



Green Logistics

Korea's GHG mitigation policies in logistics

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An illustration of a green logistics concept. It features a blue and white cargo plane flying through a blue, cloud-like shape. Above the plane, there are several white dots connected by lines, suggesting a network or data flow. The text 'Green Logistics' is written in a light blue font above the plane.

Green Logistics

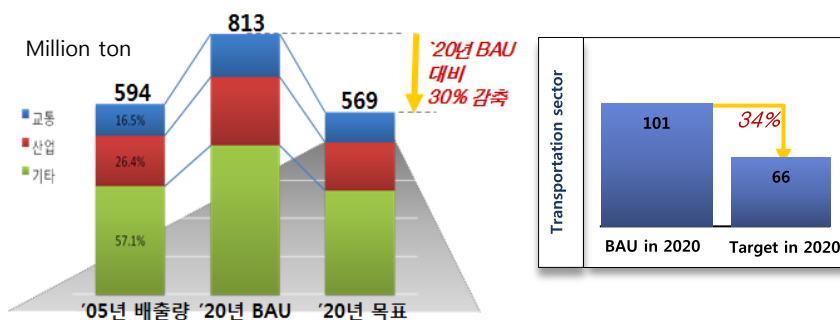
Chapter |. GHG mitigation national target and policies in logistics

National GHG emission reduction target

Established the Master Plan for Sustainable Transport Logistics Development

- The Government established the Sustainable Transportation Logistics Development Act in 2009 and established the Master Plan for Sustainable Transport Logistics Development in 2011 in order to respond to a change in transport logistics conditions
- Master Plan Presented the promotion of modal shift, 3PL, common logistics and green logistics technology

Greenhouse gas reduction target in Korea until 2020



Outlook of greenhouse gas emissions by means in 2020

- 2020 BAU in transportation sector

(Unit: Ton)

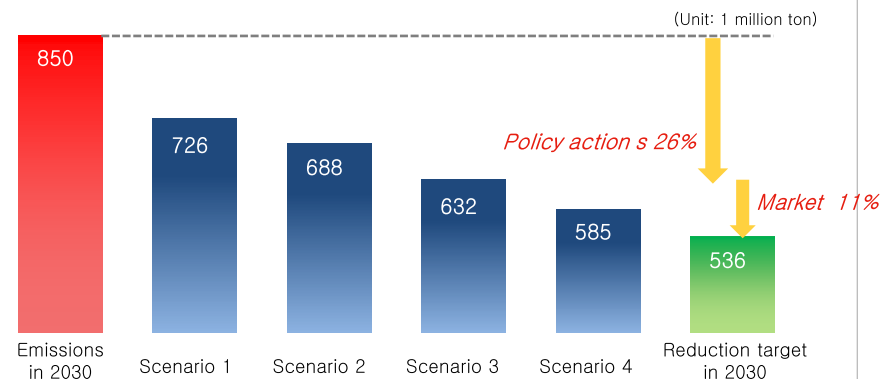
Classification	Road	Railway	Shipping	Air traffic	Total
Total	95,278,681	827,994	3,362,227	1,106,864	
Passenger	62,898,066	632,016	244,793		100,575,766
Cargo	32,380,615	195,978	3,117,435	1,106,864	

Note: greenhouse gas emissions excluding international bunkering

Post-2020(new climate system) Greenhouse gas reduction target

- Outlook of greenhouse gas emissions in 2030 (BAU) – estimated as 850 million Ton
 - Estimated the outlook of greenhouse gas emissions based on major economic variables including rate of economic growth, oil price and industrial structure
- Established **37% reduction target in comparison to the estimated greenhouse gas emissions BAU**
 - Reducing greenhouse gas using international markets (11.3%)

Classification	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Reduction level	726 million ton (14.7% in comparison to BAU)	688 million ton (19.2% in comparison to BAU)	632 million ton (25.7% in comparison to BAU)	585 million ton (31.3% in comparison to BAU)



Domestic greenhouse gas emissions and cargo transport status

Trend of energy consumption and GHG emissions

Energy consumption

- Annual energy consumption (2015): 218,608,000 TOE/year, showing an annual average **4.37%** increase.
 - **Transport 18.4% of total**
- The energy consumption from the logistics field : **37.1% of total energy consumption in transportation field**
 - **road (77.7%)**, coastal shipping (16.1%), air (5.7%) and rail (0.5%)

Greenhouse gas emissions

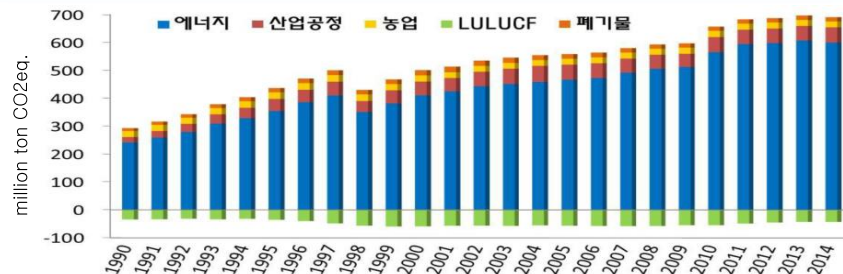
- Domestic greenhouse gas emissions in 2014 were 690.6 million Ton, showing a 3.6% annual average increase.
 - **Transport 14.8% of total**
- Logistics field : **35.4% of total GHG in transportation field**
 - **road (96.2%)**, coastal shipping (2.6%), air transportation (0.9%) and railway (0.3%).

Cargo transport performance status and outlook

Status/prospect

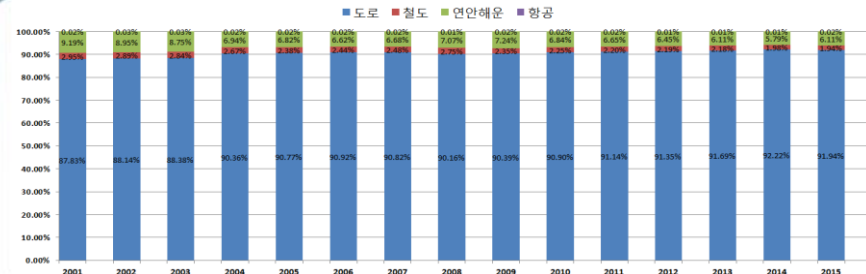
- Total cargo freight volume (2015) : 1,915 million tons, showing a **1.9%** annual increase.
 - **road (91.9%)**, coastal shipping (6.1%), rail (1.9%) and air (0.02%).
- Total domestic cargo transport performance in 2015 is 173,745 million ton-km, showing a 1.66% annual increase, and it has been increasing steadily since 2009.
- The future cargo freight volume is 2,413 million ton/year in 2030 and 2,763 million ton/year in 2040, showing a **1.48%** annual average increase.
 - For the rate of increase by mode of transportation, air cargo shows the highest rate (2.4%) and the coastal shipping cargo shows the lowest rate (1.3%).

Greenhouse gas emissions by sector



※ greenhouse gas emissions excluding international bunkering

Domestic cargo transport share by year and mode



Greenhouse gas emission reduction policies in logistics



Master plan for sustainable transport logistics development(2011)

Policy roadmap to achieve national GHG reduction target in transport

- Transport sector national GHG emission reduction target 2020 – 34.3% reduction from BAU
- Strategies in logistics sector:
 - Converting to more energy-efficient mode, technology
 - More efficient logistics network

Revitalization of 3PL and common logistics

- Self logistics and second party logistics converted to third party logistics
- Improve the level of the third party logistics service

Green logistics technology

- Support greenhouse gas reduction and energy efficiency business of shippers and logistics companies → Support logistics energy management system, electric heat accumulation type cooling and refrigerating equipment and air spoiler

Shifting to railway and coastal shipping

- Subsidy to road→rail and coastal shipping
- Integrated shipping network
- Efficient operation
- Recruit coastal shipping crew

LNG hybrid cargo vehicle

- Support LNG + diesel hybrid cargo vehicle for reducing greenhouse gas and exhaust gas emissions

Green port

- Improve port rail network
- Intelligent load/unload system
- Improve electricity network for port

ITS system

- ITS system → indirect effect to the reduction of greenhouse gas emission
- Example, Korea Expressway Corporation implements electronic payment for highway toll (Hi-Pass) collection and provision of traffic information.

Greenhouse gas emission reduction policies in logistics

Greenhouse gas reduction policy cases

Common logistics support

- Subsidize local government's common logistics support consulting (finding a success model and reinforcing competitiveness of local logistics industry)

- Local governments applies to central government for support 50% of required consulting costs (up to 100 million KRW)
- Program types : local Industry, logistics blind spot, and creative suggestion
 - Industry: industrial complex, port, rail station
 - Logistics blind spot: rural area, remoted islands
 - Creative suggestion: traditional market, etc.

Support range and scale

Subsidy for modal shift

- Provide subsidy to cargo switched from road transport to railway transport and/or coast shipping to improve eco-friendly cargo transport performance

- Shippers and logistics service operators are targets for agreement with central government
- Under agreement, provide subsidy within the limit of social-environmental cost that can be saved by switching
 - Subsidy upper limit within 30% of social environmental cost saved

Support range and scale

Green logistics support

- Provide subsidy to shippers or logistics companies energy efficiency enhancement systems in their business

- Candidates selected by company size
 - Subsidy to small and medium enterprises up to 150 million KRW
- Give an additional point to an excellent companies practicing green logistics during the candidate selection assessment
- Support logistics energy management system, vehicle performance recorder, facilities to increase load factor, etc.

Support range and scale

Greenhouse gas emission reduction policies in logistics

Greenhouse gas reduction policy cases

Entitlement of excellent green logistics company

- Stimulate green logistics activities of logistics industry

- Receive an application for the designation of excellent companies practicing green logistics from shippers or logistics companies
- Evaluation standard for excellent companies practicing green logistics
 - Facility, vehicle management, business plan, performance, etc.
- Benefits for designation and incentives
 - Designated companies have eco-friendly company advertising effects
 - Priority in moving into logistics terminal and logistics complex
 - Candidates for green logistics support program

Support range and scale

Logistics energy target management agreement

- Support participants in voluntary agreement of logistics energy target management

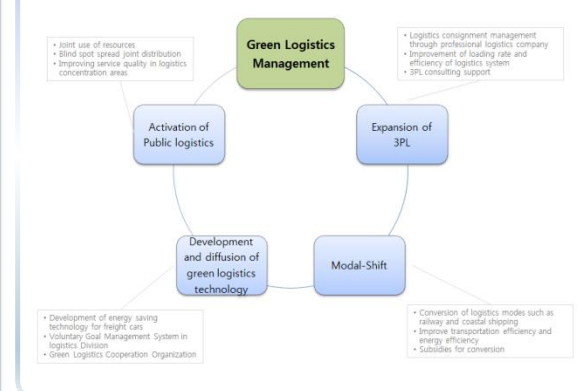
- Support the establishment of greenhouse gas inventory
 - Measurement and analysis of energy usage
- Support greenhouse gas reduction technologies education
 - Consulting of reduction technologies
- Check performance of participating companies
 - Review emissions and implementation plan
 - Support managing the reduction performance toward target of each company by using KOTEMS(integrated emission management DB)

Support details

Green logistics consultative group


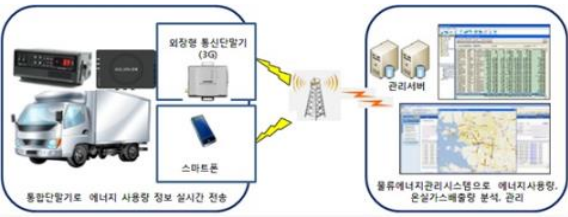




Green logistics management



Greenhouse gas emission reduction policies in logistics

Greenhouse gas reduction technology and business cases

Tech/business	Contents
Introduction of PCM vehicle	<ul style="list-style-type: none"> Improve cooling/freezing efficiency and fuel efficiency through the introduction of PCM delivery vehicles  <p><Components of PCM delivery vehicle></p>
Attachment of integrated terminal for energy management system	<ul style="list-style-type: none"> Attach the integrated terminal to delivery vehicles to monitor fuel usage and driving habits in real time  <p><Establishment of greenhouse gas management system through integrated terminals></p>
Weight reduction of vehicle	<ul style="list-style-type: none"> Reduce the weight of delivery vehicles (cargo box) through the modification of structure and material Expect the reduction of vehicle production costs and the improvement of fuel efficiency

Tech/business	Contents
Air resistance reduction equipment	<ul style="list-style-type: none"> Install air resistance reduction equipment for delivery vehicles including air spoiler, side skirt and boat tail Improve fuel efficiency and reduce greenhouse gas emissions through the reduction of air resistance  <p><Installation of air spoiler></p>
Large delivery vehicle	<ul style="list-style-type: none"> Introduce large vehicles to large workplaces with heavy freight volume Expect the decrease of empty vehicle rate and the improvement of load factor
Common logistics	<ul style="list-style-type: none"> Install a cross dock center and replace 5~6 times of small vehicle operation with one time of large vehicle operation Reduce fuel usage and greenhouse gas emissions by reducing the number of vehicle operation and travel distance  <p><Operation of Cross Dock Center></p>
Introduction of LED light	<ul style="list-style-type: none"> Introduce high-efficiency LED light in the logistics center Reduce electricity consumption

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Chapter II. GHG mitigation policies in logistics toward 2030

MRV issues of greenhouse gas emissions in logistics

Uncertainty in
data

MRV system
enhancement

- Enhance the MRV system for calculating greenhouse gas emissions in national and corporate levels
 - Urgent to enhance the MRV system for calculating greenhouse gas emissions in national and corporate levels and to improve its accuracy in order to establish greenhouse gas reduction policies and promote business
 - Needs to diagnose emissions calculation by company and to calculate emissions according to management purposes
- Need methodologies and experiments needed for calculating estimated reduction amount by reduction technology and business.
 - Present the experiment and calculation methods for greenhouse gas emissions calculation

Greenhouse gas reduction policies toward 2030

Quantification of target reduction amount

- Calculate practical greenhouse gas reduction amount in logistics until 2030

- Check mid-term and long-term greenhouse gas reduction plans in logistics field and draw improvement measures

Establishment of implementation plan

- Establish the implementation plan for each reduction business and expand support in national level

- Classify the business types in logistics field and analyze a possibility to participate in the emissions trading scheme

- Analyze the effects on the logistics industry and expected effects according to setting of greenhouse gas emissions reduction target

Implementation performance evaluation and management

- Establish a management organization and evaluation system for evaluating implementation performance by reduction business

- Present the greenhouse gas emissions calculation methodology and guideline in logistics field

- Find and link carbon reduction business in transportation field with relevant systems continuously

Enhancement of MRV system

- Continuously enhance the MRV system and develop the calculation methodology in national and corporate levels

- Improve the management organization system for managing the greenhouse gas reduction target and implementing long-term plan

- Prepare differentiated support measures separately for the emissions trading system and the target management system

Finding of reduction business

- Find GHG reduction business cases that can help saving logistics expenses

- Establishment of greenhouse gas emissions-related integrated management system

Expansion of support and promotion

- Expand support and promotion in government level for improving companies' recognition of social responsibilities

- Expand education and promotion according to the introduction of emissions trading system

- Identify participating companies based on the designation criteria of target companies for allocation

Greenhouse gas reduction policies toward 2030

Tasks	Direction of actions
Needs to classify the business types in logistics field and analyze a possibility to participate	<ul style="list-style-type: none"> • Emissions trading scheme requires more clear MRV system than the target management system → Introduce the emissions trading scheme in long term plan • The classification of business types in logistics field and the analysis of the possibility of companies' participation in advance.
Present the greenhouse gas emissions calculation methodology and guideline in logistics field	<ul style="list-style-type: none"> • Needs to review problems in current greenhouse gas emissions calculation method and develop Korean-style greenhouse gas emissions calculation methodology
Prepare support measures separately for the emissions trading system and the target management system	<ul style="list-style-type: none"> • A logistics company with relatively high emissions may become participant of emissions trading scheme • Needs to expand financial support in government level to participating companies
Find carbon reduction business in transportation field continuously	<ul style="list-style-type: none"> • The participation of relevant authorities and experts in the emissions trading scheme operation should be guaranteed and it is necessary to find carbon reduction business and support measures. • It is necessary to expand the investment on eco-friendly technology development in the transportation field and to make a system for recognizing the previously obtained reduction credit
Improve the organization for managing the greenhouse gas reduction target and implementing long-term plans	<ul style="list-style-type: none"> • Needs to prepare the management organization that can respond to a change in the market promptly and actively • Needs to enhance inter-ministry cooperation and integration of GHG management systems under different ministries

Greenhouse gas reduction policies toward 2030

Tasks	Direction of actions
Establishment of greenhouse gas emissions DB management system	<ul style="list-style-type: none"> • DB system for analyzing the greenhouse gas emissions by company is necessary <ul style="list-style-type: none"> – The greenhouse gas emissions management system links available greenhouse gas reduction technologies with costs
Check mid-term and long-term greenhouse gas reduction plans in logistics field and draw improvement measures	<ul style="list-style-type: none"> • Needs to check the mid-term and long-term greenhouse gas reduction target and master plan in logistics field established in 2011 <ul style="list-style-type: none"> – Identify the achievement of greenhouse gas reduction target until 2020 and re-set the improvement measures and master plan through the checking of mid-term and long-term greenhouse gas reduction plans set previously • Needs to check the setting of greenhouse gas reduction target in national level and the effectiveness of previous reduction policies in logistics field
Analysis of effects from the introduction of greenhouse gas emissions trading system	<ul style="list-style-type: none"> • There is high probability that the logistics service cost increases due to the allocation of emissions to the logistics industry, and it is necessary to analyze the effects by industry according to the introduction of trading scheme since the burden of consumers and manufacturers grows heavier.
Education of companies	<ul style="list-style-type: none"> • Provide education programs to logistics companies on greenhouse gas emissions trading scheme • Companies need to enhance MRV further in order to identify greenhouse gas reduction performance in their workplaces.

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Logistics Technology Innovation
With People, Society and Environment

Thank you.

