects related to the emissions trading scheme</li> </ul>
<b>Condition of access to CDM/JI</b>	<ul style="list-style-type: none"> <li>• EUETS rulemaking for clear definition of incentives for business establishments and legal handling of transactions</li> <li>• Imposition of "vague" limitations with attention to complementarity</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of application procedures, etc.</li> <li>• Preparation of the environment through information support, OE education, etc.</li> </ul>
<b>Approaches related to the Kyoto mechanisms for target attainment (quantitative assurance)</b>	<ul style="list-style-type: none"> <li>• Participation of Central/Eastern European countries in the EUETS</li> <li>• ERUPT and CERUPT</li> <li>• Conclusion of MoU with host countries and promotion of projects</li> </ul>	<ul style="list-style-type: none"> <li>• Provisions for FS support and subsidization by the national government</li> <li>• Establishment of the carbon fund</li> </ul>
<b>Coming events</b>	<ul style="list-style-type: none"> <li>• Discussion for the NAP (EUETS; including the period beginning in 2008)</li> <li>• Presence/absence of coordination with carbon tax schemes upon EUETS instatement</li> </ul>	<ul style="list-style-type: none"> <li>• Review of existing GHG countermeasures</li> <li>• Study of policy measures for the second step</li> </ul>

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