

Korea Environmental Policy Bulletin (KEPB)

Greenhouse Gas Energy Target Management Scheme

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Greenhouse Gas Energy Target Management Scheme

I. Background

- In 2009, the Korean government announced a goal of 30% reduction of greenhouse gases against anticipated emissions (Business As Usual) by 2020 and declared to the world that it will actively respond to the global greenhouse gas reduction and implement systematic low carbon green growth.
- The reduction goal was evaluated to be the best level of the reduction range (15~30% against BAU) which was recommended by the IPCC (Inter-government Panel on Climate Change) to the developing countries.
- To achieve the reduction goal, the 「Framework Act on Low Carbon, Green Growth」 was enacted in January 2010. As a result, the Greenhouse Gas Energy Target Management Scheme was introduced from 2012.
- The Target Management Scheme has the legal basis on the 「Framework Act on Low Carbon, Green Growth, Enforcement Decree Articles 42~45」 and the scheme structure is defined according to Same Act, Enforcement Decree Articles 26~36.
- In the Ministry of Environment Notice No. 2011-29, guidelines were prepared for the greenhouse gas and energy target management and operation.
- The Target Management Scheme is a system to set the goals of greenhouse gas emissions and energy consumption by mutual agreement between the government and firms. Heavy greenhouse gas emissioners and heavy energy consumers are designated as target firms. Goals for greenhouse gas reduction are imposed and their achievements are inspected and managed.
- The scheme was introduced as a political means to effectively achieve the reduction target. In this scheme, the government promotes the achievement of reduction target through incentives and penalties (improvement order, fines, etc.) and the target firms establish implementation plans and supporting management systems to achieve the target.

II. Summary of Scheme

1. Operation System

- The Target Management Scheme is operated by an overall organization which is in charge of the overall system and adjustment function and administrative organizations for each sector which set and manage goals.
 - The Ministry of Environment takes the overall organization role which prepares

comprehensive guidelines, inspects, and evaluates the performance of administrative organizations. The administrative organization for target firms divides the firms or places of business based on the firm which emits the most greenhouse gases or consumes the most energy, and directly performs the work to set the goal for target firms, support their implementation, evaluate achievements and administrative dispositions.

- Industrial and power generation sectors are administered by the Ministry of Knowledge Economy, the waste sector by the Ministry of Environment, the building and transportation sector by the Ministry of Land, Transport and Maritime Affairs, and the agricultural and livestock industry by the Ministry for Food, Agriculture, Forestry and Fisheries.

2. Major Operation Methods

2.1. Designation of target firms

○ Target firms are divided into firms and installation within a firm

- Target firms are selected when the yearly average amount of greenhouse gases emissions from the firm and the energy consumed for the last three years agrees to the target firm designation standard.
- If the greenhouse gas emissions and energy consumption by a place of business agrees to the standard, it is selected as the installation¹⁾. Detail designation standard for target firms is shown in are shown in <Table 1> below.

<Table 1> Designation standard for target firms

Item	Until 12.31.2011		From 1.1.2012		From 1.1.2014	
	Firm based	Installation based	Firm based	Installation based	Firm based	Installation based
Greenhouse gas (tCO ₂)	125,000	25,000	87,500	20,000	50,000	15,000
Energy (TJ)	500	100	350	90	200	80

○ Estimation method is based on the yearly average amount of greenhouse gases emissions from the firm and the energy consumed for the last three years as of January 1 of the pertinent

1) A “firm” means a group of all places of business where same corporation has the dominant influence. An “installation” means each place of business included in the firm. An “installation” is a place, building and associated facilities where a series of activities such as production of goods and provision of service by the same corporation, public organization, or an individual.

year. If there is insufficient data for the last three years due to new establishment, the data including the first year will be used.

- Target firms are designated each year, and if greenhouse gas emissions and energy consumption do not agree to the standard, the firm will be excluded from the target firms even if it was selected in the previous year.
- As of October, 2011, 458 firms are designated as the target firms and their allowable greenhouse gas emissions in 2012 is 598 million CO₂ tons, which accounts for 1.44% (8.7 million tons) of the estimated emissions (606 million CO₂ tons) reduction goal.
- In terms of reduction by sector, the industrial and power generation sector has 8,325 thousand tons, which is 95.4% of the total reduction amount.

<Table 2> Number and allowable emissions of target firms by industrial sector in 2012

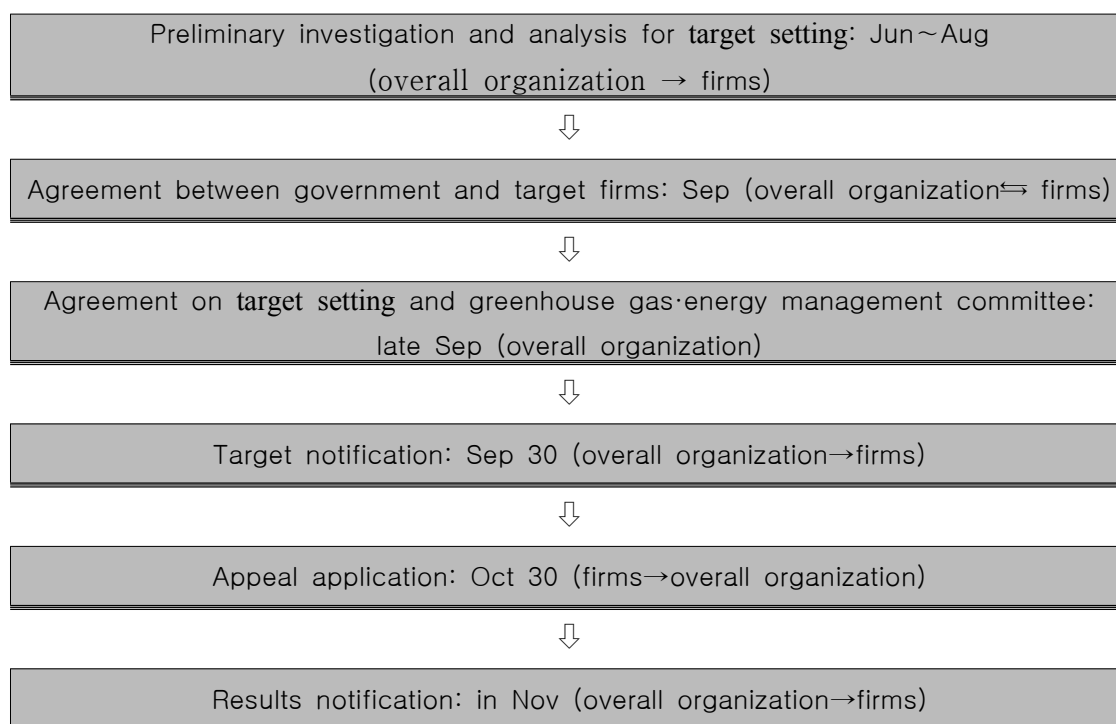
(Unit: thousand CO₂ ton)

Industrial Sector	No. of Business	2012 Estimated Emissions	2012 Allowable Emissions	Reduction Against Estimated Emissions	Reduction Rate (%)
Food and beverage	26	2,766	2,742	24	0.88
Power energy	33	242,924	239,279	3,645	1.5
Steel	38	119,669	118,350	1,320	1.1
Cement	24	50,369	49,864	505	1.0
Petrochemical	76	59,708	58,938	770	1.29
Oil refining	4	34,803	34,354	449	1.29
Semiconductor, display, Electric and Electronic	34	37,358	36,268	1,090	2.92
Paper & lumber	55	9,749	9,605	145	1.49
Nonferrous metals	17	6,181	6,100	81	1.31
Automobile	19	4,462	4,415	47	1.05
Ceramic	20	5,257	5,193	64	1.22
Textile	13	5,534	5,465	69	1.25
Shipbuilding	8	3,349	3,307	41	1.24
Communication	5	3,586	3,516	71	1.97
Mechanical	18	1,969	1,942	27	1.39
Mining	2	240	238	2	0.86
Building	34	3,800	3,716	84	2.2
Transportation	11	4,506	4,466	40	0.89
Waste	21	10,109	9,855	254	2.51
Total	458	606,339	597,612	8,727	1.44

2.2. Setting of emissions reduction targets

- The administrative organization for each sector determines the targets for greenhouse gas reduction, energy saving and energy efficiency by the agreement with target firms. However, the greenhouse gas reduction goal of the target firms must be set within the range of 30% national reduction target against 2020 BAU.
- The target for following year is set by the end of September each year by agreement with target firms. If the target firm was designated for the first time in that year, the goal setting is waived and will be set the following year. Specific procedure for goal selection is describe in <Table 3> below.

<Table 3> Procedure for target setting



- More specifically, the reduction target for each firm is divided by existing facility (started operation before 12. 31. 2010) and new or extension facility (started operation after 1. 1. 2011), determined after reflecting the anticipated growth rate.
- The Setting of emissions reduction target and management is done by adjusting (Compliance Factor) the reduction target (Bottom-Up) by target firms to match the national goal for each business (Top-Down).
- The reference year for the goal target management is for the three years directly before the target firm was selected, and the yearly average for the period is set as the reference

emissions.

- However, if three years emissions data are not available for the target firm, most recent 2 years average or one year date can be used²⁾.

2.3. Emissions Measure, Reporting, and Verification

- Target firms participating in the Target Management Scheme must measure and report all greenhouse gas emissions from the emission activities and emission facilities within the range suggested in the guideline. If there is a emission activity or emission facility to be excluded from the measure and reporting of the greenhouse gas emission, the reason should be clearly presented.
- Target firms must use consistent data collection and estimation methodology so that the greenhouse gas emission by time can be compared and analyzed. If there is a change to the factors related to the estimation of greenhouse gas emission, it should be clearly documented and maintained.
- Target firms must divide the greenhouse gas emission into direct emission and indirect emission, and the greenhouse gas emission should be measured and reported by corporation, installation, emission facility and type of emission activity. Emission activities of greenhouse gases are as shown in <Table 4>.

2) Target setting method based on past performance is adopted so far but a benchmark based target setting will be used as well in the future. "Benchmark" means to compare the achievement and performance of the greenhouse gas emissions per unit activity data such as production with the similar emission facilities or processes in Korea and other countries.

<Table 4> Greenhouse gas emission activities requiring measure and reporting

1. Greenhouse gas emission from fixed combustion facility energy use
1) solid fuel 2) gaseous fuel 3) liquid fuel
2. Greenhouse gas emission from mobile combustion facility energy use
1) aircraft 2) road transportation 3) railway transportation 4) ships
3. Missing greenhouse gas emission (measure and reporting from Jan 1, 2013)
1) mining, treatment and storage of coal 2) crude oil (petroleum) and natural gas system
4. Greenhouse gas emission from production processes and product usage
1) cement production 2) lime production 3) use of carbonate in other processes 4) ammonia production 5) nitric acid production 6) adipic acid production 7) carbide production 8) soda ash production 9) oil refine activity 10) petrochemicals production 11) perfluorochemical production 12) steel production 13) ferro alloy production 14) zink production 15) lead production 16) electronic industry 17) use of substitute material for ozon-layer destruction substance (ODS) 18) other process emission (use greenhouse materials)
5. Greenhouse gas emission form waste treatment process
1) landfill of solid waste 2) biological treatment of solid waste 3) wastewater treatment and emission 4) incineration of waste
6. Indirect greenhouse gas emission from electricity, heat and steam supplied from outside
1) use of electricity supplied from outside 2) use of heat and steam supplied from outside

- All target firms conducts third party verification for the statements prepared by the firm using one of the verification agencies designated and announced by the Minister of Environment.
- When, the verification team consists of 2 or more verification reviewers, one of the reviewers should be from the specialized area.
 - A review team including a verification reviewer who did not participate in the pertinent verification maintains the quality through internal review on the observation of verification procedure and reevaluation of the verification result.
 - The verification procedure is as shown in <Table 5> and an additional verification can be requested if the verification agency acknowledges.

<Table 5> Verification procedure

	Procedure	Outline	Subject
Sta ge 1	Review verification summary	<ul style="list-style-type: none"> ·Review status of verification ·Confirm scope of verification ·Discuss field verification schedule ·Standard for emission estimation ·Confirm data management system 	Verification team + Verified person
	↓		
Sta ge 2	Review documents	<ul style="list-style-type: none"> ·Review implementation plans and statement/ review implementation performance ·Evaluation of validity for greenhouse gas emission based on emission estimation standard ·Evaluate important data and information ·Evaluate data management reporting system ·Check changes to previous year ·Request corrections after document review 	Verification team + Verified person
	↓		
	Risk analysis	<ul style="list-style-type: none"> ·Evaluate important error possibility and error risk related to observance of implementation plan 	Verification team
	↓		
Sta ge 3	Establish data sampling plan	<ul style="list-style-type: none"> ·Important target sampling data and methodology reflecting risk 	Verification team
	↓		
	Establish verification plan	<ul style="list-style-type: none"> ·Scope and method of verification ·Interview target and verification schedule 	Verification team
Sta ge 3	↓		
	Field verification	<ul style="list-style-type: none"> ·Data and information verification ·Calibration of measuring devices ·Check data and information maintenance status ·Check previous verification results and changes 	Verification team + Verified person
Sta ge 3	↓		
	Organize and evaluate verification results	<ul style="list-style-type: none"> ·Organize document review and field verification results ·Evaluate errors ·Determine and request corrective measures ·Verification confirmation review after corrective actions 	Verification team

2.4. Early Actions Performance Recognition

- “Early Actions” is a series of voluntary additional actions by target firms for greenhouse gas reduction prior to target management by the Act Enforcement Decree.
- The purpose of early reduction performance recognition is to properly reflect the early actions of target firms by recognizing the reduction performance prior to target management.

- The early reduction performance is reflected when target firms are evaluated by the performance in principle, and the entire or a portion of it can be reflected in the performance within the range of total annual recognition.
- If a target firm wishes to reflect a portion of the early reduction performance, it can use 4 consecutive times including the first year when the performance was reported.
- The early reduction performance is the amount of reduction by early actions from January 1, 2005 to the year a target firm first set its emission reduction target, and must satisfy the recognition criteria on the early action performance.
- In the Target Management Scheme, only the following can be recognized as the early reduction performance: ① “registered projects for greenhouse gas reduction performance” by the Ministry of Knowledge Economy ② “energy target management pilot project” by the Ministry of Knowledge Economy ③ “energy target management pilot project” by the Ministry of Land, Transport and Maritime Affairs ④ “greenhouse gas emissions trading scheme pilot project” by the Ministry of Environment.
- However, an individual voluntary reduction project which accompanied substantial investment for reduction technology and financial resources can be recognized as the early action by agreement with the Minister of Environment and overall organization for each sector.
- The total amount of early reduction performance each year (total annual recognition) is limited to 1% of the total emissions, and the limit of early reduction performance for a target firm to apply (annual application limit) is less of the product of total annual recognition and early action contribution coefficient³⁾ or the product of allowable target firm emissions and 0.1.

2.5. External reduction performance (offsets) recognition

- The external reduction project means a project to reduce, absorb and remove greenhouse gases outside of the boundary of the firm and target firms can use it for the target implementation performance.
- Recognition of the external reduction project and the external reduction performance should be considered in the scope required to achieve the national goal of greenhouse gas reduction, and implemented considering the related international standards and guidelines.
- Specific information on the type and methodology of the external reduction performance, the

3) Early actions contribution coefficient calculated for each target firm is the target firm's early reduction performance recognition divided by the early reduction performance recognition of the total target firms. Early actions contribution coefficient is calculated each year and the amount previously reflected in the performance evaluation is deducted in the calculation.

feasibility study and registration of external reduction project, the verification of calculation and monitoring of the external reduction performance, and the issuance, registration and maintenance of the external reduction performance certificate should be announced by the Minister of Environment agreement with overall organization for each sector.

2.6. Penalty

- In the Target Management Scheme, if the reduction goal was not achieved or the MRV standard of implementation performance was insufficient, the overall organization for each sector can order target firms to take actions, and notifies the Minister of Environment as an improvement order.
- If the improvement order was not addressed, the overall organization can impose and collect the fine in the 3-10 million Won range depending on the violation activity and number of violations by agreement with the Minister of Environment.

III. Future Plans

- Most of target firms (458) currently participating in the Target Management Scheme are expected to participate in the emissions trading scheme. According to the Greenhouse Gas Emission Trading System Act which was promulgated in May this year, firms that emit more than 25,000 tons of greenhouse gas must participate in the emissions trading scheme (2015).
 - Therefore, installation that emit more than 25,000 tons of greenhouse gases automatically will be switched to emissions trading scheme from the Target Management Scheme in 2015.
 - Also, the method for target setting and measure, reporting and verification (MRV) of the Target Management Scheme will be utilized in the emissions trading scheme.
- Based on the changes and experience with the system, the Target Management Scheme is planned to be continuously improved.
 - For example, the energy use standard at small emission places of business (15TJ → 55TJ) and the gas emission standard for small emission greenhouse (10tCO₂-eq → 100tCO₂-eq) will be alleviated to reduce the burden of target firms by adjusting and simplifying reporting items on the statement while maintaining the accuracy of emission calculation and reporting.
 - In addition, the error on the calculation method for each emission activity and the difficult

applications will be continuously improved, which were requested by target firms and verification agency in the submission process.

- To prepare infrastructure for a successful operation of the emissions trading scheme to be implemented in 2015, an international level measure, reporting, and verification system will be developed in the process of Target Management Scheme.
 - For this purpose, a methodology for introduction of the Smokestack Tele-Monitoring System (TMS), which is the most reliable international method to measure emission amount, and relevant items is scheduled to be applied from 2012 statements.
 - To reinforce the third party verification system which is a core means to secure objectivity and fairness in the control of greenhouse gas emission, the qualifications for verification reviewer should include training and evaluation and verification performance. For flexible operation of the system, the verification reviewers' performance period (2 years → 3 years), registration exception period, and the re-designation of verification agency are planned to be extended.
- The early reduction performance recognition in the Target Management Scheme is planned to be somewhat adjusted depending on the introduction of emission trade system and condition.
 - Target firms which are currently implementing reduction goal in the Target Management Scheme will be designated as the target emissions trading scheme in 2014 and must participate in the emissions trading scheme from 2015. Then, the partial reflection of early reduction performance recognition in the Target Management Scheme will be adjusted from 4 years to 3 years.
 - Meanwhile, the introduction of the bench mark allocation method which was planned to be applied from 2013 goal selection will be determined after comprehensive review of the development status on allocation coefficient and the allocation method of emissions trading scheme.