

The 15<sup>th</sup> Asian Pacific Integrated Model(AIM) Workshop



## Forecasting the GHG emission and assessment of potential GHG reduction in Korea

10.2.

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# Contents

- Background
- Outline of this study
- Result and data analysis
- Future Plan

1

# I. Background

2

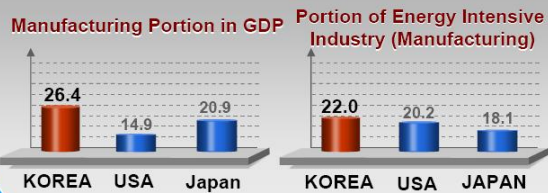
## GHG related Circumstances

### Demands for Active Participation



### Constraints for participating in current scheme

#### Energy Intensive Industry Structure



#### High Energy Efficiency

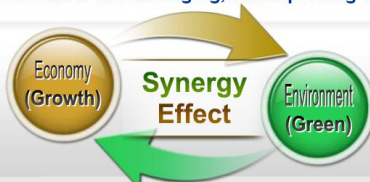


3

## Basic act on low carbon green growth

Conflict between Economic Growth and Environment → Maximizing the Synergy Effect

Economic Growth that is not Damaging, but Improving the Environment



Economic Growth using Environment as a New Growth Engine

- Mandate government to set concrete target for GHG emission reduction
- Contain articles to foster financing for green technology R&D and green investment
- Mandate the government to foster and support green economy, green industry and the transformation of conventional industry
- Provide for mandatory reporting of GHG emission for business and cap& trade system

4

## II. Outline of this study

5

## Methodology & data

### Objectives

- Forecasting the GHG emission and assessment of potential GHG reduction in Korea

### Target sector

Sector	Area
Residential	Cooling, Heating, Lighting, Cooking, Electric appliance, etc
Commercial & Public	Cooling, Heating, Lighting, Cooking, Power, Office equipment, etc
Transportation	Land(car, bus, taxi, jeep, truck, motorcycle), Water, Air, Rail
Industrial	Iron&Steel, Petro chemical, Cement, etc
Power generation	Nuclear, Coal, LNG, Petroleum, Hydro, Renewable, Heat, etc

### Year : standard year (2005), target year(2020, 2030, 2050)

### Methods

- Residential, Commercial & Public, Transportation : AIM(Asia-Pacific Integrated Model)
- Industrial : statistical analysis

6

## Methodology & data

### Introduced technology and change of life style

Sector	Area	Total technology	Advanced technology	Life style
Residential	Cooling	4	2	3
	Heating	11	5	3
	Lighting	5	2	1
	Cooking	6	2	1
	Electric appliance	33	10	8
Commercial & Public	Cooling	10	5	5
	Heating	17	6	4
	Lighting	5	2	1
	Cooking	6	1	0
	facilities	8	3	0
	Office equipment	16	8	0
Transportation	Land (car, bus, taxi, jeep, truck, motorcycle)	52	36	23
	Water	2	1	0
	Air	5	1	0
	Rail	2	1	0
Industrial	Iron & Steel	10	3	0
	Petro chemical	1	1	0
	Cement	20	2	0
Power generation		2	2	0
Total		215	93	49

7

## Methodology & data

◆ Main Socio economic parameter

	2008	2010	2020	2030
Oil price(\$/bbl)	98	84	70	82
Population(mill.)	48.6	48.9	49.3	48.6
GDP growth rate (%)	4.2	4.75	3.66	2.24

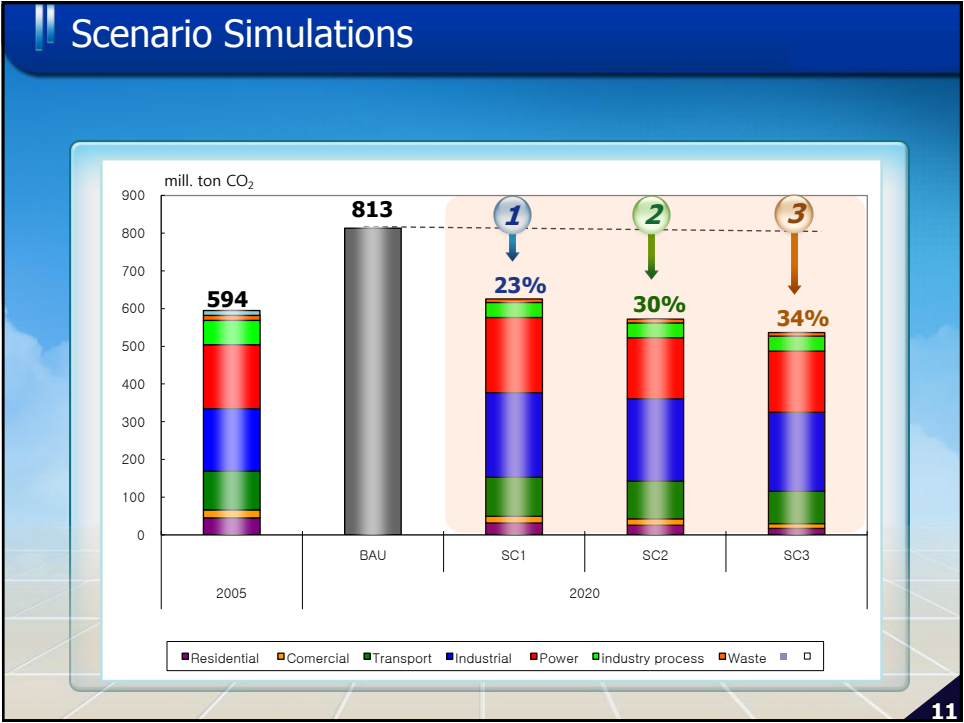
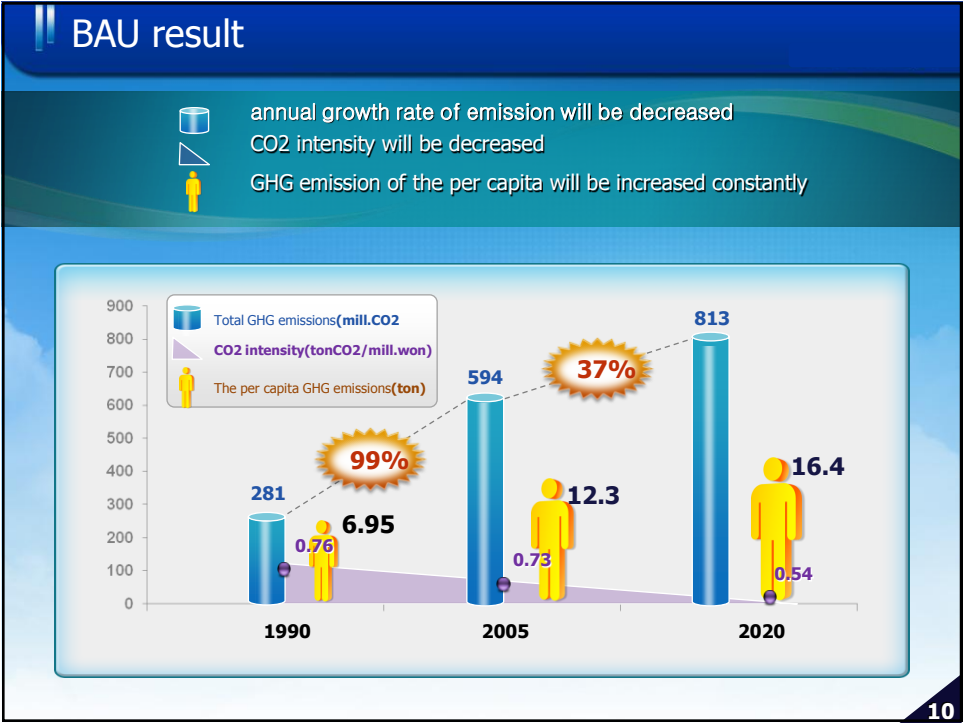
- (Oil price) EIA(Energy Information Agency)
- (Population) Statistics Korea
- (GDP growth) Korea Development Institute

8

### III. Result and data analysis

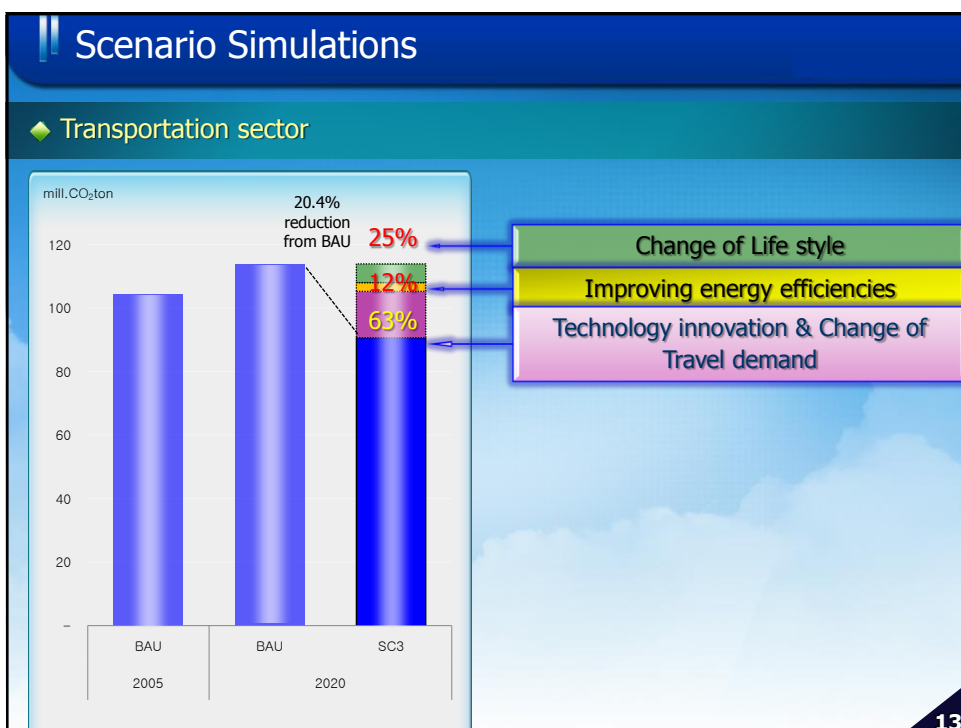
9



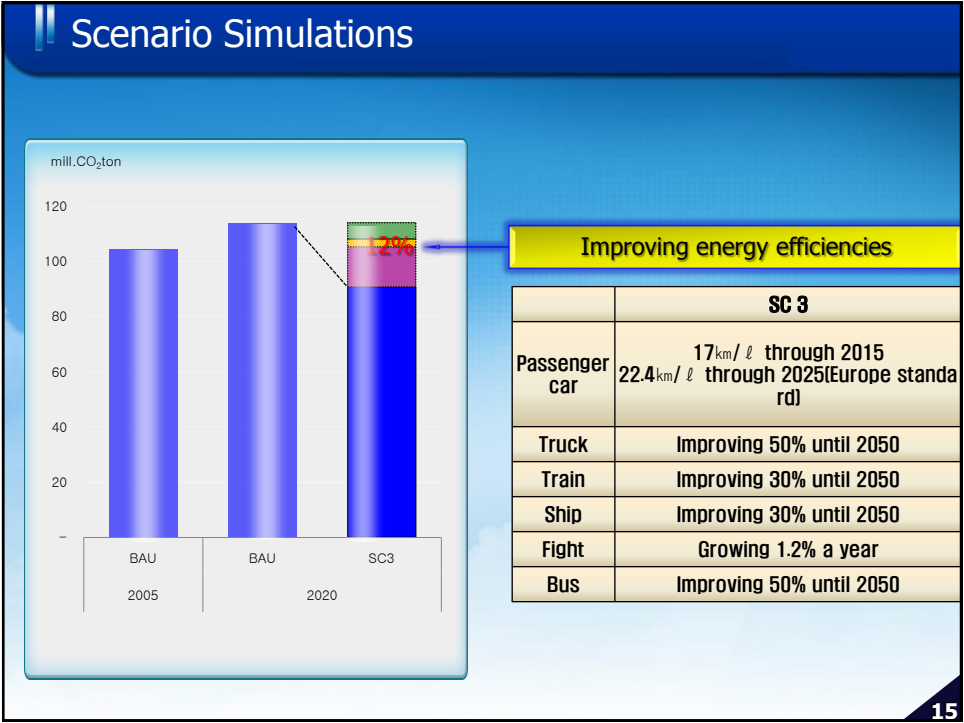
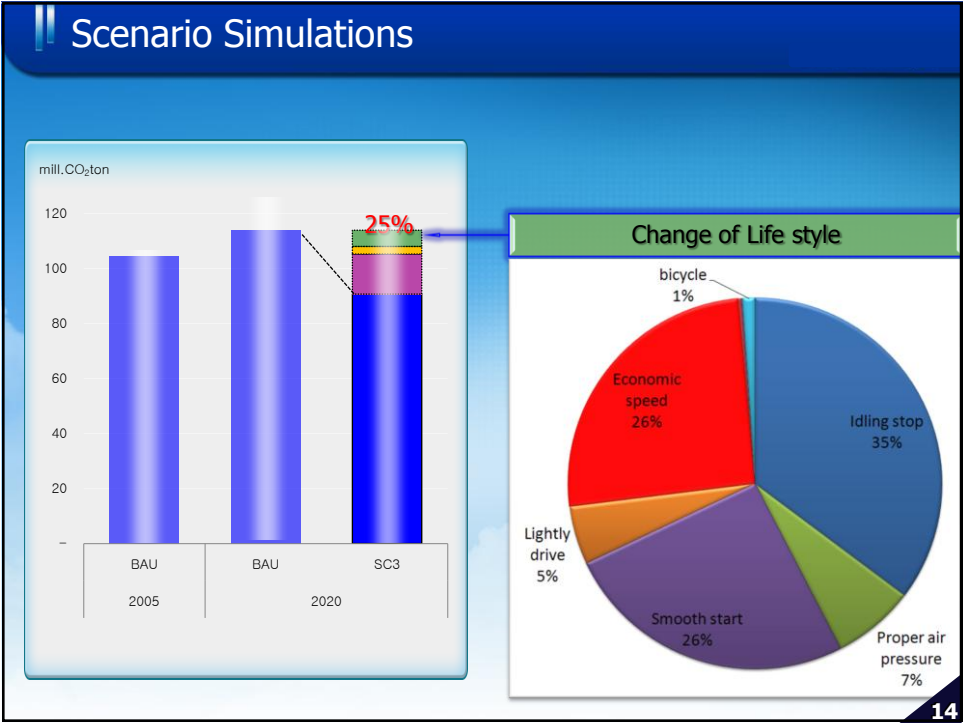


Scenario Setting			
Scenario	Potential GHG Reduction from BAU	Selection standard of countermeasures	reduction countermeasure (2 and 3 scenario include countermeasures of former scenario )
1	$\Delta 23\%$ <b>187 mill.ton reduction from BAU</b>	<ul style="list-style-type: none"> <li>Introducing cost effective technology and policy</li> <li>Reduction cost in the international standard</li> </ul>	<ul style="list-style-type: none"> <li>enlarge green home and building</li> <li>supply high efficiency facilities</li> <li>Reshape transportation system with low carbon scheme</li> <li>Innovate high efficient green process in industry</li> <li>Enlarge the portion of new and renewable energy and nuclear energy</li> </ul>
2	$\Delta 30\%$ <b>2.41 mill.ton reduction from BAU</b>	Maximum reduction in technology and policy	<ul style="list-style-type: none"> <li>Expand supply of green car(electric car, fuel cell vehicle etc.)</li> <li>partly introduction of CCS(Carbon capture and storage)</li> <li>Introduce change of life style</li> </ul>
3	$\Delta 34\%$ <b>2.76 mill.ton reduction from BAU</b>	Maximum reduction in technology and policy and change of life style	<ul style="list-style-type: none"> <li>Maximum expand supply of green car</li> <li>Maximum enlarge the distribution of high efficiency appliances</li> <li>Reinforce introduction of <b>CCS</b></li> <li>Maximum change of life style</li> </ul>

12

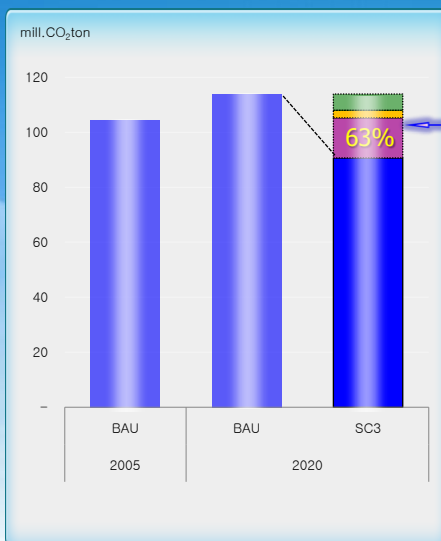


13





## Scenario Simulations



### Technology innovation & Change of Travel demand

- Modal shift to public transportation service
- Widespread use of green car (electric, fuel cell, hybrid plug in hybrid )

	2020		
	BAU	SC2	SC3
Electric car	1%	1%	10%
Fuel cell car	2%	2%	2%
Plug in hybrid	5%	5%	7%
Hybrid	5%	10%	10%

16

## Future plan

### Establish implementation target action plans

- Establish reduction target by sector and implementation target action plans (2010)
- Perform follow-up actions to establish detailed reduction amount by sector
- Establish/ manage short and midterm reduction target.

### Build up the foundation for developing model.

- Build up the foundation for developing model of assessing potential GHG reduction
- Support to establish detailed reduction amount by sector
- Propose the detailed countermeasures and action plan

### Low-carbon Society Scenario for the Regional Level

- Suggest the methodology for development of LCSs vision
- Provide the guideline for archiving the low carbon society scenario

17