

Carbon Management Trends, Visualizing and Pricing of Carbon Emissions

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At the Hitachi Research Institute, we conduct multifaceted and comprehensive research into global environmental issues such as global warming and biodiversity conservation. This research ranks high among the major themes about these issues. Greenhouse gas emissions regulations will become stricter, impacting the business opportunities and risks facing all businesses. Subsequently, a crucial management challenge will be to develop the appropriate strategies to deal with an increase in regulation.

A carbon “pricing” policy refers to a policy that focuses on emissions trading and carbon-emissions tax. Emissions trading is a system where a government determines emission quotas on a per-business or per-facility basis, and includes a framework which allows businesses whose emissions are over the quota to purchase credits or allowances from other companies, and also allows businesses whose emissions are below the quota to sell their surplus credits or allowances to other companies. A carbon-emissions tax is a tax levied on users based on the quantity of carbon contained in the fossil fuels they consume. For example, if a business incurs an extra 10,000 Yen in costs for each extra ton of carbon emissions, then in some sense, both an emissions trading system and a carbon tax scheme can be regarded as systems that assign a price to carbon.

A prime example of a carbon “visualization” policy is the Carbon Footprint (CFP) system. This is a system that converts the greenhouse gases generated over the entire lifecycle of a product or service into an equivalent volume of carbon emissions, creating an index which then can be displayed for each product. With the development of CFP methodologies by The Carbon Trust Fund in the United Kingdom in 2007, businesses, such as food manufacturers and drug stores, began to incorporate CFP labeling on their products. Today, there are many activities throughout the world focused on developing CFP systems.

Most recently, our research has focused on emission trading systems as a policy tool to price carbon. In particular, we have concentrated our research on (1) emission trading systems, or related schemes, in Europe, and (2) business solutions to assist companies impacted by

emission trading regimes.

1. Trends in Emission Trading Systems and Related Schemems in Europe

The EU-ETS is a well established system in the European Union. Characteristics of the system are as follows:

1. Key Phases (Phase 1: 2005 – 2007, Phase 2: 2008 – 2012, Phase 3: 2013 – 2020);
2. Covers about 42% of carbon emissions in the EU (with 11,500 facilities subject to the system);
3. Targets direct fuel usage by energy-intensive facilities such as power plants, petroleum refining facilities, iron and steel facilities, and the chemical industry (there is little impact on other types of business and business support operations in the industrial sector);
4. In the allocation of emissions allowances there is an initial gratis allocation based on the equivalent volume of past emissions (with plans to move to an auction based allocation system from Phase 3);
5. Each year, business operators are required to compile a report of their annual emissions and submit the report, together with a third-party verification, to the regulatory agency in their respective country during the period from January to the end of April in the following year.

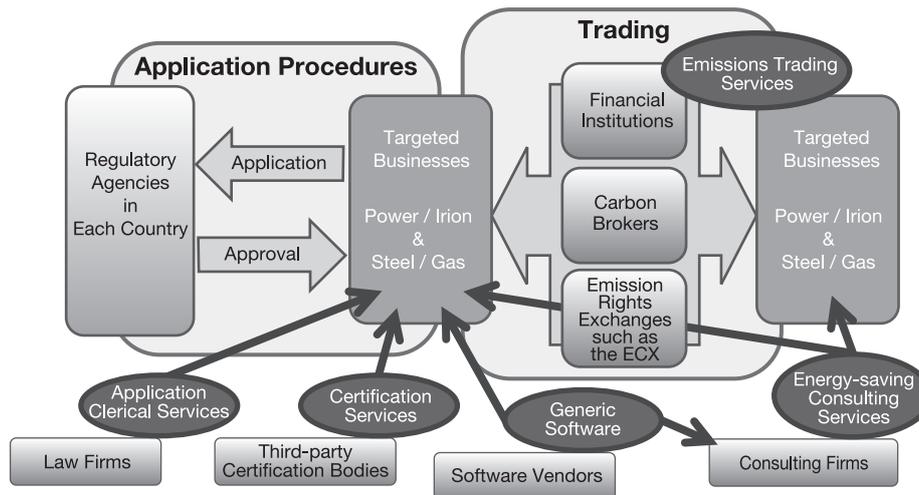
In the U.K. and France, there are separate and independent carbon emission restrictions in addition to the EU-ETS. In the U.K., a new system known as the Carbon Reduction Commitment (CRC) began in April 2010 as scheme targeting the emissions from stores and offices. Under the CRC, businesses are given bonuses (refunds) or penalties based on their performance in reducing carbon emissions (Table 1).

In France, there are also plans to sign a carbon footprint scheme into law and introduce a carbon emissions tax. These policies aim to promote activities and measures to reduce carbon emissions on the part of businesses and the residences which are exempt from the EU-ETS.

Table 1: Emission Trading Systems Applied in the United Kingdom

Emission Trading System	Targets	Number of Establishments Targeted	Volume of Emissions Targeted
EU-ETS (30 European Nations)	<ul style="list-style-type: none"> Large sources of emissions in power generation, industry, and transportation (power plants are subject regardless of size) Targeted on a per-business site basis 	1,140 business sites within the U.K.	256 million tons (roughly 40% of U.K. emissions)
CRC (UK) (Carbon Reduction Commitment)	<ul style="list-style-type: none"> Targets commercial structures with large energy consumption Target business entities 	5,000 businesses	57.5 million tons (roughly 10% of U.K. emissions)

Prepared by Hitachi Research Institute based on publicly available data



Prepared by Hitachi Research Institute based on various materials

Figure 1: Services for Companies Subject to EU-ETS / CRC

2. Business Trends Concerning Emissions Trading

The volume of emissions trading in the EU-ETS currently accounts for about 70% of worldwide emissions trading, and 80% in terms of transaction value, growing into a market worth 73 billion Euros out of the 94 billion Euros of carbon allowances traded worldwide (2009). Business operators subject to the EU-ETS are held accountable on a per-facility basis for their carbon emissions. Interview-based research of local businesses showed that few companies were using special software being marketed by some software vendors to support emissions monitoring and reporting. Most companies utilized tools made available by off the shelf software manufacturers. There were also examples of businesses using existing commodities trading systems to support emissions trading.

There has also been growth in many services aimed at businesses that must comply with the EU-ETS, and these include financial services firms, carbon allowances brokerage firms, environmental consulting companies, and

legal services. Furthermore, in the U.K., where the CRC has been introduced, the demand for these business support services is expected to increase even more.

3. Future Outlook: Consideration of Carbon Footprint Systems

A working subcommittee of the International Organization for Standardization (ISO) is currently undertaking work for the international standardization of CFP systems, which is pegged for completion by the end of 2011. In Japan a demonstration project is currently underway and is proceeding towards final implementation in 2012. Also, on the emissions trading front the next phase of the EU-ETS will start from 2013. Proposed laws which incorporate emissions trading are also being deliberated in Japan and the U.S.

The Hitachi Research Institute plans to continue to research trends in domestic and overseas policies, and track trends in overseas companies impacted by or involved in providing services to companies impacted by emissions trading.