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A Low Carbon Society for Korea

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Strategies toward a Low Carbon Society for Korea

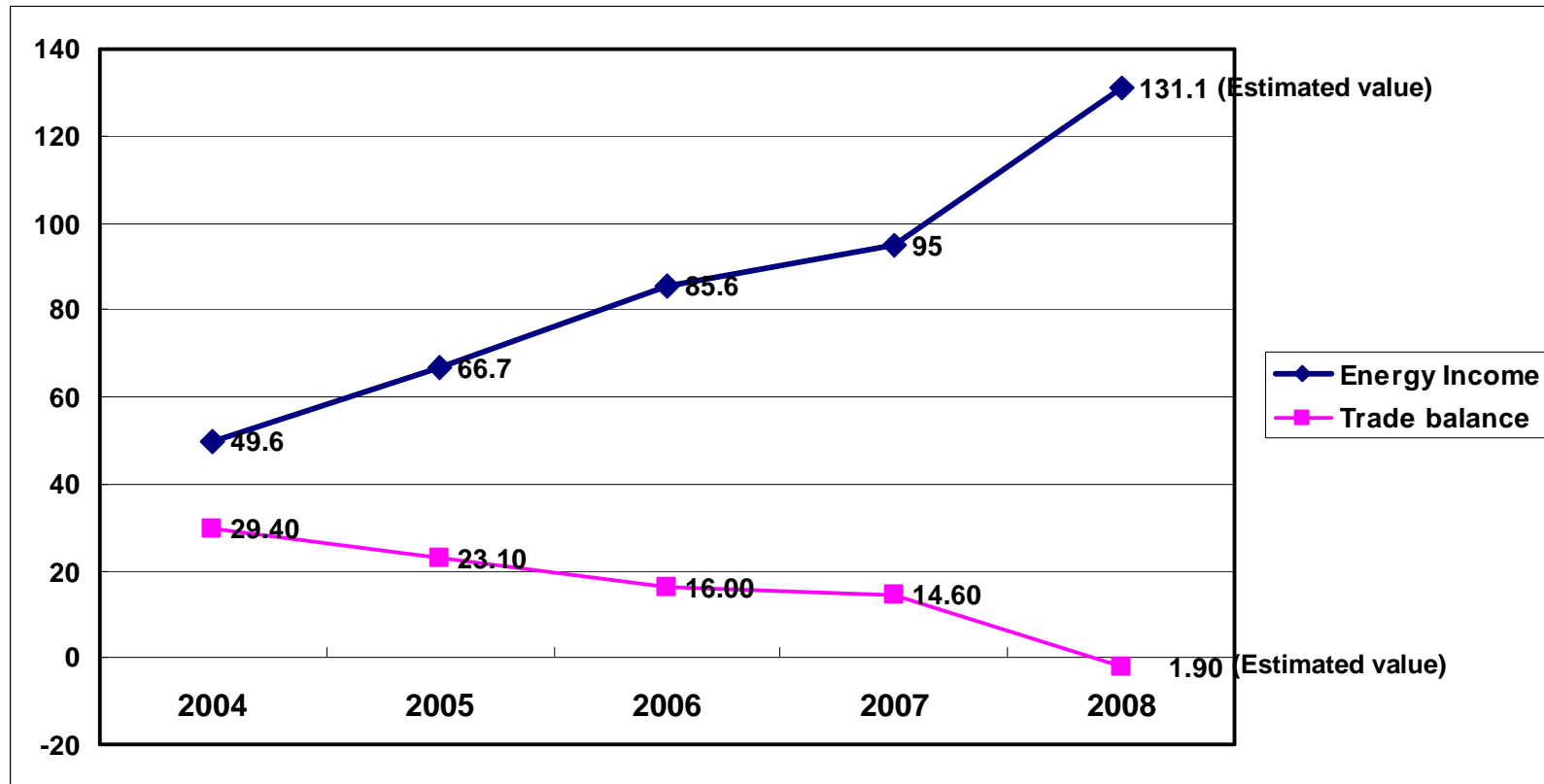
Low Carbon, Green Growth

- **A Low-carbon development paradigm contributes to the reduction of GHG emissions, which aims for decoupling GHG emissions and air pollutants with economic development. It means not only maximize efficient use of natural resources but also minimize environmental impacts. It is based on environmental sustainability and Ecological efficiency (EE).**
- **The Korean government will make a low-consumption society by drastic increase of energy efficiency by 2030.**
- **The Korean government focused more on developing related policies for end-use sectors such as residential and commercial sector.**
- **The Korean government will invest in R&D areas, especially in environmental-friendly technologies such as renewable tech., and promotion of green energy industry to make ‘Green-powerful country’**

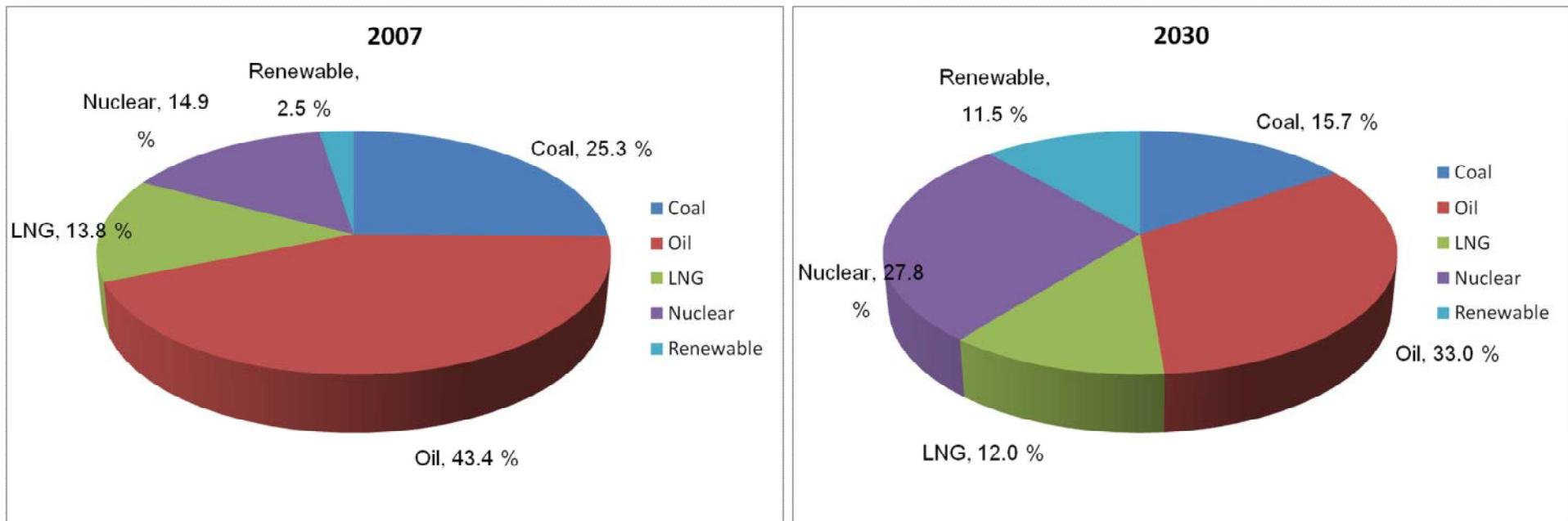
Energy Situation in Korea

- Import Dependence : 97%
- Fossil fuel : 83%

(unit: billion \$)



Energy Mix (Power Sector)



Policy for Low Carbon Society

Lowering Energy Consumption

- Energy Intensity : 0.341(2007) -> 0.185(2030)
- Enhancing the national capacity for climate adaptation

Carbon Free Energy Source

- Oil dependency : 43.4%(2007) -> 33%(2030)
- Renewable energy : 2.4%(2007) -> 11%(2030)

Green Energy Technology

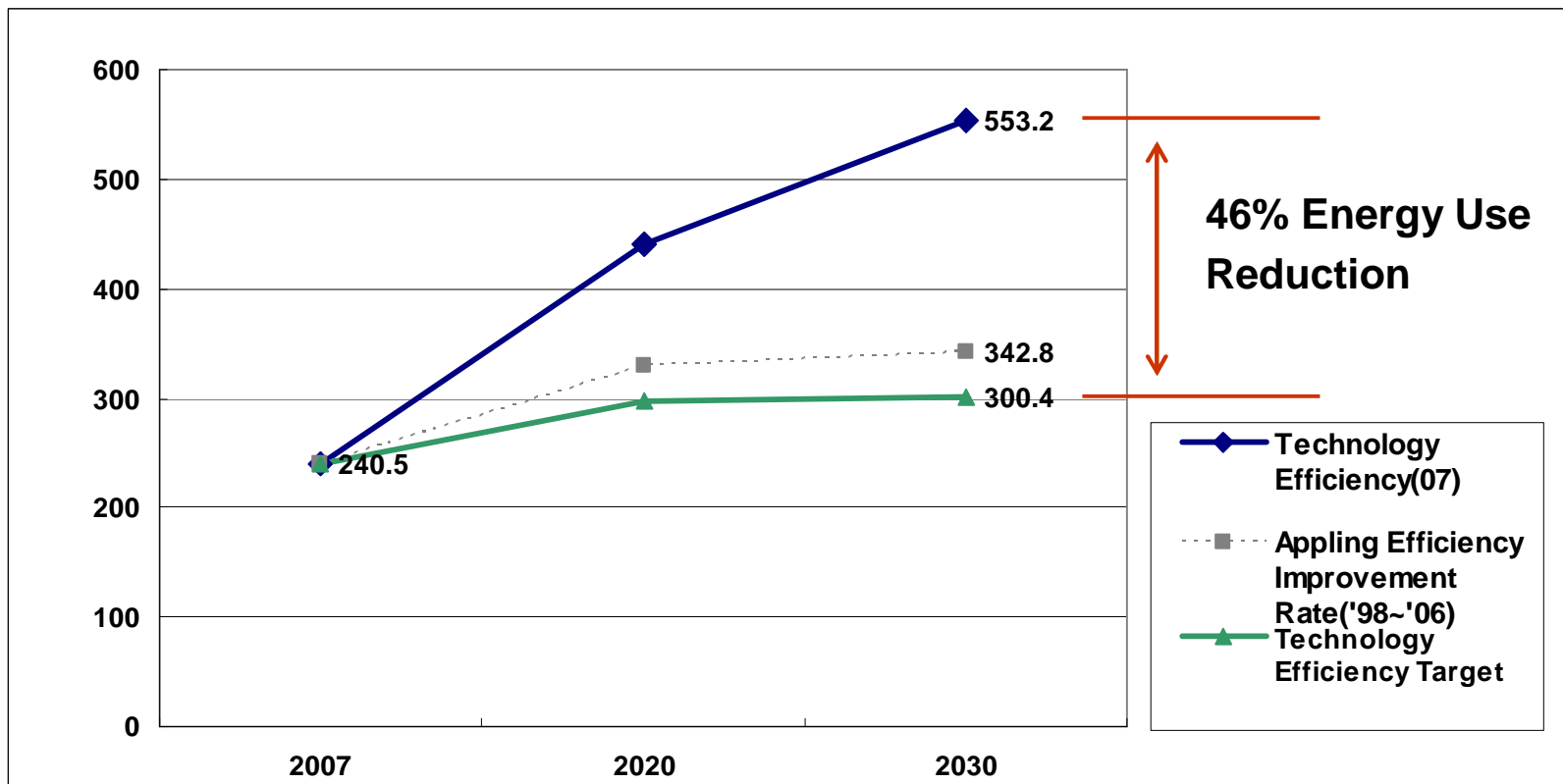
- Technology : 60%(2007) -> World Best(2030)

Energy Independence

- Rate : 4.2%(2007) -> 40%(2030)

Policy for Low Carbon Society

(unit: Mtoe)



Sectional Action Plan and Roadmap

Industrial Sector

- Promoting programs which improve energy efficiency
- Reinforcing energy demand side management
- Introducing fortified NA (Negotiated Agreement)
- Introducing emission trading system
- Investing in R & D to improve the efficiency of energy intensive devices such as HD TV, LCD monitor, green car, and efficient motor

Transportation Sector

- Minimization of trip distance for commuting by intensive land use
- Modal shift from cars to mass transit systems (buses, railways, LRTs)
- Infrastructure development for foot and bike passengers (sidewalk, bikeway, cycle parking)
- Diffusion of motor drive cars such as electric vehicles and fuel cell vehicles

Sectional Action Plan and Roadmap

Residential & Commercial Sector

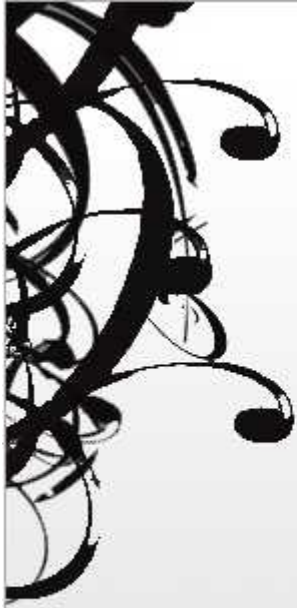
- Reinforcing the tight standards for insulation which is equivalent to those of developed countries
- Utilizing passive house or carbon-neutral house
- Applying green IT technology to improve the energy efficiency of buildings
- Distributing LED and high efficiency products to reduce energy demand in lighting
- Creating and expanding proper markets of such devices, providing competitive market conditions by implementing such high efficient lighting

Power Generation Sector

- Expanding renewable energy sources with proper financial incentives such as RPA
- Expanding nuclear power generation
- Exporting Korean style of nuclear reactors to other developing countries
- Increasing long term contract of energy resources such as natural gas or crude oil with proper energy stocks and filing
- Investing and developing joint programs on advanced technology such as CCS

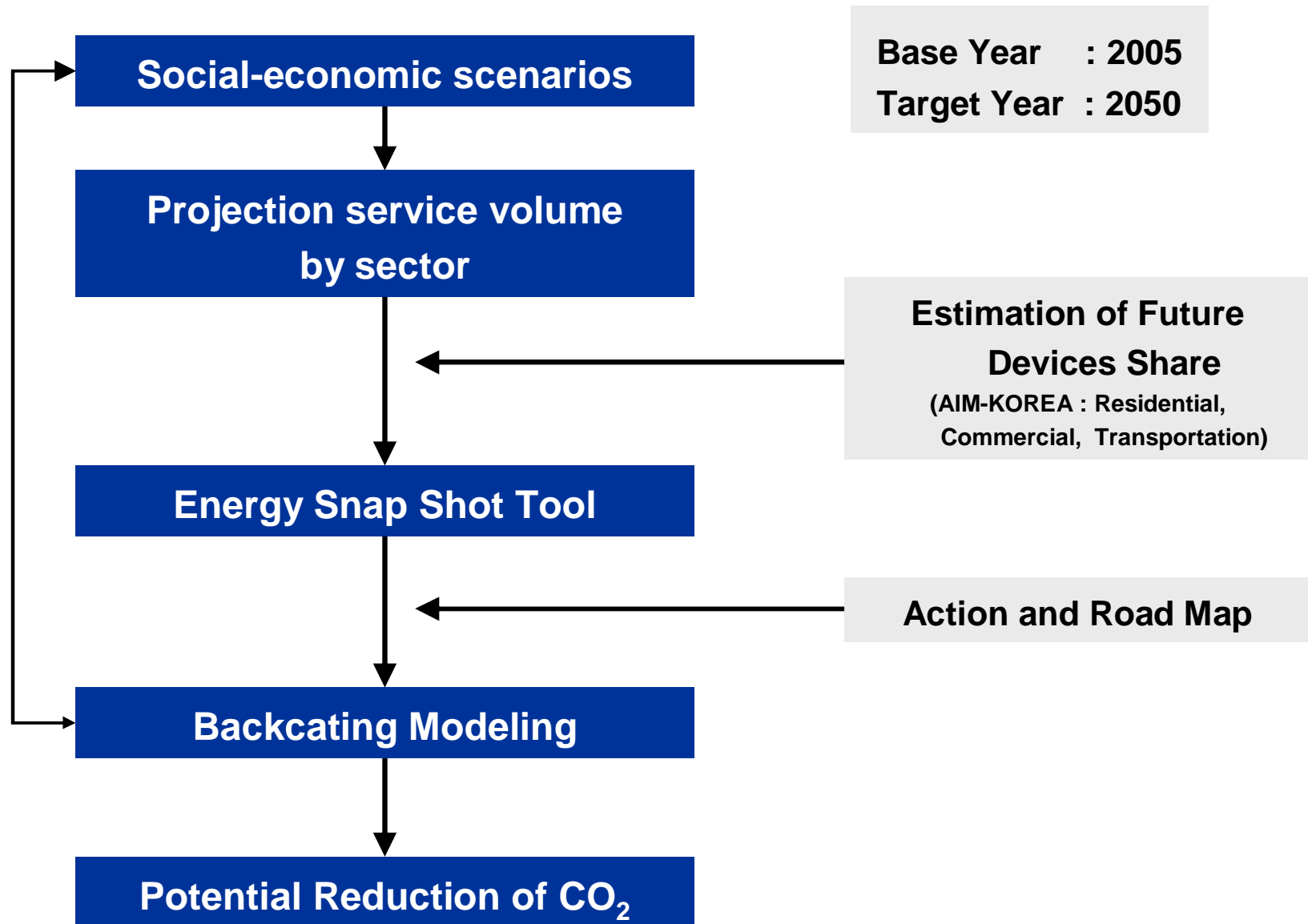
Role of Each Stakeholder

Stakeholders	Roles
People	<ul style="list-style-type: none">-Reducing energy consumption-Volunteering to low-carbon, eco-friendly life style.
NGOs	<ul style="list-style-type: none">-Raising public awareness about climate change-Encouraging and Introducing various activities for low-carbon society-Monitoring production of carbon
Private Sectors	<ul style="list-style-type: none">-Volunteer campaign for reducing GHG and wastes.-Promoting development and application of clean technology-Leading CO2 emission reduction through low-carbon product-Establishing low-carbon business models
Local governments	<ul style="list-style-type: none">-Collecting local GHG emission data-Making comprehensive plans and strategies for local governments-Shifting urban system to more environmental friendly-Designing sustainable urban transport systems
Central government	<ul style="list-style-type: none">-Providing visions and plans for a low carbon society-Enhancing the national capacity for climate adaptation-Developing financial incentives and facilities



Application LCS Scenario in Backcasting Model

Modeling Framework

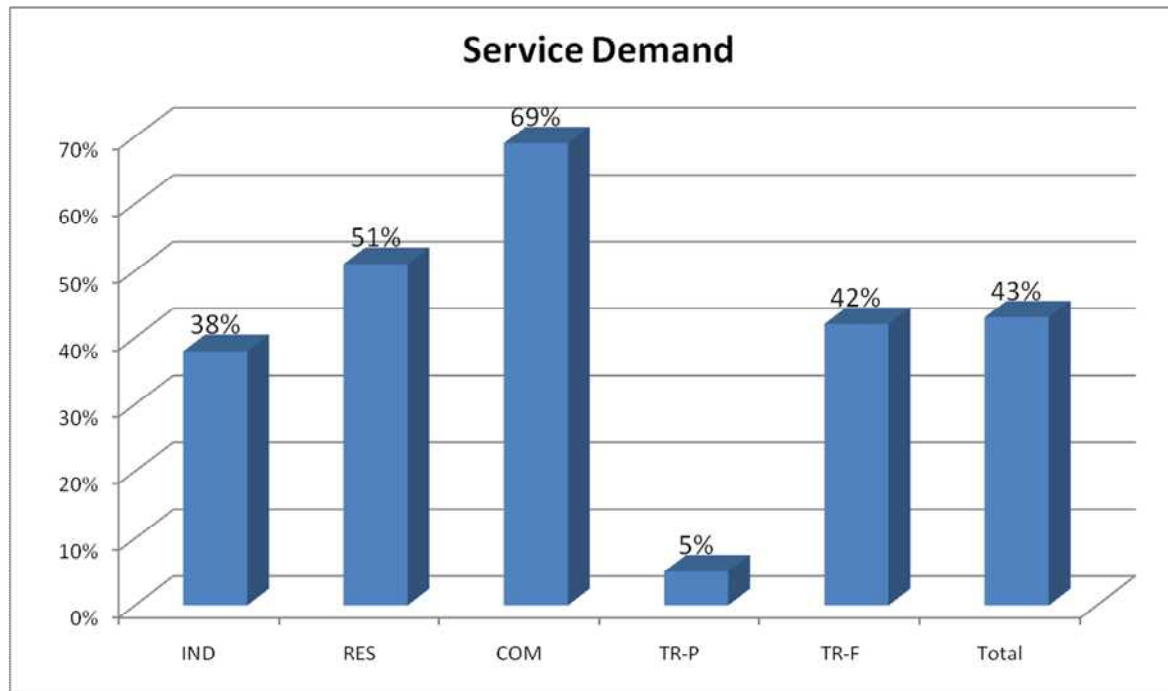


Estimated socio-economic indicators

	2005	2050	2050/2005
GDP (2005 = 1)	1	4.42	4.42
Population('000)	48,138	42,343	0.87
Household('000)	15,971	18,330	1.15
Average family members	2.89	2.21	0.76
Floor space for Residential	20.2	40	1.98
Energy consumption per floor area for energy service (100 in 2005)	100	151	1.51
Passenger transport demand (mil p-km)	275,441	345,000	1.25
Freight transport demand (mil t-km)	178,745	352,000	1.96
Urbanization rate	80.8%	93.0%	1.15

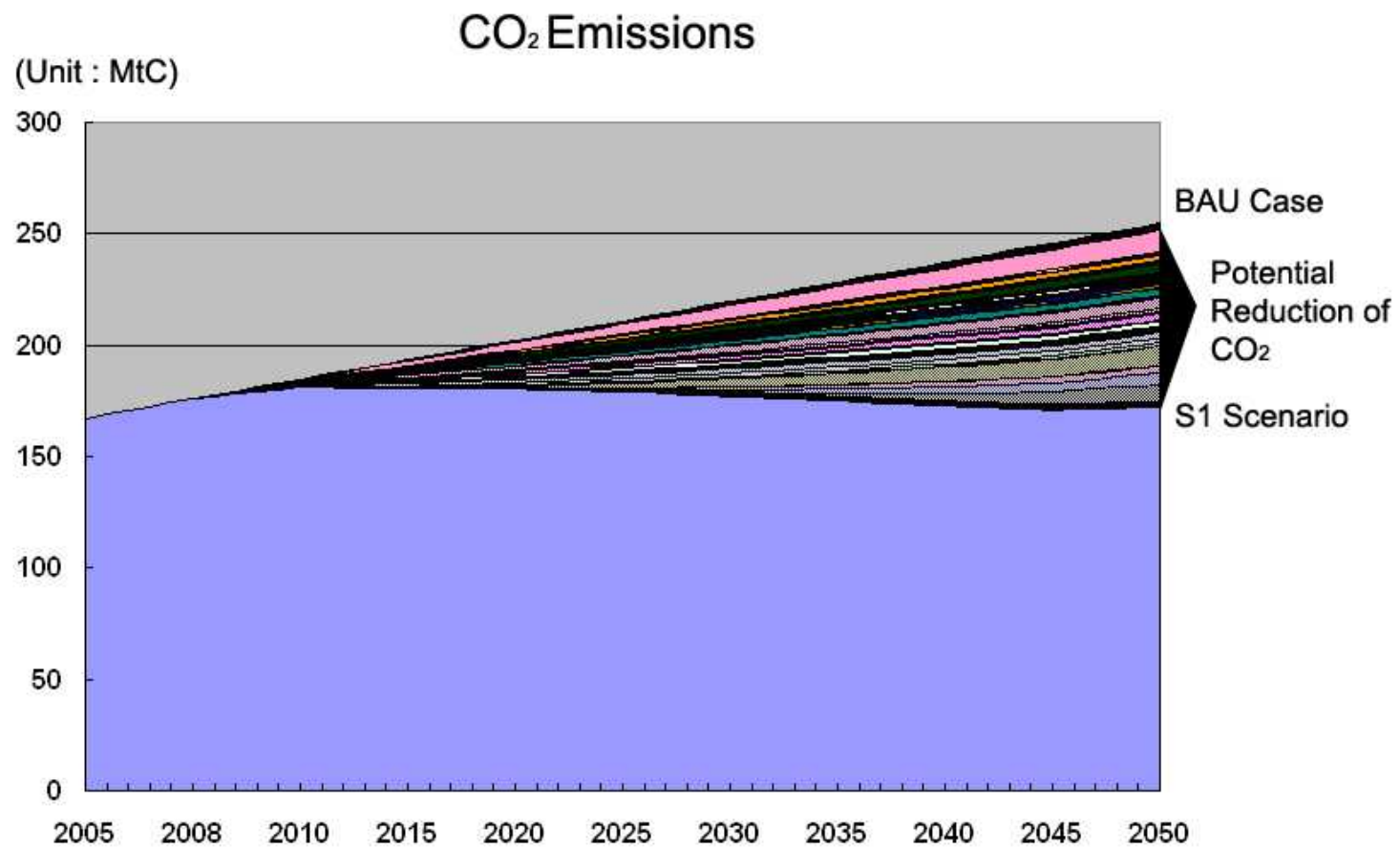
Basic Assumptions

- **Future demand for energy service will increase**



- **The energy efficiency will reach to the Japanese level in 2030.**
- **Economic methods such as levy on carbon tax and emissions trading are not included.**

CO₂ Emissions

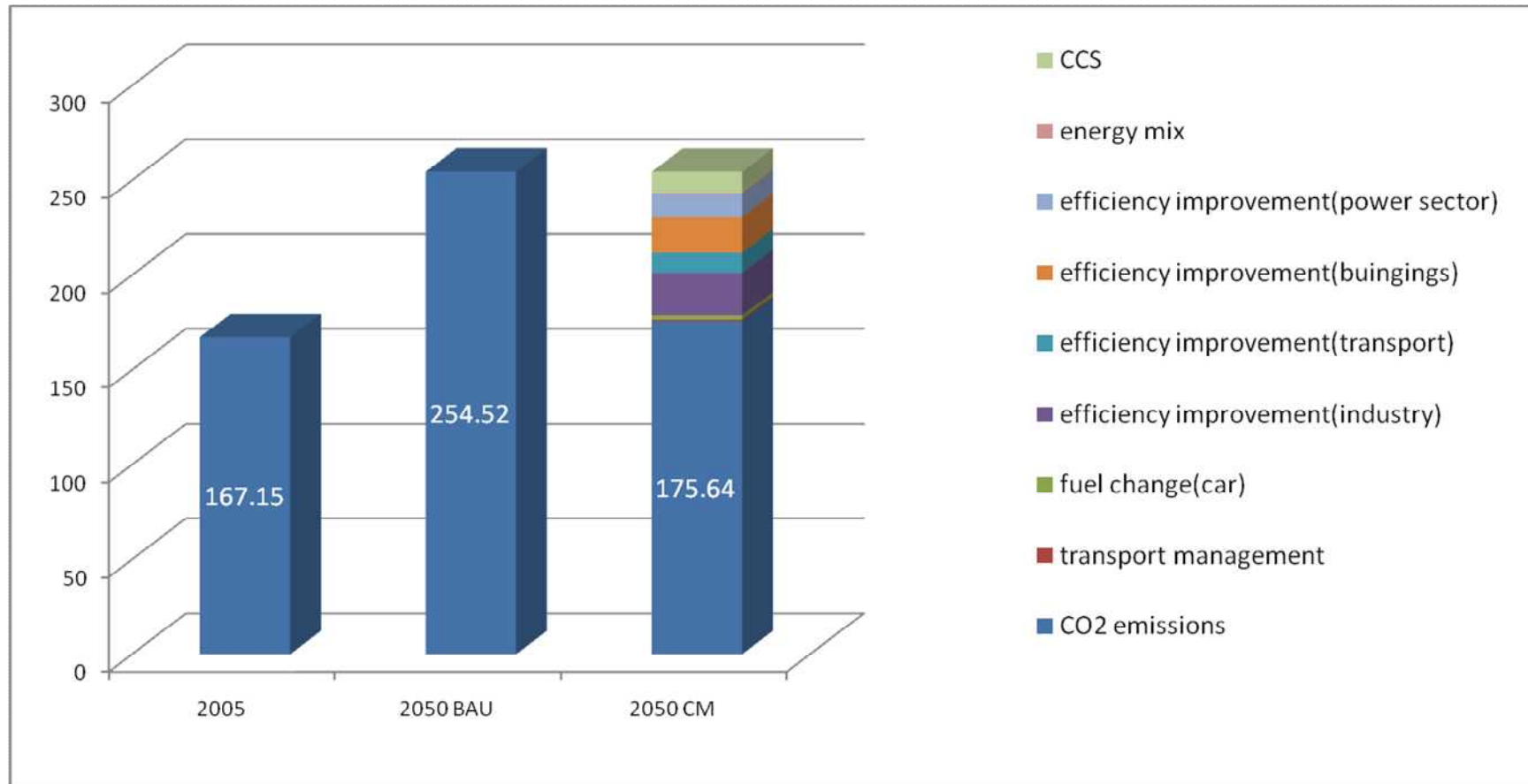


Expected CO₂ Reductions

	Actions	Expected CO₂ Reductions
1	Low Carbon and Green Buildings	17.89 MtC
2	Green IT	1.40 MtC
3	Green traffic transportation system	12.89 MtC
4	Expand Public Transportation and build pedestrian friendly passage	
5	Develop Low-Carbon technology in industrial sector and VA	22.36 MtC
6	Supply renewable energy	24.44 MtC
7	Expansion of low-carbon energy source and introducing CCS	
8	Energy labeling	Cross-sectional
9	Training low-carbon specialist and Governance	

Breakdown of Emissions reduction potential

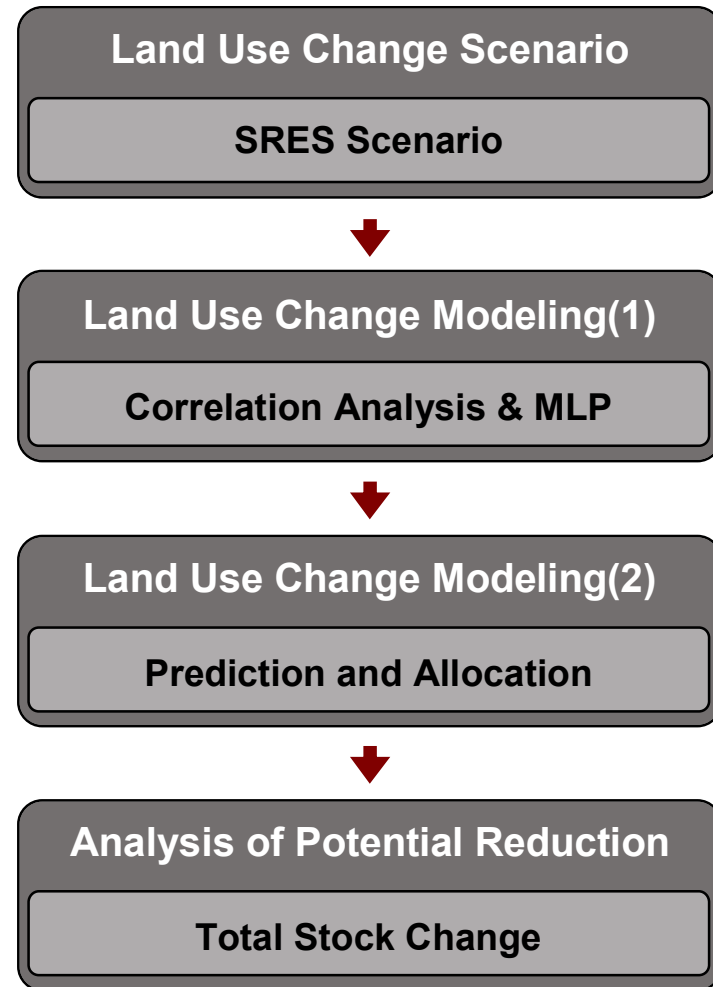
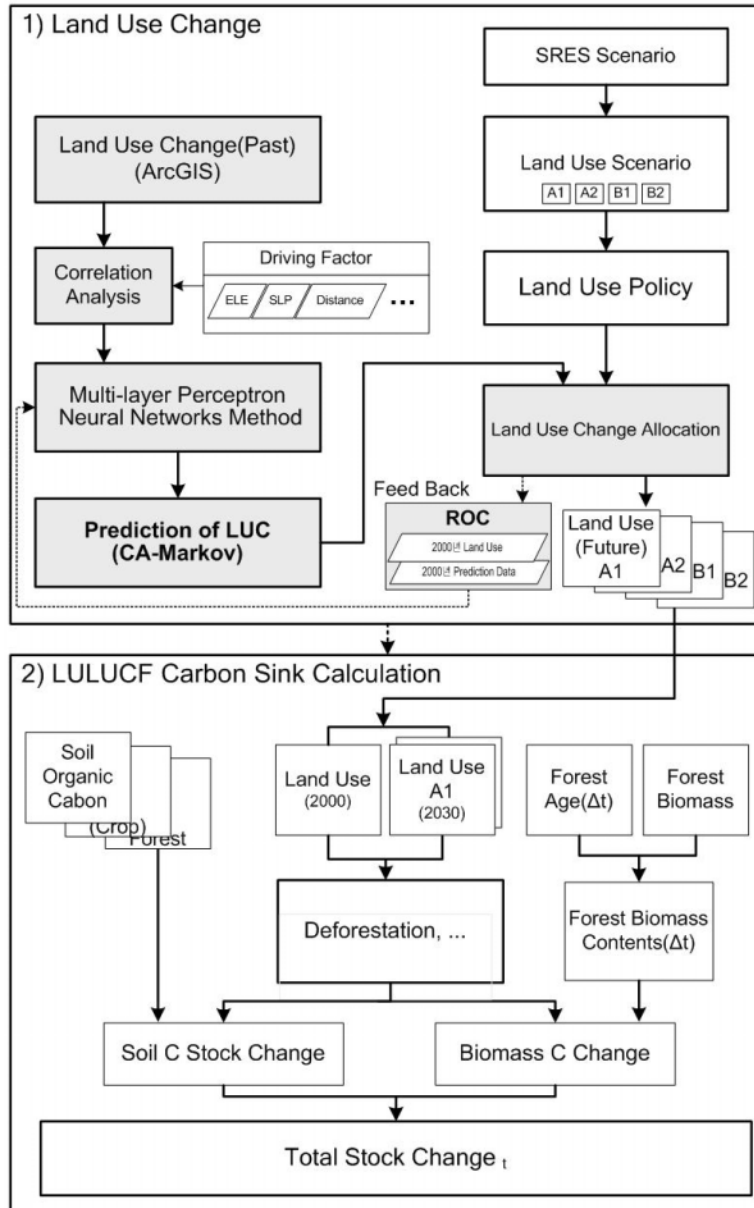
(unit: MtC)





Estimation of Carbon sequestration under different land-use scenarios

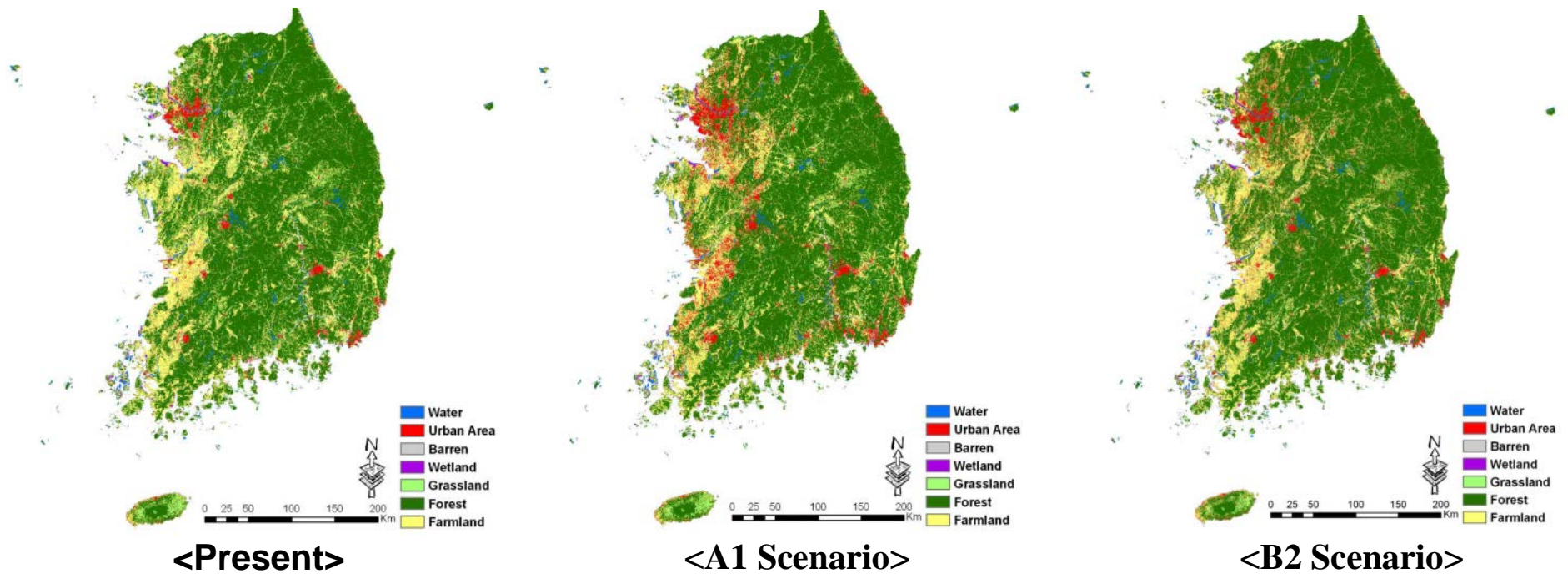
Methods



Result of Land Use Change

Base Year : 2005

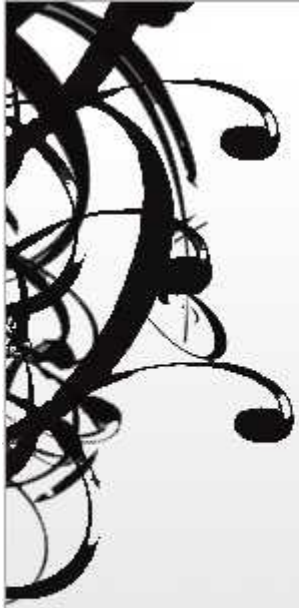
Target Year : 2030



Potential Reduction of CO₂

- From 12.42 to 14.07 MtC will be reduced annually by terrestrial. This is 8.3% percent of 2005 CO₂ emissions in Korea.
- This means from 323 million to 364 million dollars in economic efficiency per year (1tC : 17EUR).
- Potential reductions of CO₂ emissions from natural land cover will able to bring 860 million dollars of economic profits during 25 years.

25 years		A1 Scenario (MtC)	B2 Scenario (MtC)
Sink	Forest Biomass Contents (t)	330.2	337,0
	Reforestration	22.4	26.6
Emission	Deforestation	-34.6	-31.5
	Remain Biomass	-7.7	-5.7
Reduction level of CO ₂ in soil		44.0	25.5
CO ₂ Emissions caused by LUC		-42.3	-11.7
Net change of CO ₂ caused by LUC		-19.8	14.9
Total (1 year)		310.5(12.4)	352.0(14.0)



Conclusion

Conclusion Remarks

To achieve a target of 30-40% reduction in CO₂ emission,

- CCS and combined cycle technology in power generation sector would play a major role.
- The efficiency improvement can lead to a reduction of CO₂ emissions.
- Conservation of natural carbon sinks is necessary for LCS even if changeable amount of potential reduction is little.
- The government should play a leading role in promoting a common vision towards LCS at the earliest stage, enforcing comprehensive measures for social and technological innovation, implementing strong measures to actualize this potential reduction.

A 'Low-carbon, Green Growth' paradigm contributes to the reduction of GHG emissions



Thank you for your attention