

# Low carbon society scenario 2050 in Korea

2018.11.05

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# CONTENT

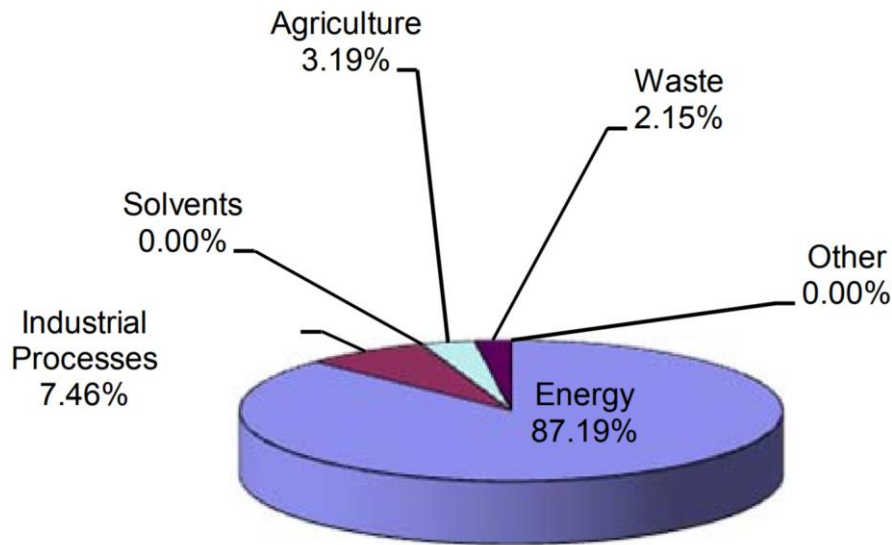
1. Where we are
2. Where do we want to go
3. How do we get there
4. Issues

# 1. Where are we

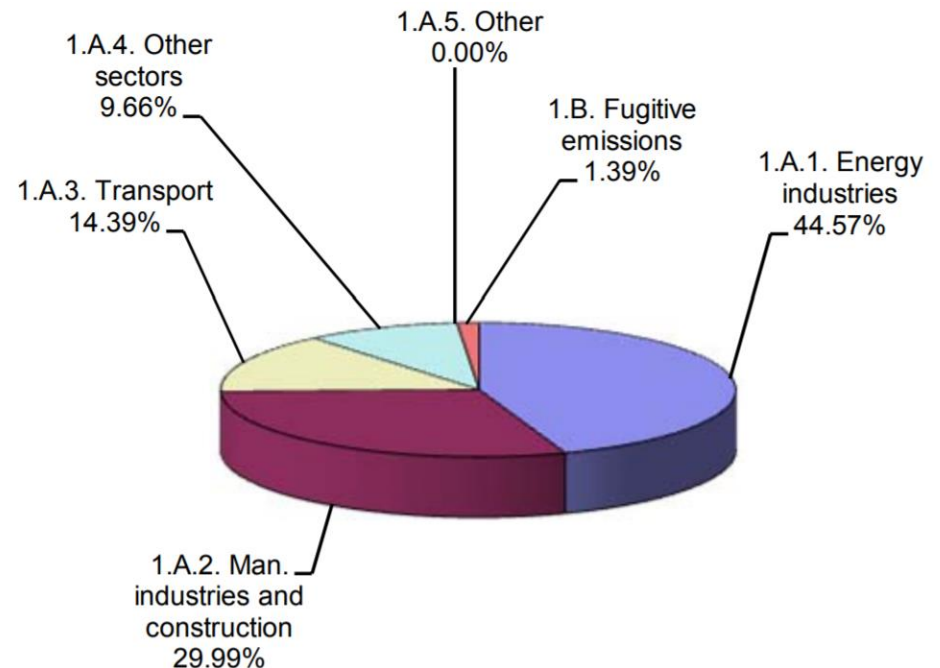
## Emission Source

- Emission mainly from Energy use (87.19%, 2012)
- Emission mainly from Industry sector within the energy sector

2012



GHG emissions by sector

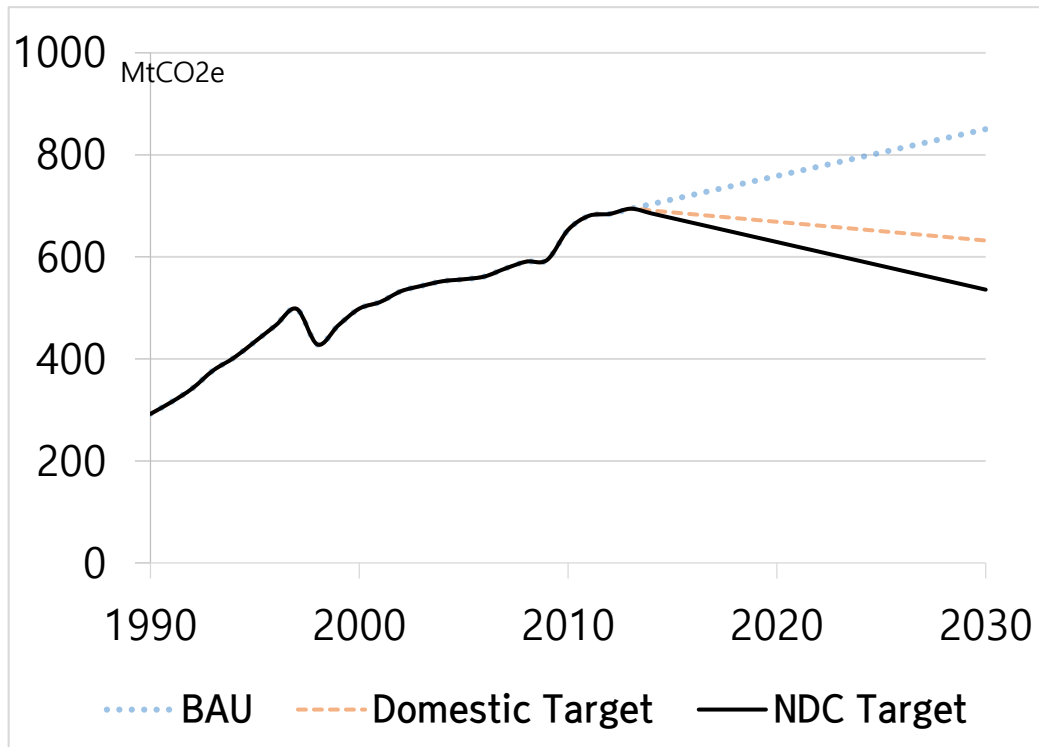


By the energy sector

# 1. Where are we

## 2030's target

- Korea's INDC is an economy-wide target to reduce its greenhouse gas emissions by 37% below business-as-usual (BAU) emissions of 850.6 MtCO<sub>2</sub>e by 2030



Sector	Reduction Target Ratio
Transformation	7.6%
Industry	6.6%
Building	4.2%
Transportation	3.0%
Public sector	0.4%
Waste	0.4%
Agricultural	0.1%

# 1. Where are we

## Evaluation (Governance)

Category			Note
Participation	Feedback period	Before announcing to public	7 months (2014. 11.14 ~ 2015.6.11)
		after announcing to public	20 days (6.11 ~ 6.30)
	Participants in the discussion	Before announcing to public	Public-private joint review team (20 persons)
		after announcing to public	Industry, civil society, academia, Public interested in climate change
	Feedback method		<ul style="list-style-type: none"> <li>Public hearing(1),</li> <li>parliamentary debate(2),</li> <li>Opportunities for public opinion(X)</li> </ul>
	Efforts to reflect opinions		Mentioned in press release (2015. 6.30)
Disclosure of Information	Open source for feedback		<ul style="list-style-type: none"> <li>Press Release (2015. 6.11)</li> <li>Post-2020 Greenhouse Gas Reduction Targeting Action Plan (page 20)</li> </ul>
	Released timing of open source		20 days before INDC submission to UNFCCC
	Documentation		Press Release (2015. 6.30) by MoE

# 1. Where are we

## Discussions



2018.01.21

**2030 온실가스 감축로드맵  
어디로 가야하나?**

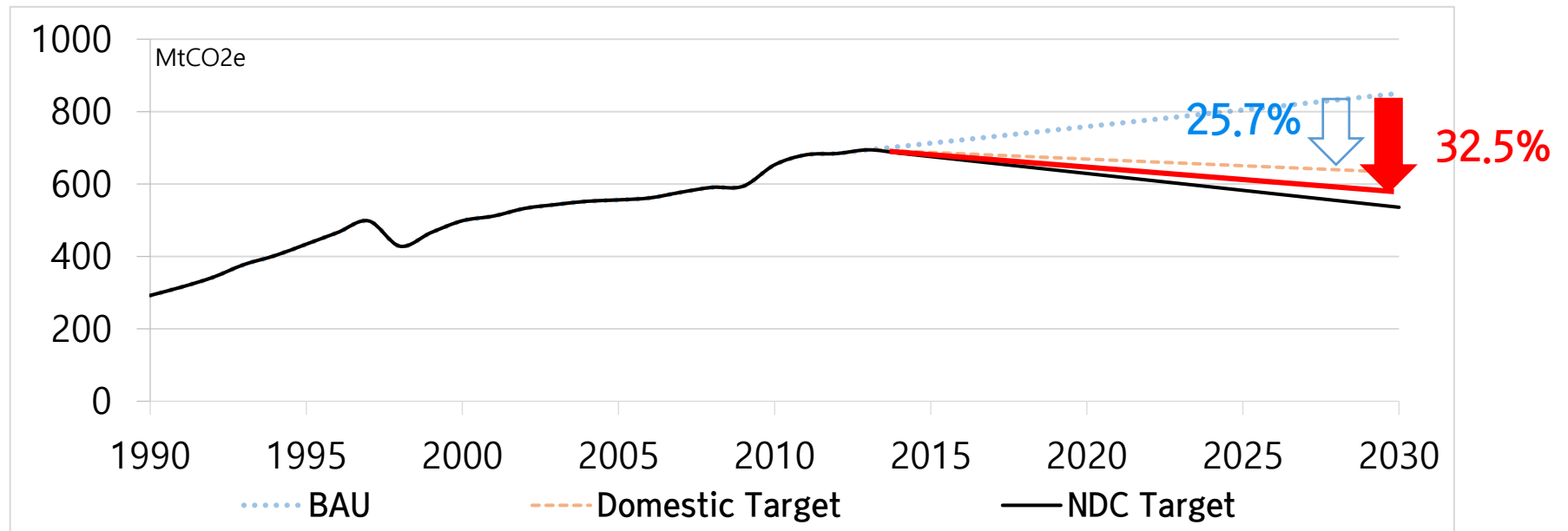
일 시 2018. 4. 16.(월) | 13:30 ~ 17:00  
장 소 대한상공회의소 국제회의장  
주 최 한국환경정책·평가연구원 | (재)기후변화센터 | 전력포럼  
후 원 환경부

2018.04.16

# 1. Where are we

## 2030's **New** target

- Korea will increase the amount of reductions in the domestic sector from **25.7%** to **32.5%** (Amended in July 2018) and seeking cooperation between South and North Korea



## 2. Where do we want to go

### Histories

Institution

Agency& Committee

NDC/System/Investments

Framework Act on Low Carbon, Green Growth(2011)

Presidential Committee on Green Growth(2009)

Greenhouse gas inventory and research center(2010)

Copenhagen accord (30%)

Paris Agreement (37%)

MRV/ETS (2015)

R&D investment (2008 ~ : 400 mil-\$/y)



## 2. Where do we want to go

### Government's Roles

Roles	Responsibilities
GHG mitigation policy Coordination	Office for Government Policy Coordination
GHG mitigation target setting	Ministry of Environment
Development and implementation of GHG mitigation policy	Each Ministry (KEI, KEEI, KIET, GIR, ...)
Emission trading system operation	<ul style="list-style-type: none"><li>• Ministry of Strategy and Finance</li><li>• Ministry of Environment</li><li>• Ministry of Land, Infrastructure and Transport</li><li>• Ministry of Trade, Industry and Energy</li><li>• Ministry of Agriculture, Food and Rural Affairs</li></ul>
local authority/ Civil society cooperation	Ministry of Environment

## 2. Where do we want to go

### Joint Working Group

- BAU Emission: KEEI-EGM System
- Reduction Potential: TIMES
- Economic Impacts: KEI-Linkages  
(ENV-Linkages)

Pop    GDP    Lifestyle    Infra    ...



Activity → Demand → Emission  
(Econometric analysis)



Scenario → TIMES → Reduction



Reduction → CGE → GDP changes



Climate policy

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## 2. Where do we want to go

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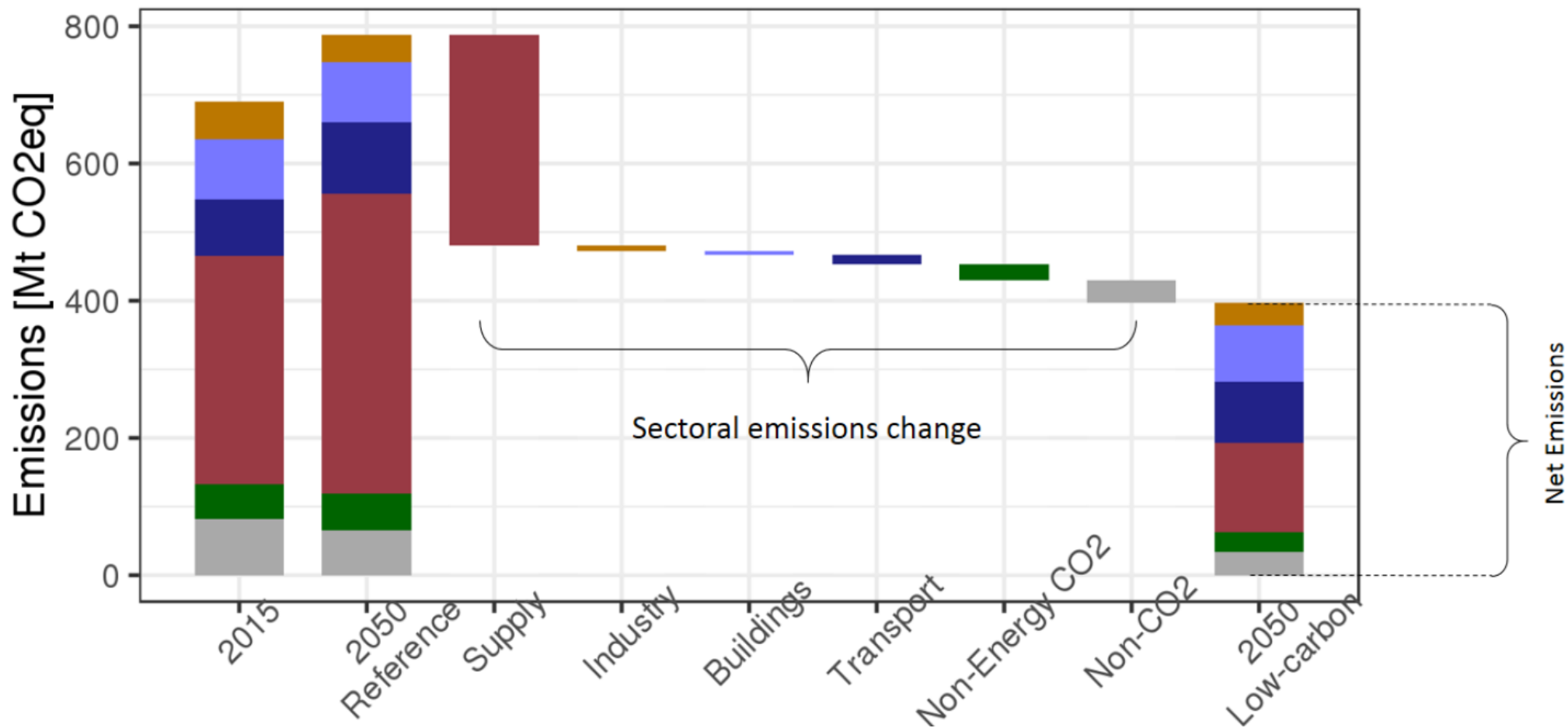
2050 LCS

KEI (Scenario): socioeconomic system transformation with a dramatic increase of energy efficiency, low carbon electricity reduction, economic structure reform, and land use change under climate proof way

KEEI (Vision) : decarbonized and resilient economy includes sustainable growth, prosperity, decarbonization, and resilience, which serve as a guide to the thinking, attitude and behavior change of our society members

## 2. Where do we want to go

LCS Scenario



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## 3. How do we get there

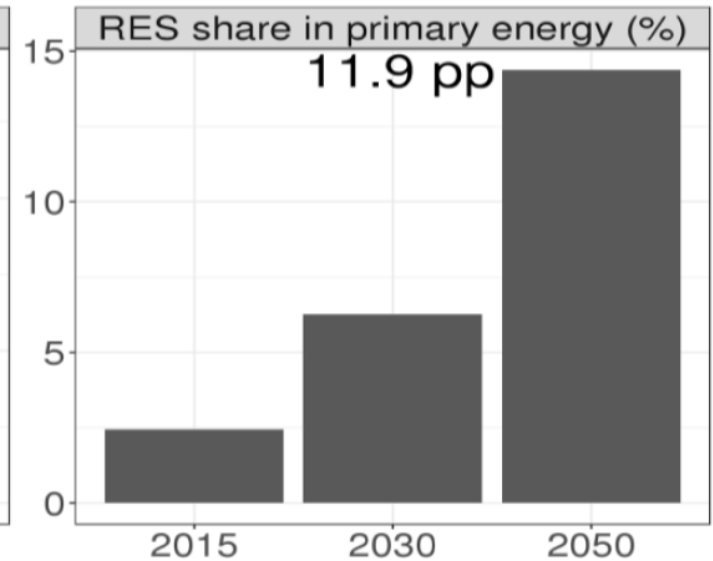
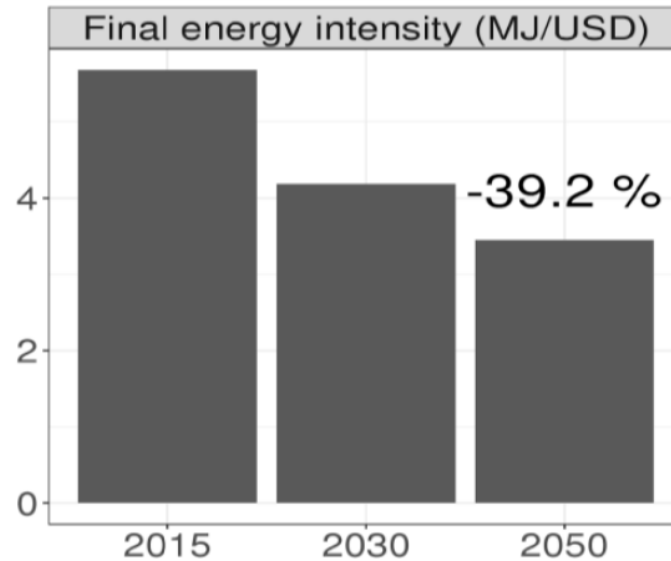
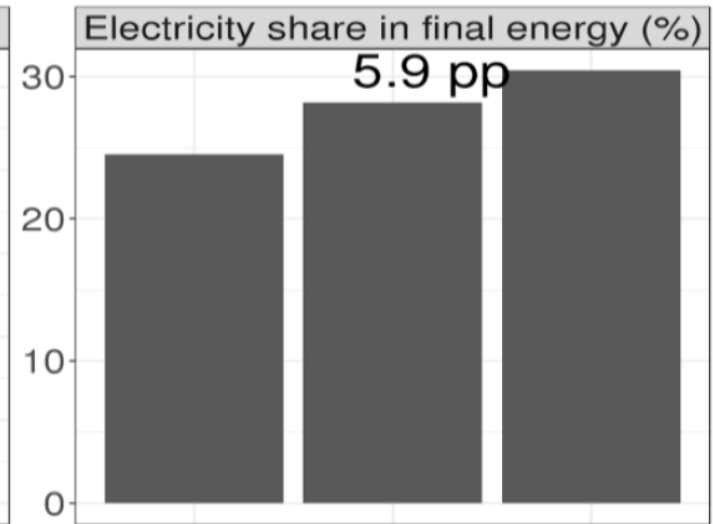
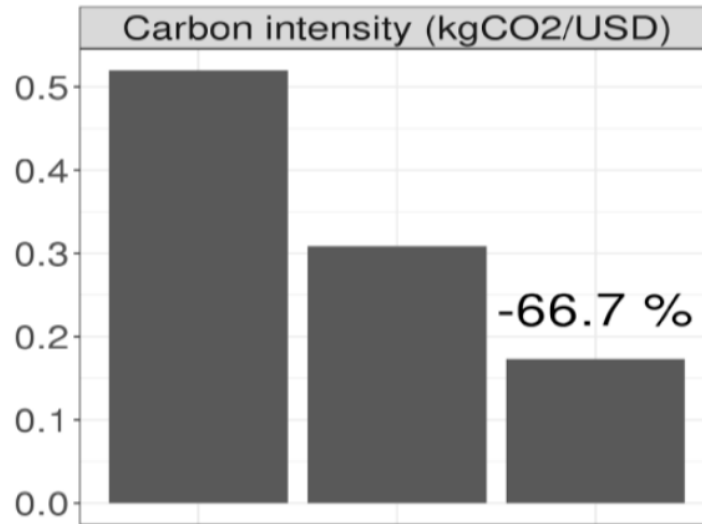
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### Reduction Measures

- Decarbonisation of power generation mainly driven by nuclear, solar PV, and CCS;
- Rapid expansion of RES both in power generation and in final demand sectors;
- Electrification of final energy uses both in heating and mobility sectors;
- Fuel switching in final energy mix towards electricity and natural gas to cope with air-pollutants.

### 3. How do we get there

#### Energy system transformation



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## 3. How do we get there

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### 3 Key plans

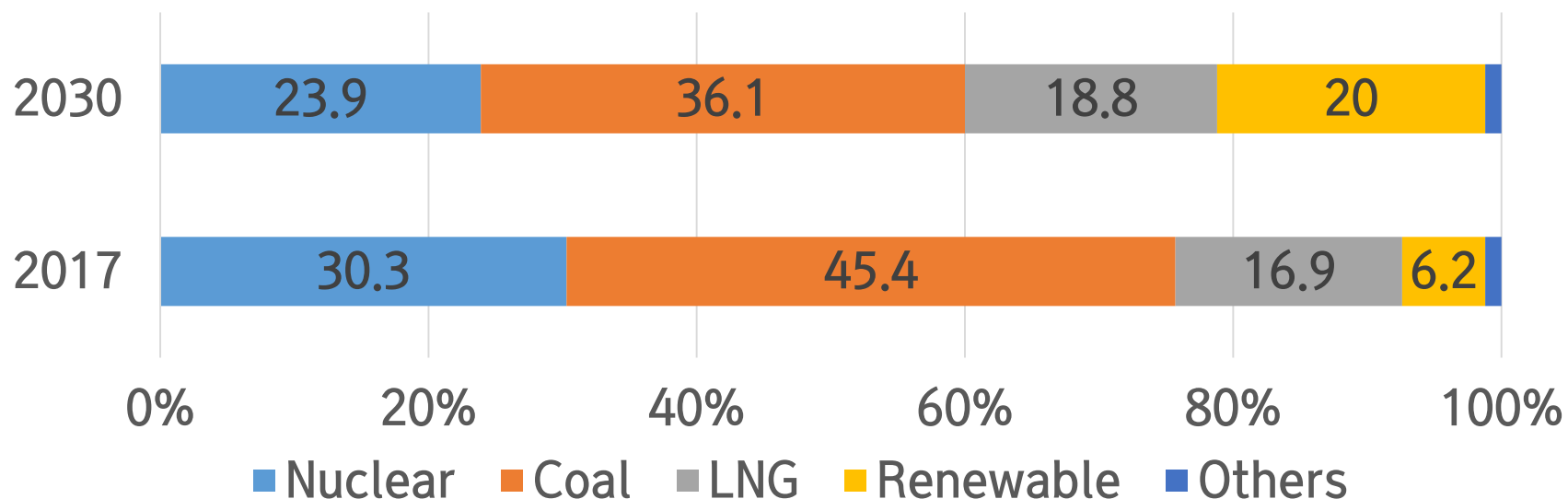
- National Greenhouse Gas Emissions Reduction Road map  
(Announced First draft in 2016, amended in 2018)
- Climate change response plan (2016)
- Mid-Century low-carbon Strategy (2019)

### 3. How do we get there

#### Power sector plan

- 8<sup>th</sup> Basic Plan for Long-term Electricity Supply and Demand (2017-2031)
  - Manage demand
  - Change energy mix

Power generation mix





### 3. How do we get there

## TALANOA DIALOGUE

TALANOA DIALOGUE FOR CLIMATE AMBITION 기후변화 대응전략 도출을 위한

# 탈라노아 대화



**일시** '18.9.19(수), 3:00~18:00

**장소** 서울 프레지던트호텔 슈벨트홀

**주최** 환경부 외교부 기상청 **주관** 한국환경공단 **후원** (사) 한국기후변화학회

### | 프로그램 |

시간	주요프로그램	발제자
13:00~13:20	개회식 (환영사) 김은경 환경부 장관 (축사) 김종석 기상청장	-

[제1 세션] *Where are we?* 우리나라 기후변화대응 노력의 현재(외교부)

## 4. Issues

### Gaps (discussion)

Currently discussed Korea's long-term strategy with government power generation plan is beyond Paris Agreement targets (limit global warming to 2/1.5 °C above pre-industrial levels).

- Current scenario's cumulative emission (2010–2050) : **21.8Gt**
- Korea's carbon budget (2010–2050) : **17Gt**

※ In the global model estimation<sup>1</sup>, cost-optimal scenarios assuming a global carbon budget of 1000 Gt CO<sub>2</sub>, considered equivalent to likely below 2 °C

<sup>1</sup> McCollum DL, Zhou W, Bertram C, de Boer H-S, Bosetti V, Busch S, Després J, Drouet L, Emmerling J, Fay M, Fricko O, Fujimori S, Gidden M, Harmsen M, Huppmann D, Iyer G, Krey V, Kriegler E, Nicolas C, Pachauri S, Parkinson S, Poblite-Cazenave M, Rafaj P, Rao N, Rozenberg J, Schmitz A, Schoepf W, van Vuuren D, & Riahi K (2018) "Energy investment needs for fulfilling the Paris Agreement and achieving the Sustainable Development Goals," Nature Energy, doi: 10.1038/s41560-018-0179-z [pure.iiasa.ac.at/15328].

## 4. Issues

### LNG price

#### Asian LNG prices

Platts JKM Index (\$ per million Btu)



Source: S&P Global Platts  
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# 4. Issues

## Renewable risk and conflict

### <Climate change risk>



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### <conflict>



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knnews.co.kr

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## 4. Issues

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### Others

- Nuclear phase out
- Coal plant with CCS
- Climate adaptation decision

# Q&A