

# **Korean Emission Trading Scheme**

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# Overview of Korea's GHG Emission

## Current Korea Situation

### ❖ Addressing Global Warming : Korea

- GHG Emission Almost **Doubled** (1990-2012), which makes Korea Highest Growing Emitter in OECD
- Plans for **Green Growth**, while Cutting GHG Emission by 2020
- Try to Introduce a Comprehensive Emission Trading System (ETS) and Carbon Tax (on Discussion)

### ❖ **0.74°C Temperature Rise** Over the Past 100 Years

### ❖ By the End of this Century, Temperature Rises to **6.4°C** and **Sea Level Rises to 59mm**

### ❖ Korea's Emission is Growing Faster than the World Average, Twice the Global Average (**Temperature Change 1.5°C Rise**)

### ❖ Heavy Industry Structure

### ❖ High Energy Dependence (98%)

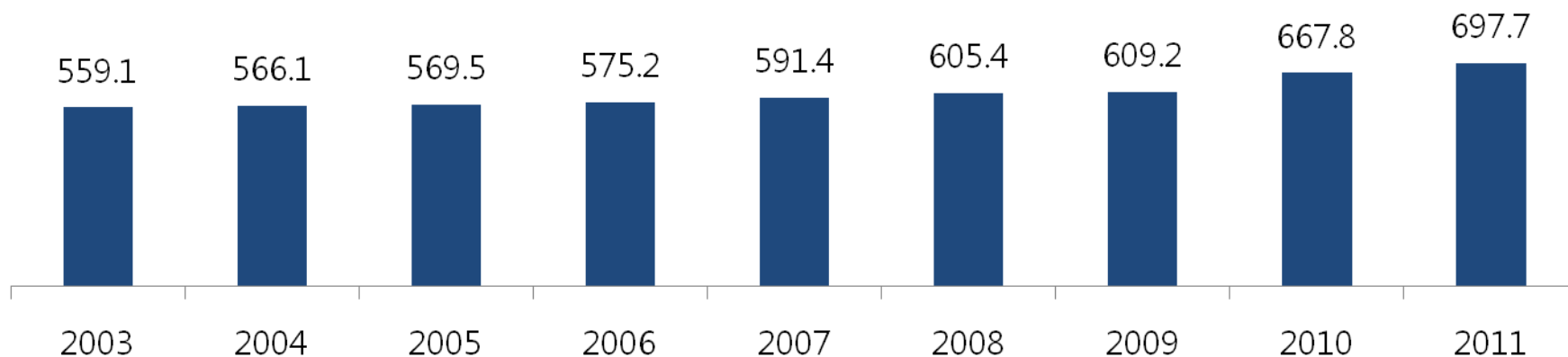
## Voluntary Or Mandatory Reduction Targets for GHG Emission Abroad

Nation	2020 National Reduction Target	Achievement (in 2011)
<b>EU</b>	20~30% Below 1990 Levels	18% Below 1990 Levels
<b>USA</b>	17% Below 2005 Levels	7% Below 2005 Levels
<b>Japan</b>	3.8% Below 2005 Levels	3% Below 2005 Levels
<b>Sweden</b>	40% Below 1990 Levels	16% Below 1990 Levels
<b>Canada</b>	17% Below 2005 Levels	5% Below 2005 Levels
<b>UK</b>	34% Below 1990 Levels	28% Below 1990 Levels
<b>Germany</b>	40% Below 1990 Levels	26% Below 1990 Levels
<b>Korea</b>	30% From BAU (4% Below 2005)	23% Above 2005 Levels

Source: UNFCCC

## Past GHG Emission Records (MT CO<sub>2</sub>e)

Sector	2003	2004	2005	2006	2007	2008	2009	2010	2011
Energy	451.3	459.4	467.5	473.9	494.4	508.8	515.1	568.9	597.9
Industry	68.1	68.3	64.5	63.8	60.8	60.6	57.8	62.6	63.4
Agriculture	22.2	22.1	22.0	21.8	21.8	21.8	22.1	22.1	22.0
Waste	17.5	16.4	15.4	15.8	14.4	14.3	14.1	14.0	14.4
<b>Total</b>	<b>559.1</b>	<b>566.1</b>	<b>569.5</b>	<b>575.2</b>	<b>591.4</b>	<b>605.4</b>	<b>609.2</b>	<b>667.8</b>	<b>697.7</b>
<b>Net</b>	<b>521.0</b>	<b>529.9</b>	<b>533.2</b>	<b>538.4</b>	<b>551.3</b>	<b>562.7</b>	<b>565.6</b>	<b>624.0</b>	<b>654.7</b>
<b>LULUCF</b>	<b>-38.2</b>	<b>-36.3</b>	<b>-36.3</b>	<b>-36.8</b>	<b>-40.1</b>	<b>-42.7</b>	<b>-43.6</b>	<b>-43.7</b>	<b>-43.0</b>



Source : National GHG Emission Inventory Report, 2013

Note : Followed IPCC Guidelines

Net Emission = Total Emission – LULUCF

LULUCF are Land Use, Land-Use Change and Forestry

## Current Situation of GHG Emission in Korea

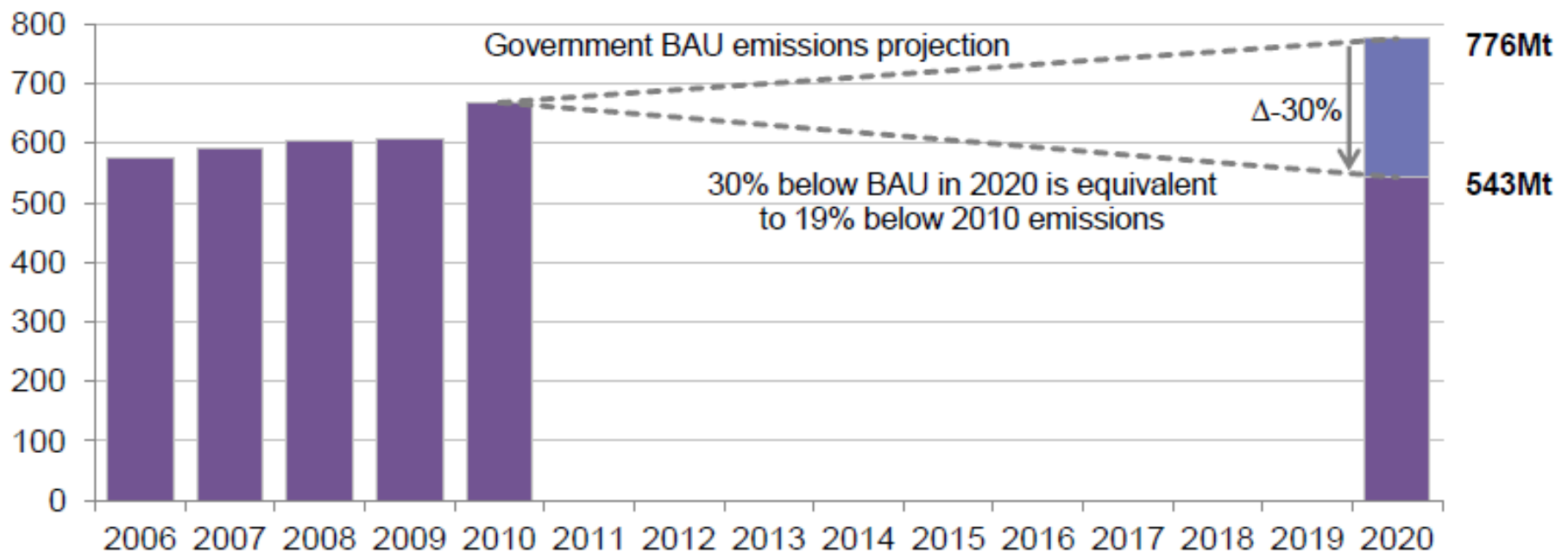
- ❖ According to Ministry of Knowledge Economics, **377 entities in Industry and Power Sectors are under GHG Emission Reduction Target in 2013**
- ❖ GHG Emission in 2013 Forecast at **570 MT CO<sub>2</sub>e**
  - GHG Emission Allowance Set at **553.4 MT CO<sub>2</sub>e**
  - GHG Emission Reduction Set at **17.2 MT CO<sub>2</sub>e**
  - **Twice as much as 2012 GHG Emission Allowance** (set at 8 MT CO<sub>2</sub>e)

Sector	'13 Emission Allowance	'13 Emission Forecast	Emission Reduction	Reduction Rate
Industry & Power (377)	553,429 (96.8%)	570,586 (96.7%)	17,157 (96.3%)	3.00%
Total (480)	571,947	589,778	17,831	3.02%

## Government GHG Emission Forecast

### ❖ Ministry of Environment ; Forecast

- GHG Emission will Reach **776 MT CO<sub>2</sub>e in 2020**, which is **16% Increase** from 2010 Emission (**667 MT CO<sub>2</sub>e**)
- ❖ The Target Limits Korea's GHG Emission to **543 MT CO<sub>2</sub>e in 2020 (19% Reduction** from 2010 Levels)

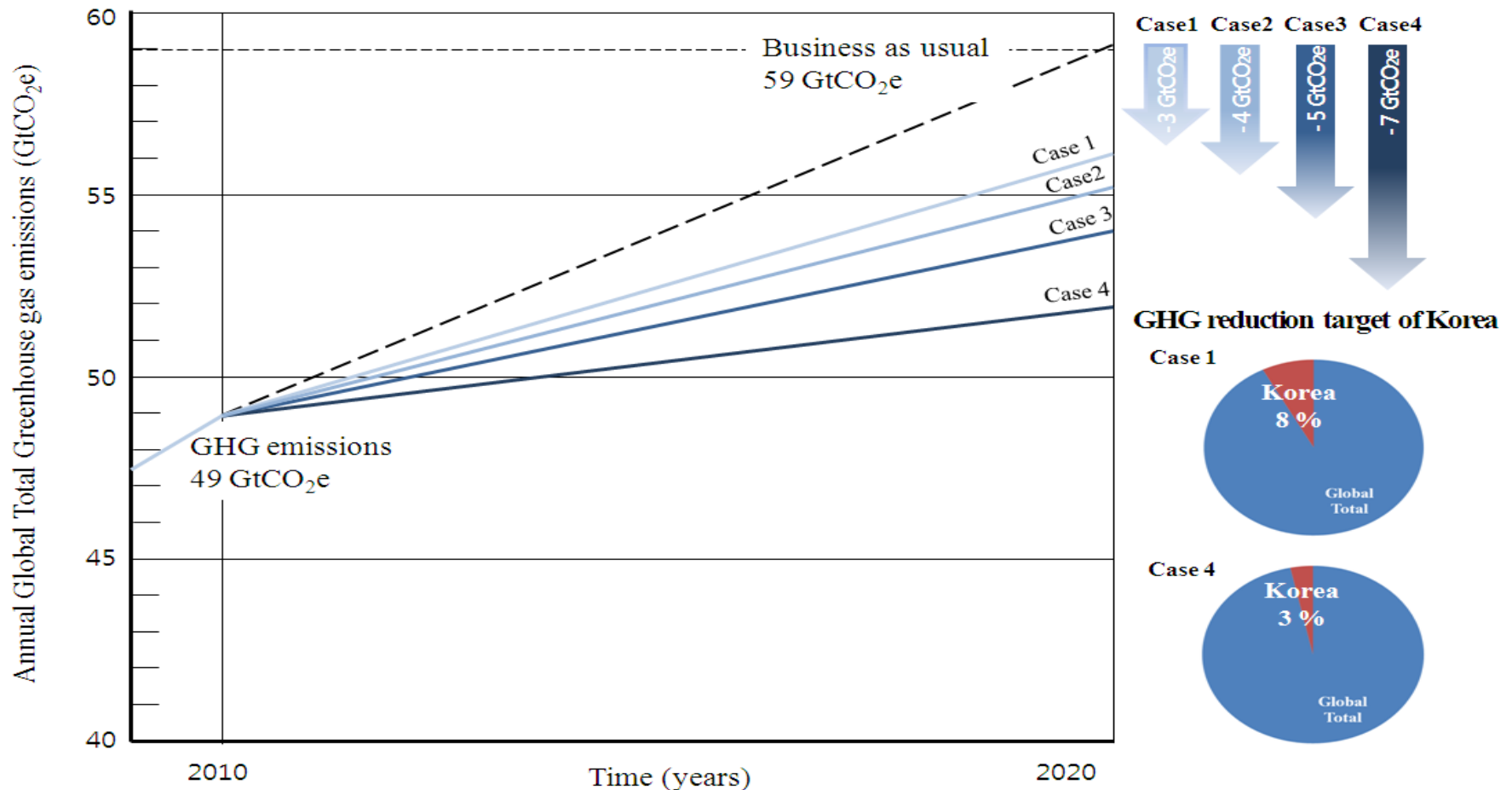


Source : Ministry of Environment

Note : Includes Six Kyoto GHG

## Industry Argument for BAU

- ❖ **Korea's Portion** of Total GHG Emission in the World is **1.4 %**
- ❖ But, 30% from BAU (4% Below 2005 Levels) is equal to **Minimum of 3% to Maximum of 8% of the Portion in the World**





## 2. Policy Measures Prior to Korean ETS

### Target Energy and GHG<sub>s</sub> Management Scheme (TMS)

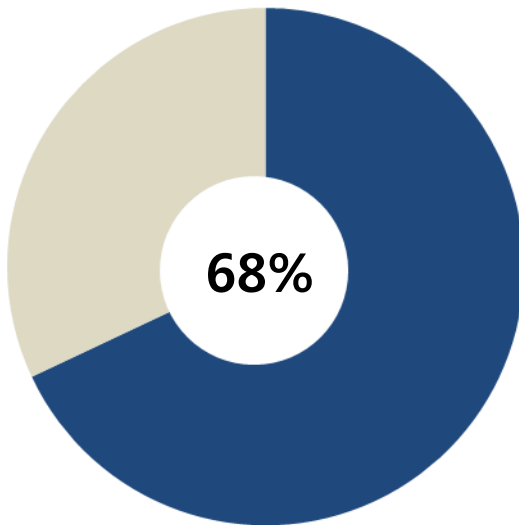
#### ❖ **Command and Control Measure**

- Targets Set through **Bilateral Negotiations**
- **Modest Penalty (max 10,000 USD)** when Targets are Not Met
- Coverage Criteria (from 2014)  
(+50 KT CO<sub>2</sub>e for Businesses, +15 KT CO<sub>2</sub>e for Installations)
- **National GHG MRV System** Established

#### ❖ **Piloting of ETS**

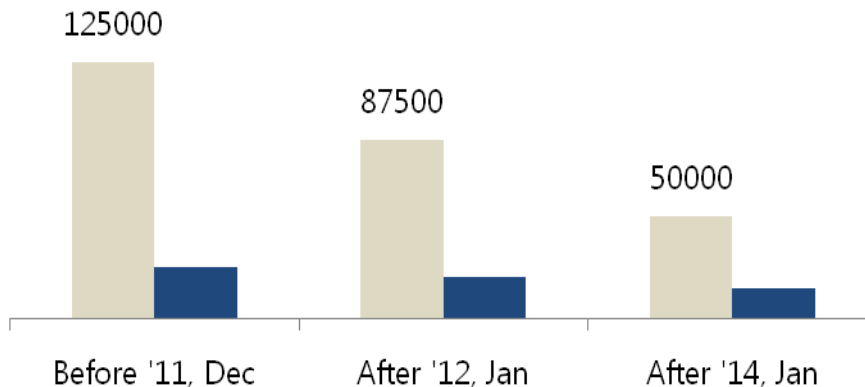
- To Assist Business to be **Better Prepared for ETS**
- Implemented **in Conjunction with TMS**
- **Apply TMS Procedures and MRV Infrastructure**

# Target Management Scheme

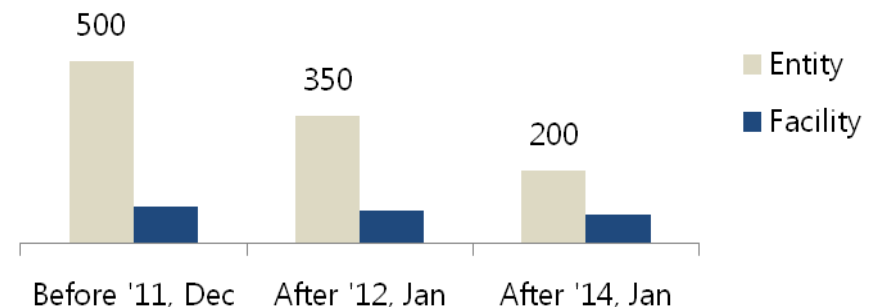


- ❖ **Launched in 2012**
- ❖ **Target Management Scheme Covers 68% of Total GHG Emission**
- ❖ **490 Entities Designated at the End of 2011**
  - Power & Industry (412), Buildings (51), Waste Facilities (27)
- ❖ **580 Entities Designated in 2013**

GHG Emission Criteria (Ton Co2e)



Energy Consumption Criteria (Terajoules)



# 3. Korean ETS

## Recent Landmarks on Korean ETS

- ❖ Until 2020 National Reduction Target Set at **30% from BAU**
- ❖ Korea's Pledge for Reduction (2009, Nov.)
- ❖ **'Low Carbon Green Growth Act Enforcement Decree 25'** (on GHG Emission National Target) (2010, Apr.)
- ❖ **'National GHG Emission Reduction Roadmap'** (2014, Jan.)
  - Setting Sectoral Targets
  - ETS as a Key Strategy policy

## Legislation

Low Carbon Green Growth Act Article 46  
(2010, Jan) (Introduction of ETS)

GHG Emission Allowance Allocation and Trade  
Act and Enforcement Decree  
(2012 , Nov.)

## Key Processes and Legal Plans

	Basic Plan	Allocation Plan and Designation of Entities			Allocation of Allowances	Submission of Allowances
2014	Jan.	Jun.	Early Sept.	Sept.	Nov.	After 2015
	Basic Plan for ETS Finalized	Application for Voluntary Participating Entities	Designation of Compliance Entities  Draft Allocation Plan and Relevant Guidelines & Directives Disclosed	Entities/ Installation  Submit Requests for Allowance Allocation	Allocation Finalized in the Allocation Approval Committee	Submission for Additional Allowances

## Three ETS Phases & Free Allocation

Phase I ('15~'17)	Phase II ('18~'20)	Phase III ('21~'25)
<ul style="list-style-type: none"> <li>•Set ETS</li> <li>•Flexible Operation</li> <li>•Accumulate Infrastructure and Experience</li> <li>•<b>100% Free Allocation</b></li> </ul>	<ul style="list-style-type: none"> <li>• Considerable Emission Reduction</li> <li>• Expand Application Sectors</li> <li>• Advance Allocation Method</li> <li>• <b>97% Free Allocation</b></li> </ul>	<ul style="list-style-type: none"> <li>• Proactive Emission Reduction</li> <li>• Expand Allocation Auctioning</li> <li>• Expand Flexibility</li> <li>• Set Allocation Method</li> <li>• <b>Less than 90% Free Allocation</b></li> </ul>

## 100% Free Allocation for EITE Entities (EITE : Emission Intensive Trade-Exposed)

- ❖ >5% of Production Cost Intensity + >10% of Trade Exposed Intensity
- ❖ >30% of Production Cost Intensity
- ❖ >30% of Trade-Exposed Intensity

## GHG Emission Forecast & 2020 Target

- ❖ 2020 National Emission BAU Forecast at **776.1 MT CO<sub>2</sub>e** (net calorific value)
  - Industry (**439 MT CO<sub>2</sub>e**), Building (**168 MT CO<sub>2</sub>e**), Transportation (**100 MT CO<sub>2</sub>e**)
- ❖ 2020 National Reduction Target Set at **30% from BAU**
  - Transportation (**34.3%**), Building (**26.9%**), Power (**26.7%**), Industry (**18.5%**)

## Key Processes and Legal Plans

### Economic Effects of ETS

❖ **GDP 0.13~0.35%p** Improvement Compared to Target Management Scheme (in 2020)

### Industry Support Measures

- ❖ Free Allocation
- ❖ Financial Support and Tax Favor for Reduction Facilities and Technologies
- ❖ Energy Efficiency Support
- ❖ ESCO (Energy Service Company) Financing

### Meeting International Standard

- ❖ Establish Ties with Global Carbon Markets and International Cooperation
- ❖ Market Stabilization by Maintaining ETS Cap During Compliance Phases
- ❖ No Exception from ETS
- ❖ International Offset Credits from Phase III in Consideration

## Allocation Plan

<b>Name</b>	National Allocation Plan
<b>Purpose</b>	Overall Operation Standard for Cost-Effective Achievement of National Reduction Target
<b>Establishment Foundation</b>	GHG Emission Allowance Allocation and Trade Act Article 5
<b>Compliance Phase</b>	2015.1.1~2017.12.31 (Phase I)
<b>Establishment Subject</b>	Ministry of Environment
<b>Main Contents</b>	Total Emission Allowances, Sectoral Emission Allowances, Allocation Method, Allowance Reserves, Offset Criteria etc.

## Constituents of Allocation Plan

<b>Chapter 1</b>	<ul style="list-style-type: none"> <li>❖ Nature of Allocation Plan</li> <li>❖ Establishment Procedure &amp; Subject</li> </ul>
<b>Chapter 2</b>	<ul style="list-style-type: none"> <li>❖ Application Sectors &amp; Industries</li> </ul>
<b>Chapter 3</b>	<ul style="list-style-type: none"> <li>❖ Set of the Cap</li> <li>❖ Total Allowances &amp; Sectoral Allowances Allocation</li> </ul>
<b>Chapter 4</b>	<ul style="list-style-type: none"> <li>❖ Grandfathering based on Past Emission Levels</li> <li>❖ Benchmarking based on Past Performance Levels</li> <li>❖ Criteria for Additional Allowances, Amendment &amp; Cancellation</li> </ul>
<b>Chapter 5</b>	<ul style="list-style-type: none"> <li>❖ Management of Allowance Reserve</li> </ul>
<b>Chapter 6</b>	<ul style="list-style-type: none"> <li>❖ Operation of Kyoto Protocol Flexible Mechanisms                             <ul style="list-style-type: none"> <li>• Criteria for Banking &amp; Borrowing</li> <li>• Criteria for Pre-Compliance</li> <li>• Criteria for Offset</li> </ul> </li> </ul>
<b>Chapter 7</b>	<ul style="list-style-type: none"> <li>❖ Schedule for Phase I</li> </ul>



# Allocation Plan

## Motivation

- ❖ Cost-Effective Achievement of National Reduction Target by Operating ETS
- ❖ Realization of Creative Economy by Developing Reduction Technology and Promoting Low Carbon Industry

## Direction

### ❖ Direction 1. Compatibility with National Reduction Target

- Set Allowances to Meet National Reduction Target
- Share Responsibility for National GHG Emission Between ETS Compliance Entities and Non-Compliance Entities

### ❖ Direction 2. Fair Allocation of Allowances

- Allocate Allowances Objectively and Impartially
- Support Growing Businesses by Allocating Allowances to Installation Investment

### ❖ Direction 3. Set ETS

- Use Experience from Target Management Scheme for Allocating Allowances and Reporting & Verification (MRV)

## Allocation Coverage

❖ **5 Areas & 23 Sectors**; Following Classification from Target Management Scheme(TMS) and National Emission Reduction

❖ Covered Sectors by **ETS** are also covered by **Target Management Scheme**

Sector	Conversion	Public & Waste	Building	Transportation	Industry	
Industry	Power & Energy	Waterworks Waste	Building Telecommunication	Aviation	Mining Food & Drink Textile Lumber Paper Oil-Refining Petrochemistry Glass & Ceramic	Cement Steel Nonferrous Machinery Semiconductor Display Electric & Electronic Automobile Shipbuilding
Total	1	2	2	1	17	

## Criteria for Compulsory Allocation (by Article 8)

- ❖ Entities with Multiple Installations Producing **Over 125 KT CO<sub>2</sub>e/year in average 3 Years Prior to the Compliance Phase 1 (Company Based)**
- ❖ Installation Producing Over **25 KT CO<sub>2</sub>e/year in average 3 Years Prior to the Compliance Phase 1 (Site Based)**
- ❖ New Entry ; Covered both 1) or 2) during Compliance Phases

## Criteria for Voluntary Participation

- ❖ Entities Applied as Voluntary Participating Entity

## Total Allowances During Phase I

**Compatibility** with **National Reduction Target**

**Fair Allocation** of **Allowances Between ETS Compliance Entities and Non-Compliance Entities**



**Sharing of Reduction Burden** Based on **Past Emission Records**

**Time Flexibility** for Implementing **Reduction Burden**

- Relax Early Reduction and Reinforce Late Reduction
- Linear Reduction Method for Setting the Cap

## Steps for Setting Allowances

<b>Step 1</b>	Assess National Reduction Potential and ETS-covered Sectors Reduction Potential
<b>Step 2</b>	Assess National Reduction Potential by Compliance Year and Industry
<b>Step 3</b>	Assess Allowances by Compliance Year and Industry
<b>Step 4</b>	Assess Amount of Allowance Reserves During Compliance Phases
<b>Step 5</b>	Assess Amount of Pre-Allowances During Whole Compliance Phases
<b>Step 6</b>	Assess Amount of Pre-Allowances by Industry During Compliance Phases

**Allowances by All Industries =  
Pre-Allowances  
+ Additional Allowances (from Pre-Compliance or Banking / Borrowing)**

# Ex-Ante Total Allowances and Allowances by Sector

Sector	Industry	Compliance Year			Total Amount during Phases (1000 KAU (Korean Allowance Unit)
		'15	'16	'17	
Total		573,460	562,183	550,906	1,686,549
	Reserve	88,822			
	Ex-ante Allowance	543,227	532,576	521,924	1,597,728
Conversion	Power & Energy	250,190	245,284	240,379	735,853
Public & Waste	Waterworks	766	751	736	2,254
	Waste	8,920	8,745	8,570	26,234
Building	Building	4,017	3,938	3,860	11,815
	Tele-communication	3,089	3,029	2,968	9,086
Trans portation	Aviation	1,290	1,264	1,239	3,793 22

# Total Allowances and Allowances by Sector

Note : 1000KAU(Korean Allowance Unit)

Sector	Industry	Compliance Year			Total Amount during Phases
		'15	'16	'17	
Industry	Mining	245	241	236	722
	Food & Drink	2,535	2,485	2,435	7,455
	Textile	4,701	4,609	4,517	13,828
	Lumber	384	377	369	1,130
	Paper	7,630	7,481	7,331	22,443
	Oil-Refining	19,153	18,778	18,402	56,334
	Petrochemistry	48,857	47,899	46,941	143,698
	Glass & Ceramic	6,264	6,141	6,018	18,423

# Total Allowances and Allowances by Sector

Note : 1000KAU(Korean Allowance Unit)

Sector	Industry		Compliance Year			Total Amount During Phases
			'15	'16	'17	
Industry	Steel	Non-process	103,285	101,259	99,234	303,778
		F-gas process	675	662	649	1,986
	Nonferrous		6,888	6,753	6,618	20,260
	Machinery		1,416	1,388	1,361	4,165
	Semiconductor	Non-process	8,253	8,091	7,929	24,273
		F-gas process	2,202	2,159	2,116	6,477
	Display	Non-process	6,705	6,574	6,443	19,722
		F-gas process	2,438	2,390	2,343	7,171
	Electric & Electronic		2,877	2,821	2,765	8,463
	Automobile		4,243	4,160	4,076	12,479
	Shipbuilding		2,683	2,631	2,578	7,892




## Basic Method for Allocation

<b>Motivation</b>	❖Assign Industry Allowances to Compliance Entities
<b>Pre-Allocation</b>	❖Assign Allowances to Compliance Entities Before Entering Each Compliance Phase
<b>Additional Allocation</b>	❖Assign Allowances to New Compliance Entities After Entering Each Compliance Phase
<b>Cancellation of Allocation</b>	❖False or Illegal Submission of Allowance, Closing of Whole Facility, ❖When the Compliance Entity has been Stopped Running
<b>Minimum compliance unit</b>	❖Minimum Compliance Unit for Allocation is an Emission Installation Within an Entity Site Base

## Basic Method For Allocation


### Allocation Based on Past Emission : Grandfathering

- ❖ Allocate **Same or Less** Amount of Allowances Based on **Past Emission Records**
  - ❖ Apply in Early Stages of ETS for **Well-Adaptation**
- 

### Allocation Plan of Phase I

**Grandfathering : Most Industries**

### Allocation Based on Past Performance : Benchmarking

- ❖ Allocate Allowances Based **on Past Performance Records of Each Industry** and **Installation Efficiency**
  - ❖ Use **Benchmarking Coefficient to Reflex Installation Efficiency** in Allowances
- 

**Benchmarking : Few Industries  
(Cement, Oil-Refining, Aviation)**

# Additional Allocation, Amendment and Cancellation

## Requirements for Additional Allocation and Amendment

- ❖ Increase in Allowances Due to Change in Allocation Plan
- ❖ Unexpected Opening of New or Additional Installations or Merge of Installations
- ❖ Unexpected Change in Production Line or Business Plan
- ❖ Restriction on Development
- ❖ Contribute to National GHG Emission Reduction with Change in Production

## Requirements for Cancellation

- ❖ Decrease in Allowances Due to Change in Allocation Plan
- ❖ Closing of Whole Installation
- ❖ Not Operating Installation for More Than 3 Months from Due Running Date Without Justifiable Reason
- ❖ Not Operating Installation for More Than 1 Year
- ❖ Submit Allowance in False or Illegal Way



Reserving Part of the Allowances in Case Where Allowances Cannot be Used Completely in Pre-Allocation for Liquidity Management of ETS

Use

Market Stabilization	❖Additional Allowance for ETS Market Stabilization
Early Action	❖Additional Allowance for Early Action
New or Additional Installation	❖Unexpected Opening of New or Additional Installation ❖Merge of Installations ❖Change in Production Line or Business Plan ❖Additional Allowance for Increase in Emission Due to Restriction on Development

	Market Stabilization	Early Action	Other Purposes	Total
Allowances	14,316	41,392	33,114	88,822

Note: 1000KAU(Korean Allowance Unit)

## Banking / Borrowing

	Banking	Borrowing
Importance	❖ <b>Banking</b> Spare Allowances to Next Compliance Year	❖ <b>Borrowing</b> Shortage of Allowance from <b>Next Compliance Year Within Each Phase</b>
Limitation	❖ <b>Unlimited</b>	❖ Up to <b>10%</b> of Allowances in Each Compliance Year
Period	❖ Banking of Allowances <b>Between Compliance Phases is Permitted</b> ❖ Banking of <b>Allowances Between Compliance Years in Permitted Phase 1 and 2, 3</b>	❖ Borrowing within the <b>Phases only</b> ❖ Borrowing <b>Between Each Phase is not Permitted</b>

## Pre-Compliance

Concept	❖Reduction Performance <b>Between Base Date and Before Entering Compliance Phases (2008 – 2014 ??)</b>
Importance	❖Promote <b>GHG Emission Reduction Before Compliance Phases</b> and <b>Prevent Disadvantage from Pre-Compliance</b>
Additional Allocation	❖In the <b>Phase I, Maximum of 2.5% - 3% of Total Allowances for Submission</b> (Enforcement Decree Article 19, Clause 4)
Allocation of Allowance	❖Additional Allocation as Allowance <b>Reserve in the Third Compliance Year of Phase I (2017)</b> ❖ <b>Need MRV and Confirmation process</b>

## Types of Early Action

### Type 1 : Reduction Performance Before Target Management Scheme

- ❖ GHG Emission Reduction Registered Entities (Ministry of Industry)
- ❖ Target Management Scheme Demonstration Entities (Ministry of Industry and Ministry of Land)
- ❖ ETS Demonstration Entities (Ministry of Environment)
- ❖ Voluntary Entities with Investment on Reduction Technologies and Resources which Administrative Agency has Approved Under Agreement with Relevant Governments
- ❖ KCER (???) \_ KEMCO

### Type 2 : Reduction Excess from Target Management Scheme

- ❖ Amount of Over Achievement of Total Emission Reduction Target which Sectoral Administrative Officer has Approved
- ❖ Deduct Amount of Under Achievement of Total Emission Reduction Target

## Importance of Offset and Permission Criteria

<b>Concept</b>	❖ Use Credits in ETS <b>Acquired from Reducing Emissions</b> Made at <b>Outside of the Property of the Entity</b>
<b>Importance</b>	❖ <b>Provide Flexible Mechanisms for Emission Reduction</b> Other Than ETS
<b>Additional Allocation</b>	❖ <b>Maximum of 10% of Total Allowances for Submission</b> (Enforcement Decree Article 38, Clause 4) Maximum of 10% of Total Necessary Allowances for Submission
<b>Holding Criteria</b>	❖ Produce <b>Genuine</b> Additional Emission <b>Reduction or Improvement</b>  ❖ Except Emission Reduction from Production Decrease or Maintenance purpose



## Criteria for offset Credits

- ❖ Voluntary Measure Made at **Outside of the Property of the Entity**
- ❖ **Only Domestic Offsets During Phase I** are eligible
- ❖ **Not an Obligation Under Any Legislations or Regulations**
- ❖ Produce **Genuine Additional Emission Reduction** that would not Otherwise have been Undertaken in General Business Environment
  - **Additionally Condition**
- ❖ **Continuous, Quantifiable and Verifiable** Offsets
- ❖ Offsets which has Applied **Methodology** Approved by the **Verification Committee**

## 4. Conclusion and the Road Ahead

- ❖ Make Market Work Effectively and Efficiently in the 1st Phase
- ❖ Integrate and Coordinate with the other Related Policies
- ❖ **Time Flexibility** for Implementing **Reduction Burden**
  - GHG Reduction: TMS, Carbon Tax (Recent Proposed by Legislators)
  - Energy Sector: Renewable Portfolio Standard (RPS)
  - Retail Electricity Price Reregulation
- ❖ Include and Enlarge Non-Manufacturing Sector
- ❖ Give More Incentive to the Industry Sector
- ❖ Create More Innovative ETS ;
  - Building or Individual ETS for Transportation
- ❖ Build East Asian-Country ETS ; China, Japan and Korea

- ❖ Lessen the Burden on ETS Compliance Entities
- ❖ Ease the Restrictions on the Use of Both Domestic and International Offsets
- ❖ Linkage with the Regional Pilots or a Future National Scheme in China is Likely to Reduce the Cost of Compliance for Entities
- ❖ Move Towards a High Share of Auctioning as soon as possible
- ❖ Remove Restrictions Placed on Third-Party Participation in the ETS
- ❖ The Power Markets **Need to be Liberalized to Allow Power Prices** to Rise in Line with Operating Costs (Big Huddle)
- ❖ Timeline for Reporting and Compliance are Brought Forward from the Currently Proposed Three and Six Months by as much as possible

## For Companies

- ❖ Companies Need to be Prepared to Participate in the Scheme, and will need to Reshuffle their Resources to Meet the Additional Administrative Burden of ETS Compliance
- ❖ It is Necessary for Companies to Fully Understand the Impact of the Program on their Business and Establish the Strategies that can Maximize Any Opportunities and Minimize Risk



# Thank You for Your Attention

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