The 10th Public and Private Joint Forum in Asian Region

Greenhouse Gas Emissions Status and Reduction Strategy in Korea

2019. 12. 4

KOTSA : KOrea Transportation Safety Authority
KATRI : Korea Automobile Testing & Research Institute

KOTEMS

Korea Transport Emission Management System (https://www.kotems.or.kr)

KOTEMS Korea Transport Emission Management System

한국어 | English

KOTEMS | GHG Emissions | GHG Target Scheme | Evaluation of GHG Reduction | Sustainable Index

What is KOTEMS? · Climate Change

KOTEMS

- What is KOTEMS?
- Climate Change

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Introduction to KOTEMS

What is KOTEMS?

› To systematic managing GHG(Green House Gas) from transportation sector, consists of the following three.

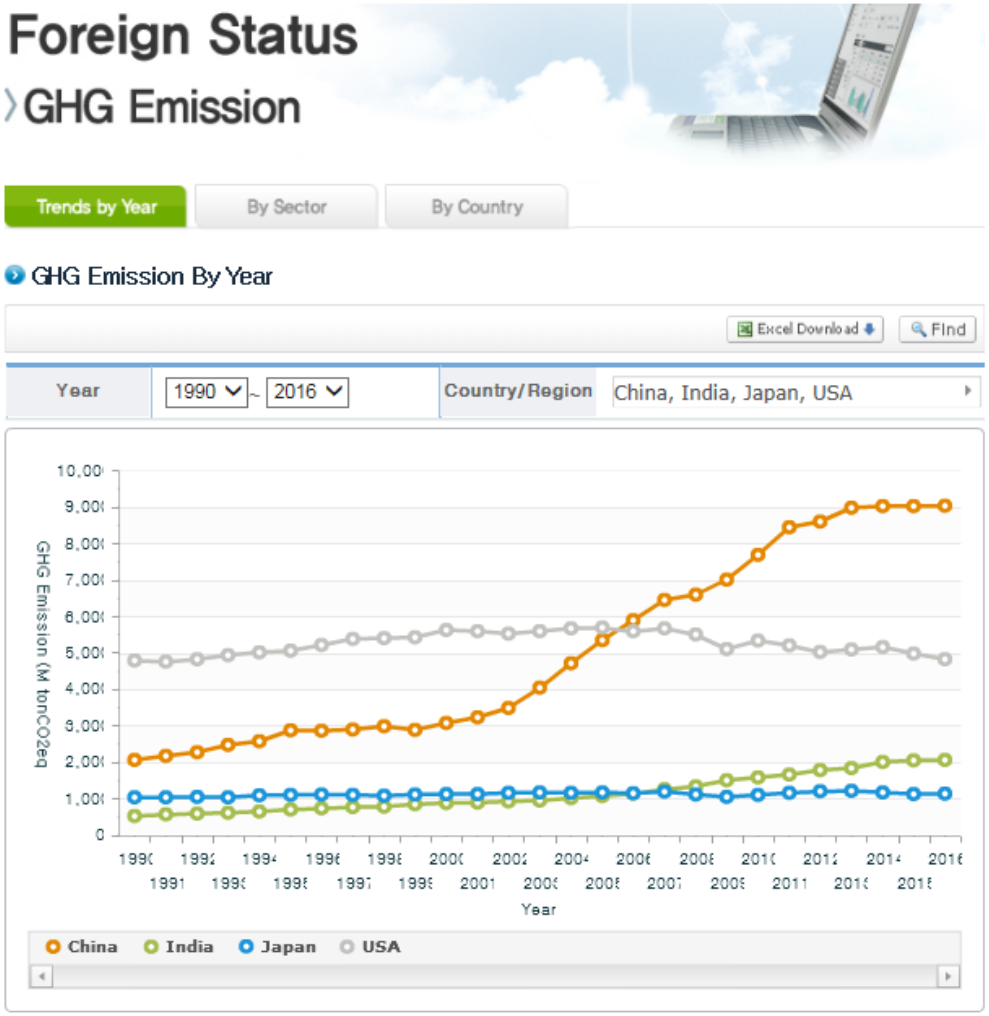
- Emission information system to managing GHG inventory.
- Target management system to managing transport sector company's GHG emission as VA(voluntary agreement)
- Transport policy to predict changes caused by GHG reduction evaluation system.

Development Background

As a GHG reduction policy management institution, Ministry of Land, Infrastructure and Transport promoting policies that reduce greenhouse gas emissions. It establishing In 2009 'Green Transport Strategy' and In 2011, 'the first sustainable development of nationaltransport logistics master plan'

1. GHG Emission Status

Foreign Status GHG Emission By year



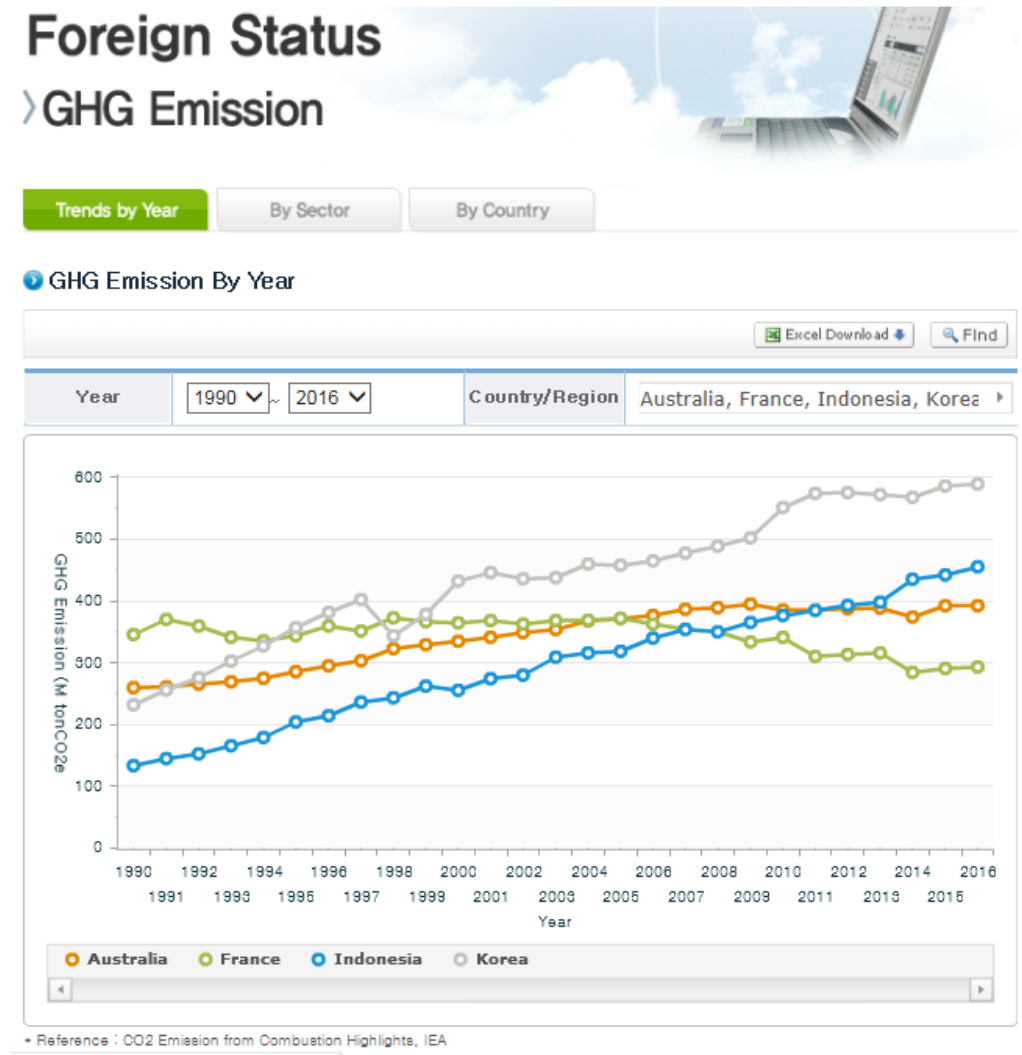
* Reference : CO2 Emission from Combustion Highlights, IEA

- Global GHG emission information
  - GHG Emissions Statistics by Year, Sector and Country from 1990 to 2016
  - Emission statistics for 16 countries including Korea, China, India, Japan and the United States

- **CO2 emissions in 2016**
  - China : 9.56 billion tons CO2eq
  - USA : 4.8 billion 33 million tons
  - India : 2.0 billion 76 million tons
  - Japan : 1.1billion 47million tons

- **CO2 growth rate in the last five years**
  - China(5%), India(16%), Japan(-5%), USA(-4%),

Foreign Status GHG Emission By year



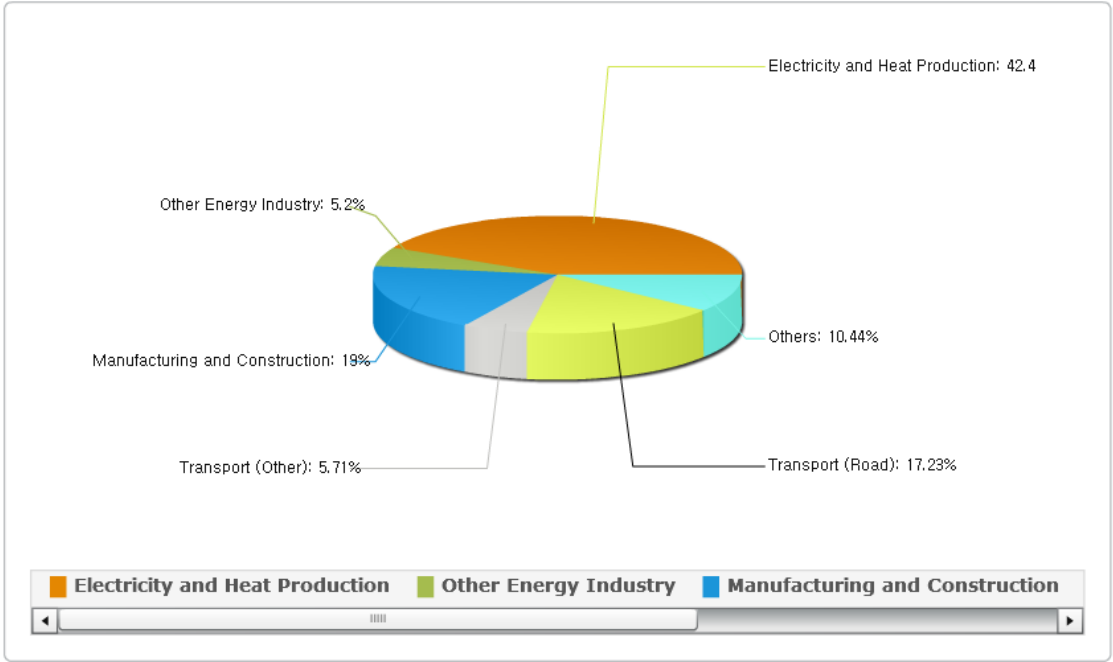
- **CO2 emissions in 2016**
  - Korea : 5.89 billion tons CO2eq
  - Indonesia : 4.55 billion 33million tons
  - Australia : 3.92 billion 76 million tons
  - France : 2.93 billion 47million tons
- **CO2 growth rate in the last five years**
  - Korea(2.4%), Indonesia(15.8%), Australia(1.4%), France(-6.6%),

Foreign Status GHG Emission By Sector

GHG Emission By Sector – Share

Excel Download | Find

Year	2013	Country/Region	World **World**



* Reference : CO2 Emission from Combustion Highlights, IEA

❖ **World**

➢ **Emission Share by Category(2013)**

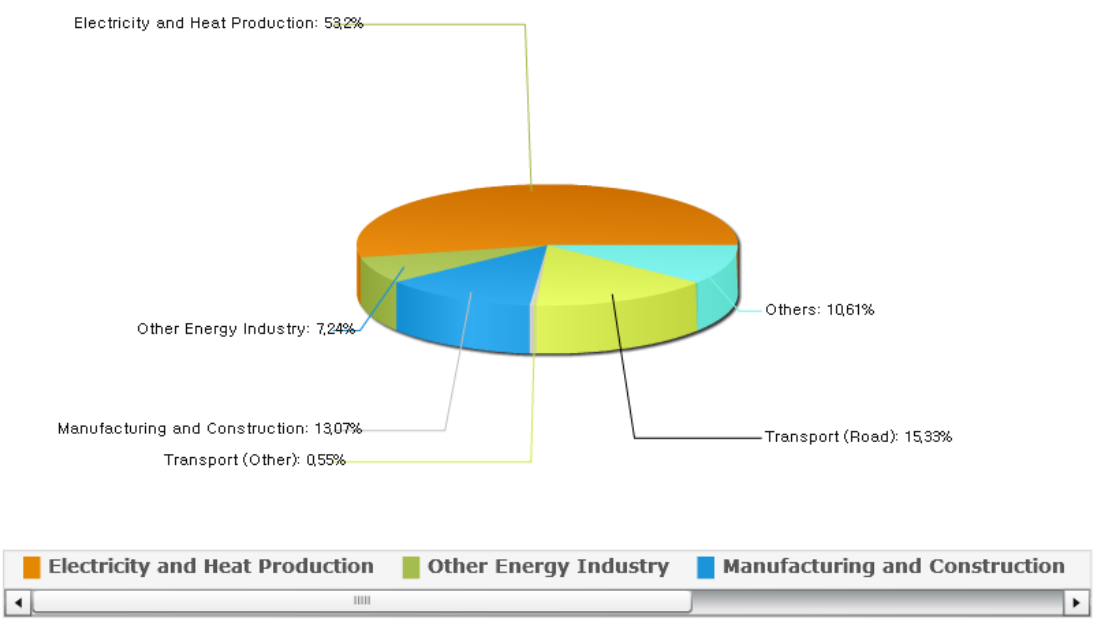
- **Transport : 22.94%**
  (Road 17.23%+Other 5.71%)
- Electricity & Heat Prod. : 42.4%
- Manufact. & Construct. : 19.0%
- Other Energy Industry : 5.2%
- Others : 10.4%

Foreign Status GHG Emission By Sector

GHG Emission By Sector – Share

Excel Download | Find

Year	2013	Country/Region	Korea **Korea**



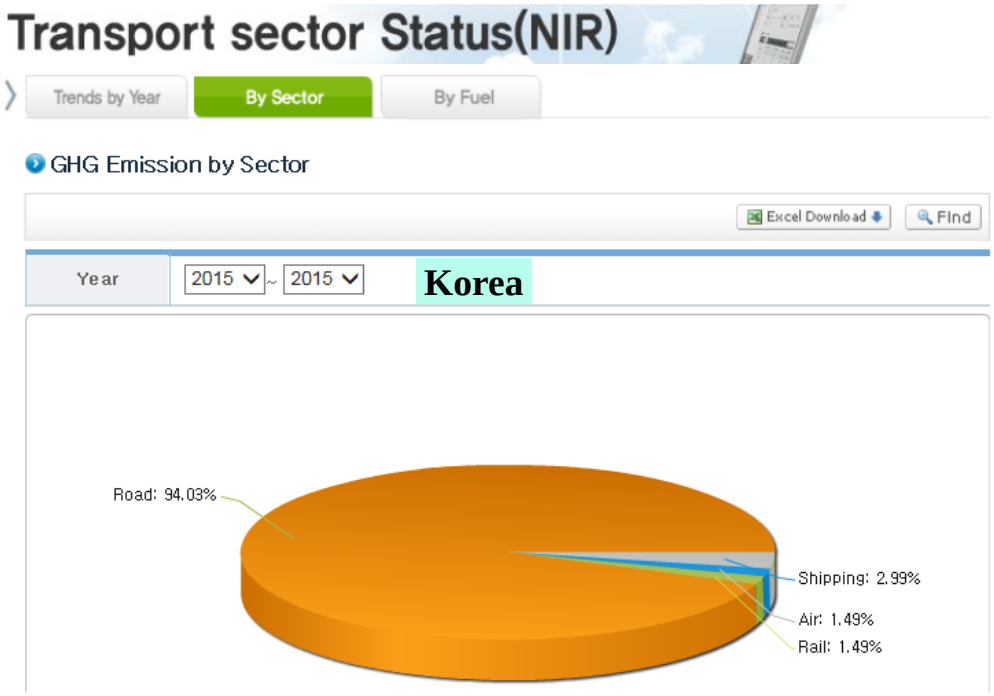
* Reference : CO2 Emission from Combustion Highlights, IEA

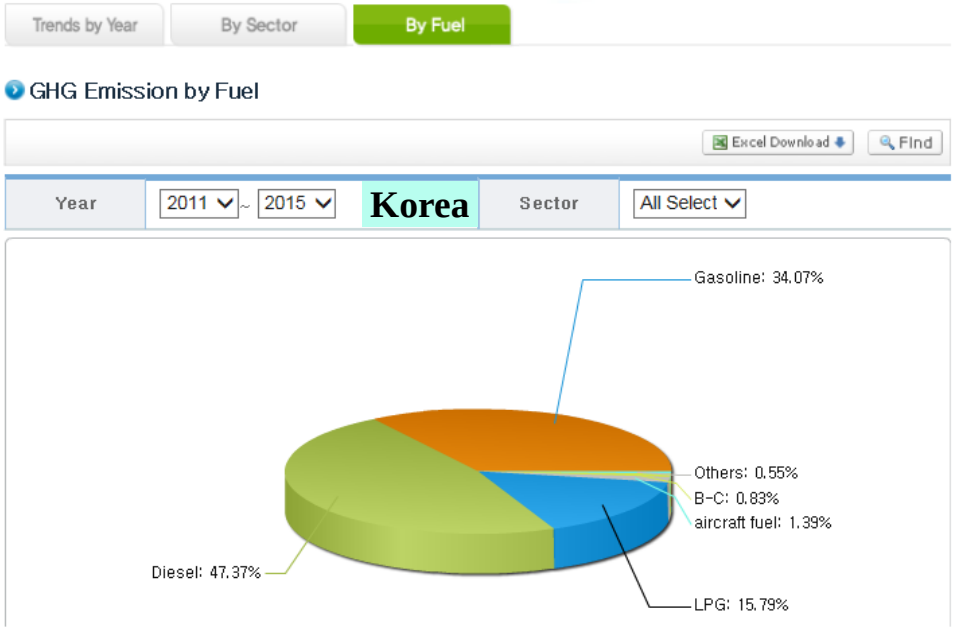
❖ **KOREA**

➢ **Emission Share by Category(2013)**

- **Transport : 15.88%**
  (Road 15.33 +Other 0.55%)
- Electricity & Heat Product. : 53.2%
- Manufact. & Construct. : 13.07%
- Other Energy Industry : 7.24%
- Others : 10.61%

KOREA SATUS – Transport sector





- **GHG Emission By Sector (2015)**
  - **Road : 94.03%**
  - Shipping : 2.99%
  - Air : 1.49%
  - Rail : 1.49%

- **GHG Emission By Fuel (2011 -2015)**
  - **Diesel : 47.31%**
  - Gasoline : 34.07%
  - LPG : 15.79%
  - Aircraft fuel : 1.39%

2. GHG Reduction Target

KOTEMS Korea Transport Emission Management System

한국어 | English

KOTEMS | GHG Emissions | GHG Target Scheme | Evaluation of GHG Reduction | Sustainable Index

Background & Rules · Importance · Process · Role of operation Ministries

GHG Target Scheme

- Background & Rules
- Importance
- Process
- Role of operation Ministries

HOME > GHG Target Scheme > Background & Rules

Background & Rules

Background of Target Scheme

01 South Korea announced 37% reduvtion by GHG BAU(Business as usual) at 2030(July, 2018)

- Common standard information management, such as greenhouse gas calorific value
- Classificaion system for emission by sector / Management of emission factor

02 Reduction target of greenhouse gas in traffic section was set 29.3 percent for BAU by 2030

03 The introduction of greenhouse gases and energy NA(Negotiated Agreement) into low carbon green growth act (April 14, 2010)

Rules of Target Scheme

2. GHG Reduction Target

Korea total reduction target

GHG Scenario

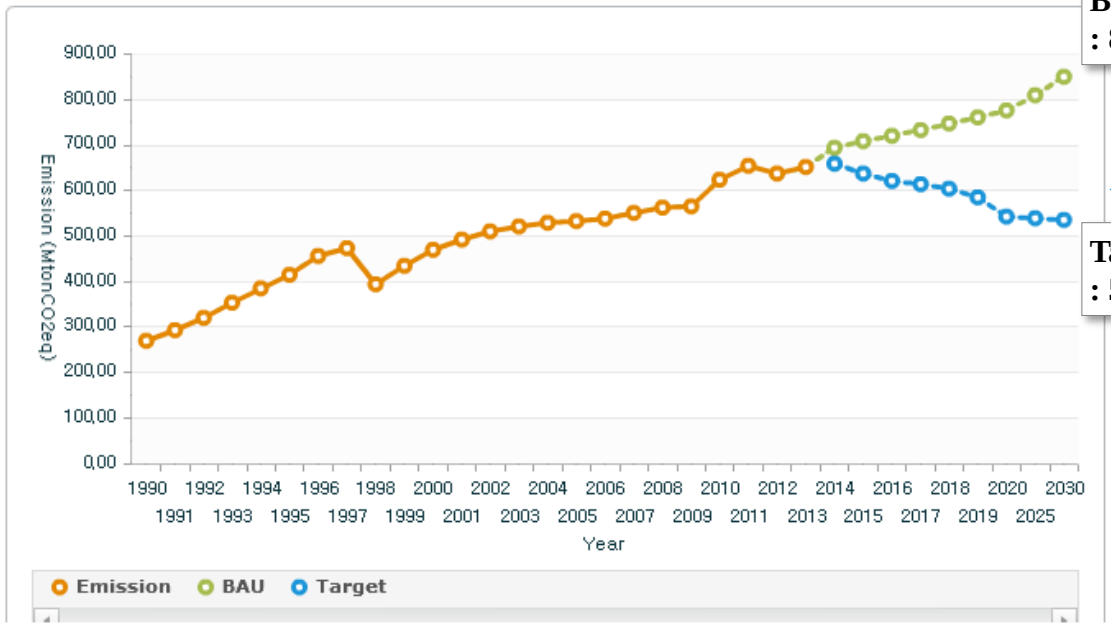
〉GHG Target(Nation)

GHG Target(Nation) | GHG Target(Article) | Transport GHG Target(Domestic

GHG Target(Nation)

Find | Excel Download

Year	1990 ~ 2030	Nation	Korea
Period	1 Year / 2 Year / 5 Year		



2030 National GHG Reduction Target

2030 Target : BAU 850.6Mton → Target 536.0 Mtons(37% ↓)

BAU 2030year
: 850.6MtonCO2eg

315MtonCO2eg
(37% ↓)

Target 2030year
: 536.0MtonCO2eg

(Unit : Million tonsCO2eg)

Overseas Reduct.. : 38.3

Electricity Generation : 57.8

Industry : 98.6

Building : 64.5

Transport : 30.8

CCUS 10.3

Others 14.6

Domestic reduction : 276.3

Total : 38.3+276.3=315

Transport reduction target

GHG Scenario

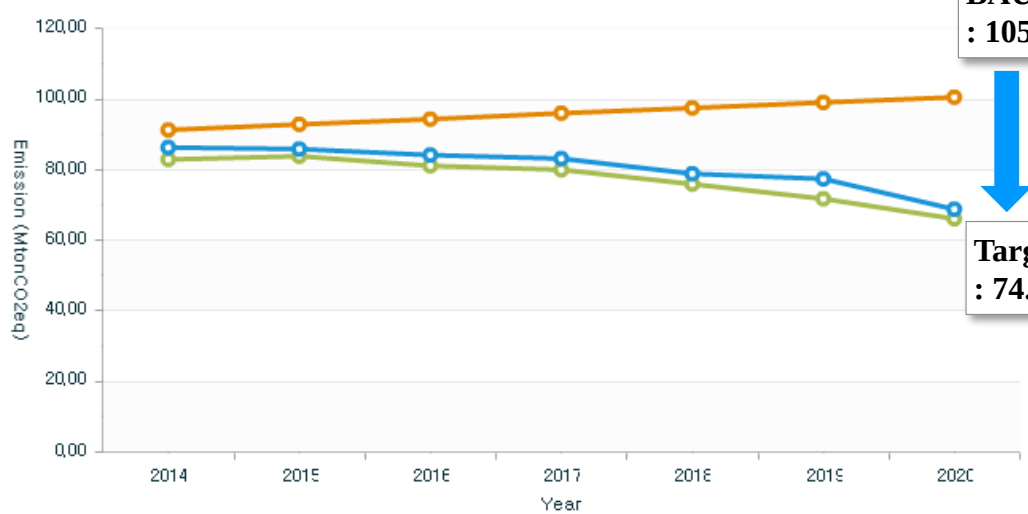
Transport GHG Target(Domestic)

GHG Target(Nation) | GHG Target(Article) | Transport GHG Target(Domestic) | Transport GHG Target(Domestic Article)

Transport GHG Target(Domestic)

Find | Excel Download

Year	2014 ~ 2030	Sector	SUM
Scenario	All		



BAU 2030year
: 105.2MtonCO2eg

30.8MtonCO2eg

Target 2030year
: 74.4MtonCO2eg

2. GHG Reduction Target

Transport reduction means

2030 National GHG Reduction Roadmap

Transportation Sector Reduction Target : 30.8Mtons(29.3% ↓)

	Reduction means	2030 target	Reduction (Million ton)
Technical reduction (25.4)	① Automotive technology reduction		23.1
	· Electric vehicle	**3 million vehicles**	(3.9)
	· Hybrid vehicle	4 million vehicles	(2.6)
	· Hydrogen vehicle	640,000 vehicles	
	· Electric bus	Wired and wireless charging bus commercialization	
	· Passenger fuel economy	24.3km / l (20 years)	
	· Commercial vehicle fuel economy	20% improvement (20 years)	
	② Biodiesel	3% blend (20 years)	1.2
	③ Ship reduction	Energy efficiency improvement	0.20
Traffic Policy (5.4)	① Expansion of public transportation operation	Expansion of urban railway and BRT service	1.8
	② Passenger car operation restraint	Remote work, eco-drive activation, etc.	1.6
	③ Green Logistics Efficiency	3rd Party Logistics Activation, Freight Modal Shift	1.8
	④ Aircraft transport efficiency	Fuel economy, Emissions Trading System	0.2
Reduction target : BAU 105.2 → 74.4Mtons (30.8Mton, 29.3% ↓)			30.8

KOTEMS

Calculation of reduction amount by KOTEMS

Fuel economy

- ① · **Electric vehicle** ☑
- ② · Hybrid vehicle ☐
- ③ Other eco-friendly cars ☐
- ④ Average fuel economy ☐
- ⑤ Reinforcement of CO_2 ☐
- ⑥ Eco Drive ☐
- ⑦ Car idling ☐

Traffic transit

- ⑧ Passenger car sharing ☐
- ⑨ Bus transportation system ☐
- ⑩ Bicycle use system ☐

3. Evaluation of GHG Reduction

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Laws & Plans • Classification & functions • Overview • GHG Scenario

Evaluation of GHG Reduction

- Laws & Plans
- Classification & functions
- Overview
- GHG Scenario
  - GHG Target(Nation)
  - GHG Target(Article)
  - Transport GHG Target (Domestic)
  - Transport GHG Target (Domestic Article)

HOME > Evaluation of GHG Reduction > Reduction project/Policy overview > related law and plan

Reduction project/Policy overview

〉related law and plan

Character and purpose of the plan

Character

- Suggest a long-term goal and strategy about sustainable transport logistics policy
- Criterion plan what establish a sustainable local transport logistics development plan

Purpose

- Implement national vision of green growth
- Environment friendly low carbon transport logistics system
- For Sustainable transport logistics growth establish task and plan

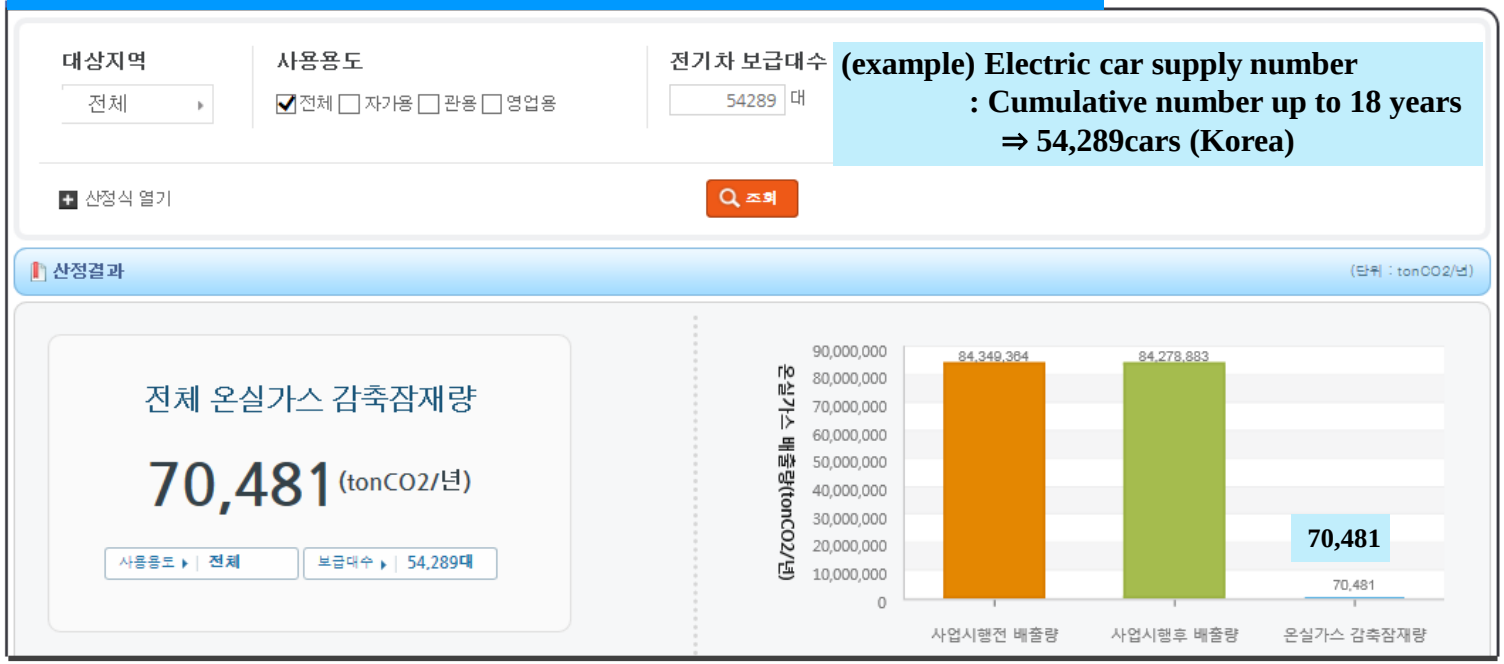
➢ Reduction Analysis by Electric Vehicle Supply Policy`

(example) Electric vehicle supply number :
⇒ 3,000,000 cars (2030target)

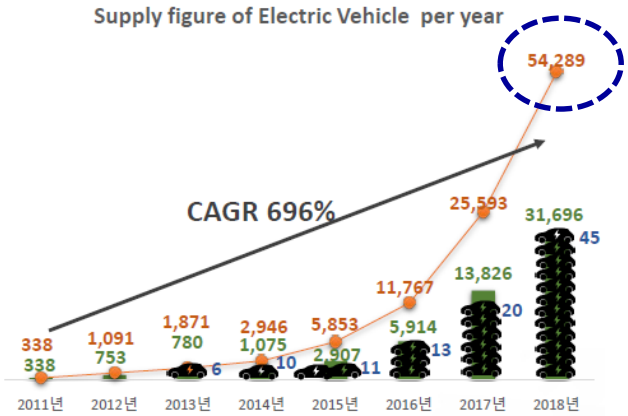
➢ **Supply 3 million electric vehicles**
→ 3.89million tons reduction

Assume 84.4 million tons before implementation

➢ Reduction Analysis by Electric Vehicle Supply Policy`

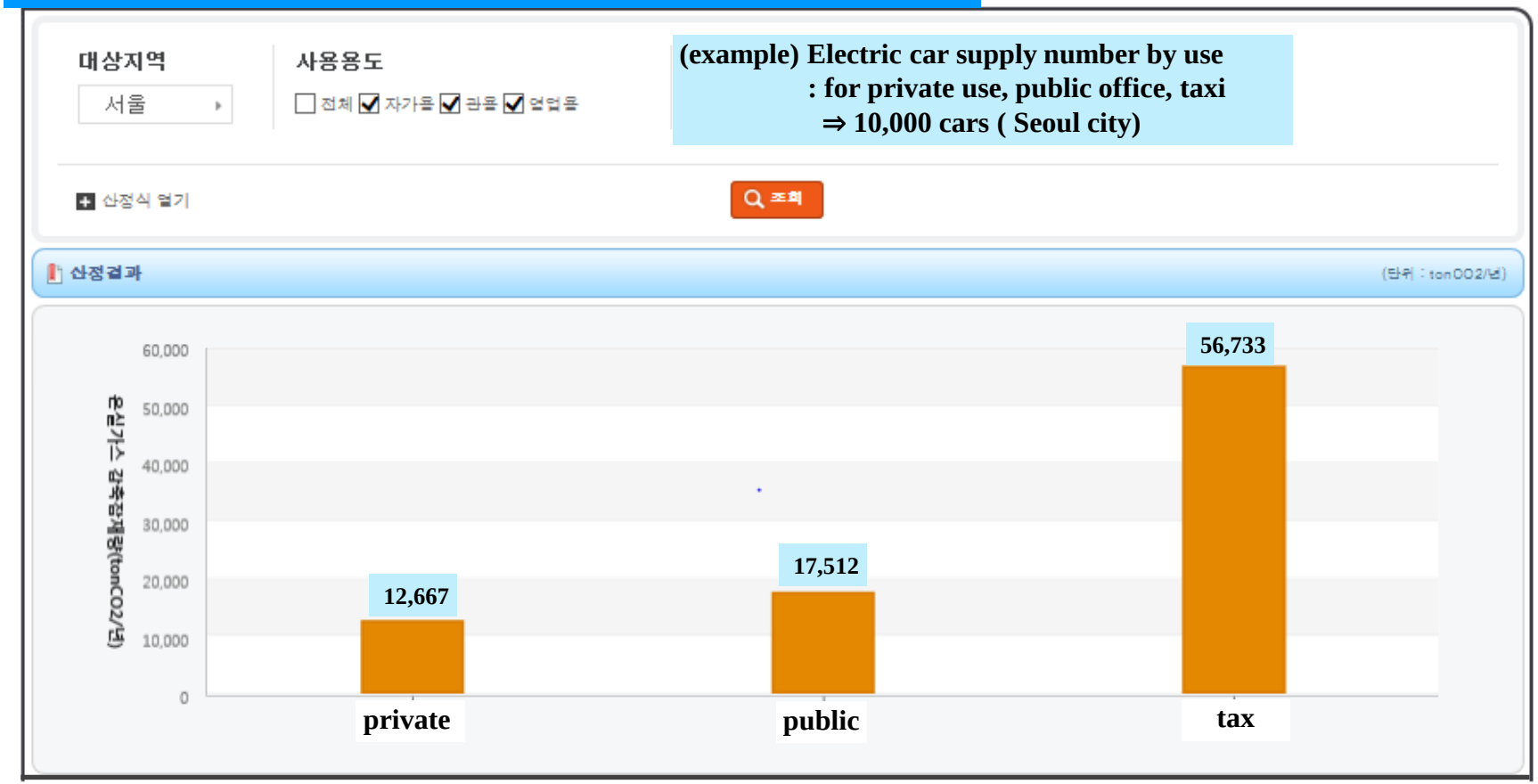


(example) Electric car supply number
: Cumulative number up to 18 years
⇒ 54,289cars (Korea)



➢ Supply 54,289cars
→ 70,481 tonCO2 reduction/year

➢ Reduction Analysis by Electric Vehicle Supply Policy`



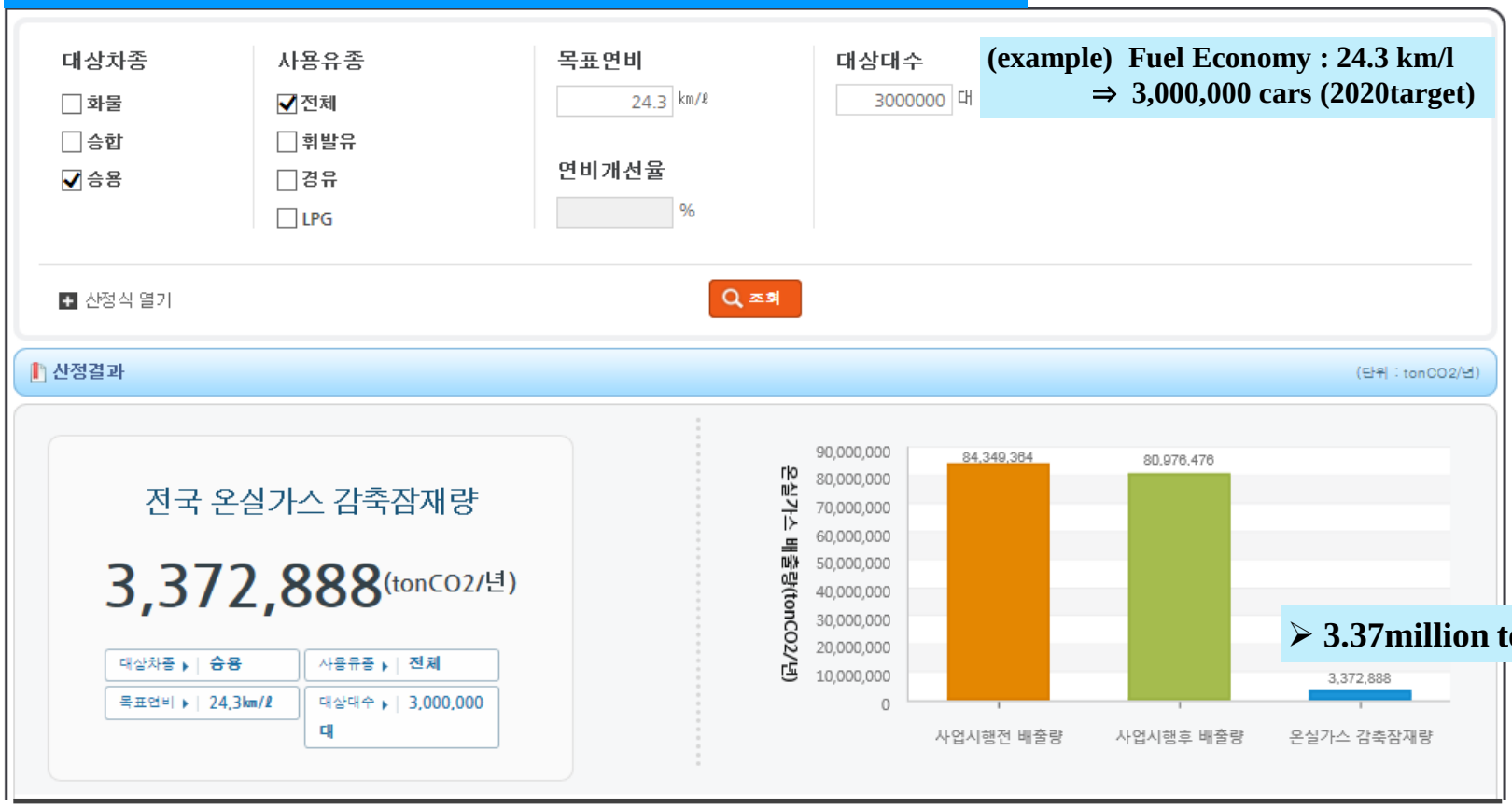
(example) Electric car supply number by use
: for private use, public office, taxi
⇒ 10,000 cars (Seoul city)

➢ Large amount of reduction when supplying electric cars by taxi

3. Evaluation of GHG Reduction

Fuel economy improvement

➢ Reduction Analysis by Fuel economy improvement



(example) Fuel Economy : 24.3 km/l
⇒ 3,000,000 cars (2020target)

➢ 3.37million tons reduction`

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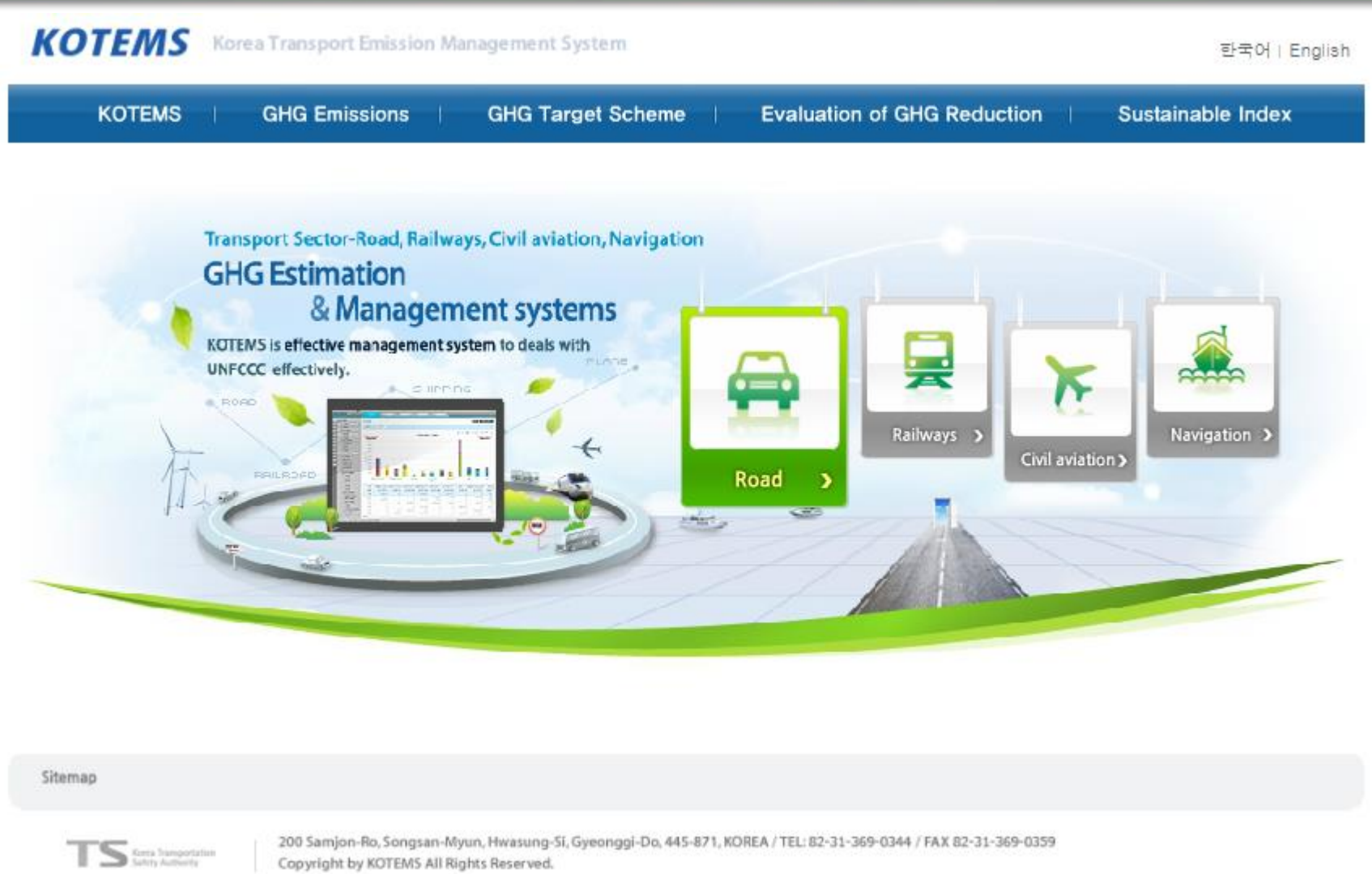
Korea Transport Emission Management System



Thank you

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