Status and Strategy of Green Technology Development in Korea

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Contents

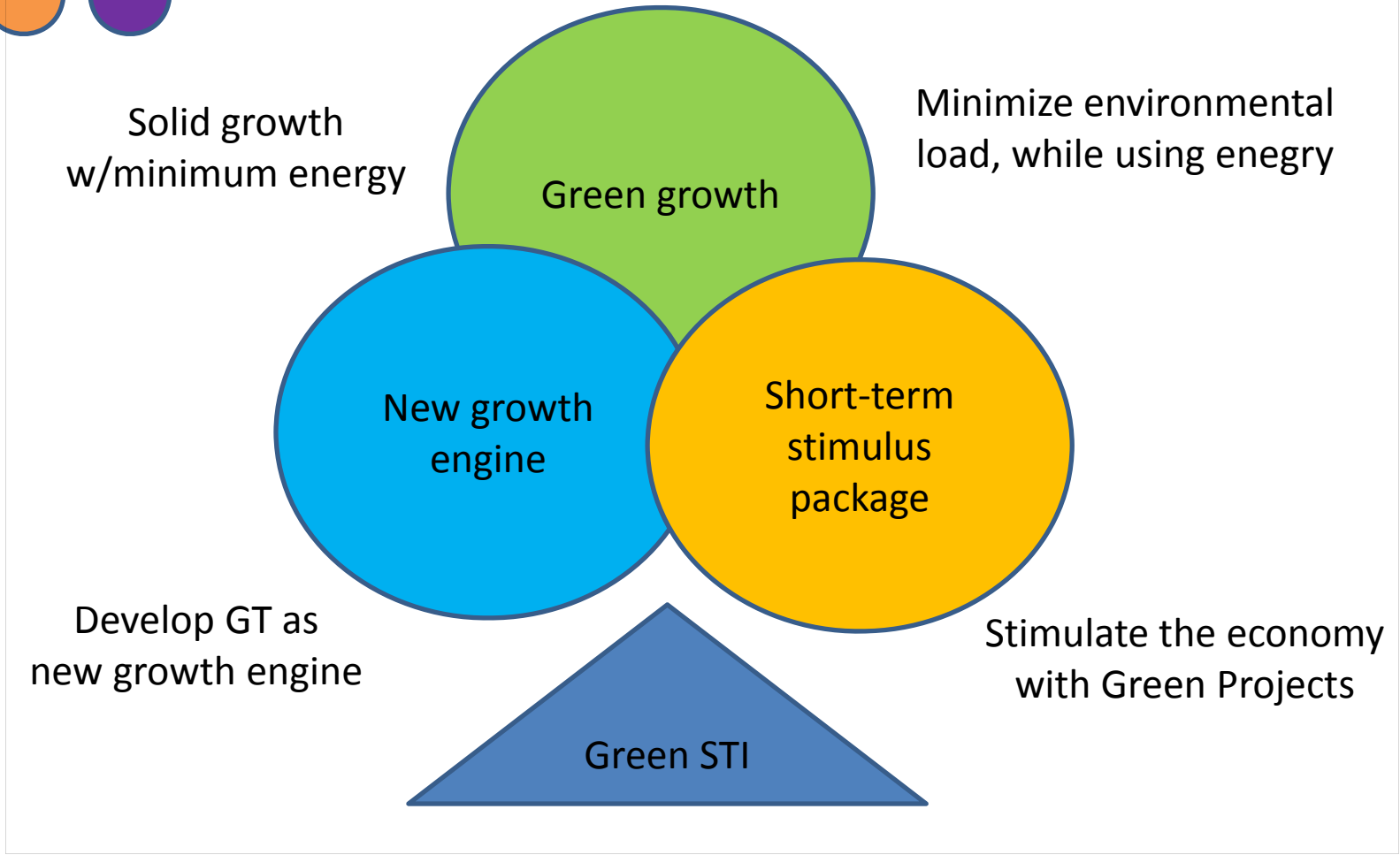
I. INTRODUCTION

❖ Environmental Performance of Korea (Rank among 149 countries)

- Environmental health: 37th
- Air pollution (ozone, sulfer dioxide): 147th
- Water (quality, stress): 28th
- Bio-diversity: 126th
- Carbon dioxide emission: 9th
  - 465 metric ton, 1.4% of the world total
- Environmental Performance: 51th

Korea's New Strategy

➢ **Green growth as a new paradigm for development…….**

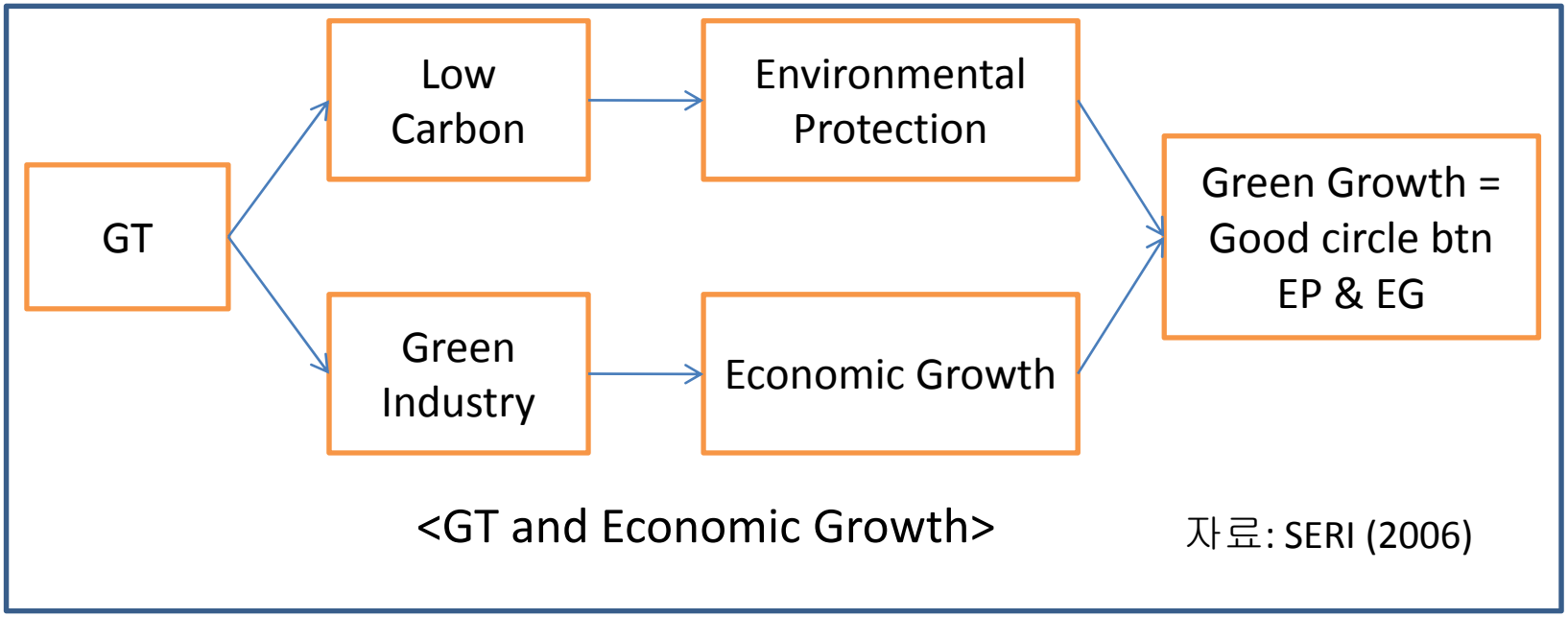


Green New Deal Program and Green Technologies

Source: "Work plan for Green New Program to create jobs" reported at the cabinet meeting January 6, 2009

❖ Green Technology (GT) and Green Growth

- GT plays a strategic role in achieving green growth by contributing to the establishment of low carbon-green industry.
- As the industrial structure changes according to the environmental protection trend, GT becomes the critical technologies among others to achieve a good circle between environmental protection and economic growth.



<GT and Economic Growth>

자료: SERI (2006)

II. STATUS OF GT DEVELOPMENT IN KOREA

Short-term Stimulus package

- "Green New Deal" projects to create jobs and stimulate investment…. (2008 – 2012)

	Investments (Billion $)	Jobs to be created
Revive 4 rivers	10.7	199,960
Green transport n/w	7.2	138,067
Rain discharge facility, dams…	0.6	16,132
Green cars/clean energy	1.3	14,348
Waste recycle	0.7	16,196
Forestation	1.6	170,702
Green home/school	5.9	133,630
Eco-river	0.3	10,789
Nation information system	0.3	3,120

GT R&D Master Plan

Investment Direction for GT Development

Increase of GT R&D Investment

- Double R&D expenditure by '12
- Increase of Basic R&D to 35%

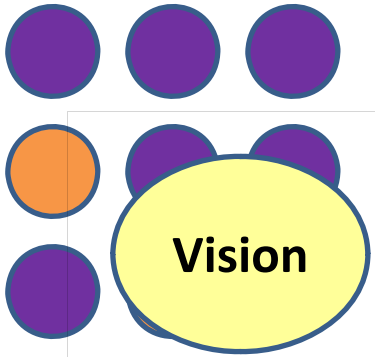
27 GT for focused development

Selection of Key GTs based on growth and green impacts

Strategy for GT Development

- Convergence Green Tech
- Increase of Basic R&D
- Make existing Industries green
- Enlarging GT R&D Infra

Source: GT R&D Master Plan, 2009.1.13



Vision **Build green superpower by advancing green technologies**

3 Goals

Green S&T capability	Green Industry competitiveness	Environmental Sustainability
Technology Level (2012)80% compared with advanced countries (2020)90% compared with advanced countires	**Creating green technology jobs** (2012)More than 160,000 jobs Global market share (2012)More than 7% (2020)more than 10%	**Environmental Sustainability index** (2012)Join the ranks of top 20 (2020)Join the ranks of top 10

❖ To fuel sustained economic growth

New growth engines	Identified and selected 17 new growth industries and/or technology areas for focused development, considering expected market demand, inter-industry linkage effects, and green contents of the candidate technologies…
Green technologies	Renewable energy, low-carbon energy technology, etc.(6) (Fuel Coel, PV Solar, Wind Power)
Leading edge Fusion technologies	Multi-media industry, food industry, etc. (6)
High value added industries	Health care, software, etc. (5)

New Growth engine projects and budgets: 2008 – 2012

		Green Technology	Leading edge technology	High value Added tech	Total
No of projects		79	62	59	200
Budget (Billion $)	**R&D**	3.7	8.8	1.6	14.1
	Non R&D	3.0	3.4	3.9	10.4
	Total	6.7	12.2	5.5	24.5

- ***Link the New Growth Engine Projects to the Development of GT…..***

❖ Samsung Electronics Co.

- Vision of ‘Creating New Value through Eco-Innovation‘: July 20, 2009
- Key Contents

  - Total investment for green innovation: Billion Won 5,400 (2009-2013)
  - 50% reduction of GHG per sales unit and 40% increase of energy efficiency by 2013 :
    Total reduction volume = GHG 84 million ton
  - 100% of Good Eco-Product by 2013
  - Green innovation partnerships with cooperative companies

❖ Hyundai-Kia Motors

➢ Investment Plans for Green Innovation:

July 22, 2009

➢ Key Contents

- Total investment for green innovation: Billion Won 4,100 (2009-2013)
- Establishing mass production system of eco-friendly vehicles, aiming at the 4th green car company
- High efficiency & energy-saving engine/transmission and materials
- Reduction of CO2 emission in production sites

❖ POSCO

- Vision of ‘Global Green Growth Leader‘: July 7, 2009
  - **Green innovation: One among Three Management Philosophy**
- Establishment of Master Plan by October, 2009: **Four Committees are under operation**
  - Low carbon steel
  - Climate change
  - Renewable energy
  - Green growth

III. STRATEGIES FOR GT DEVELOPMENT IN KOREA

Key Strategies for Green Technology (GT) Development in Korea

1. Increase and strategic allocation of government R&D investment in GT development
2. Introducing ‘Degree of Greening‘ to the existing national R&D programs
3. Strengthening incentive schemes for inducing private investment in GT development
4. Promoting the international cooperation for GT development

1 Increase and strategic allocation of government R&D investment in GT development

❖ Increase of Government R&D Investment

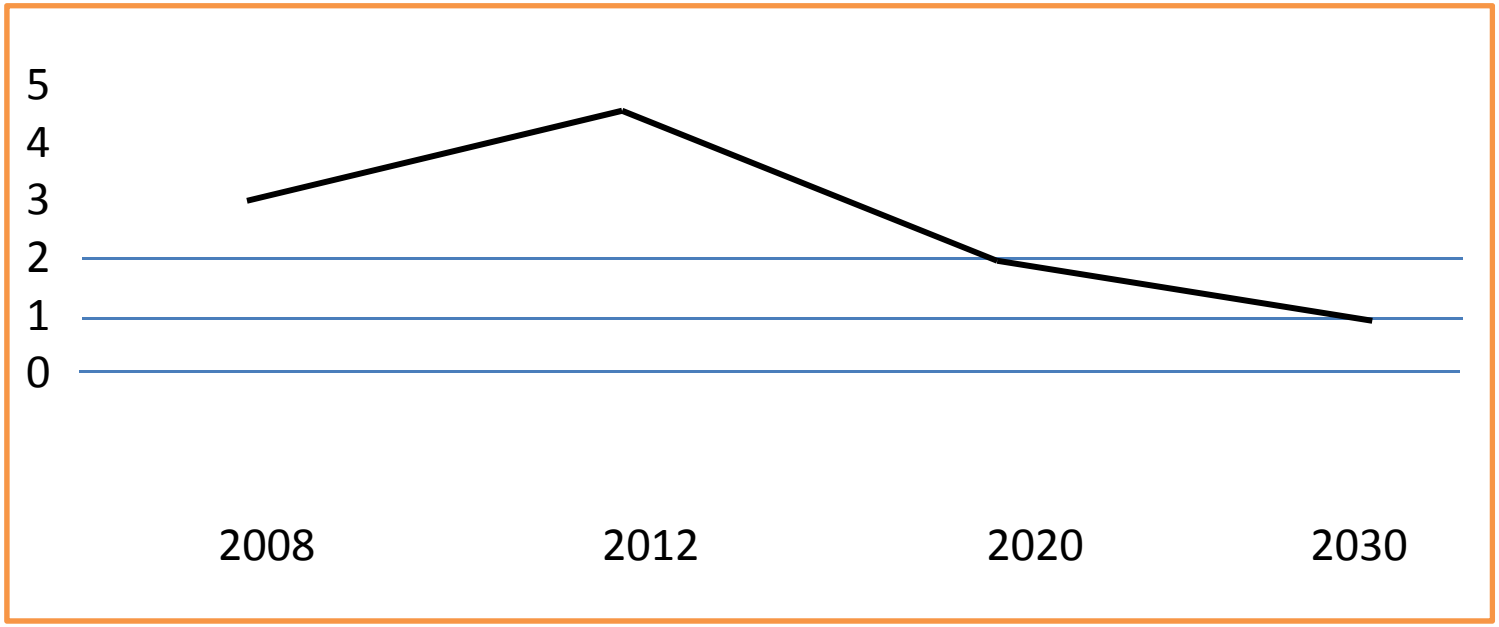
- Double R&D expenditures on green technologies from 1.4 trillion Won (billion$) in 2008 to 2.8 trillion Won in 2012
- Identify and select 27 green technologies for focused development
- Draw up a roadmap for the development of green technologies and green industries: an inter- ministerial agenda

❖ Green technologies for focused development (27)

Prediction tech (2)	Models for climate change prediction, etc.
Alternative energy technology (9)	Solar battery, bio-energy, nuclear re-actor (Improved light water), nuclear fusion energy, hydrogen energy, etc.
High efficiency energy technology (10)	Electric power generation using gasified coal, high-efficiency low emission automobiles, intelligent transportation and logistic technology, urban renewing technology, Energy-saving building, green process technology, LED, green IT, high-efficiency secondary battery, etc.
Pollution treatment technology (7)	CO2 trapping and storing technology, GHG (non-carbon) treatment technology, water quality assessment and management, etc.

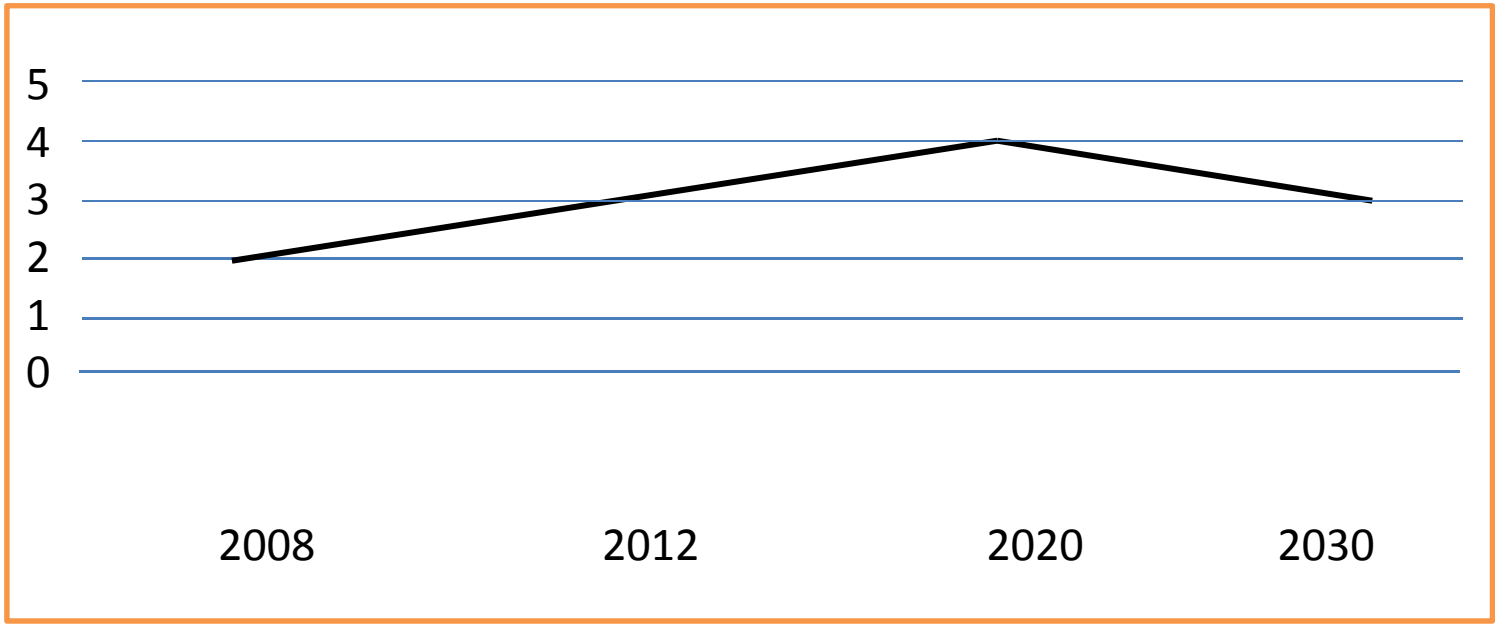
Green technologies for immediate application

- Solar battery (silicon) technology
- LED
- Application of IT to green industries



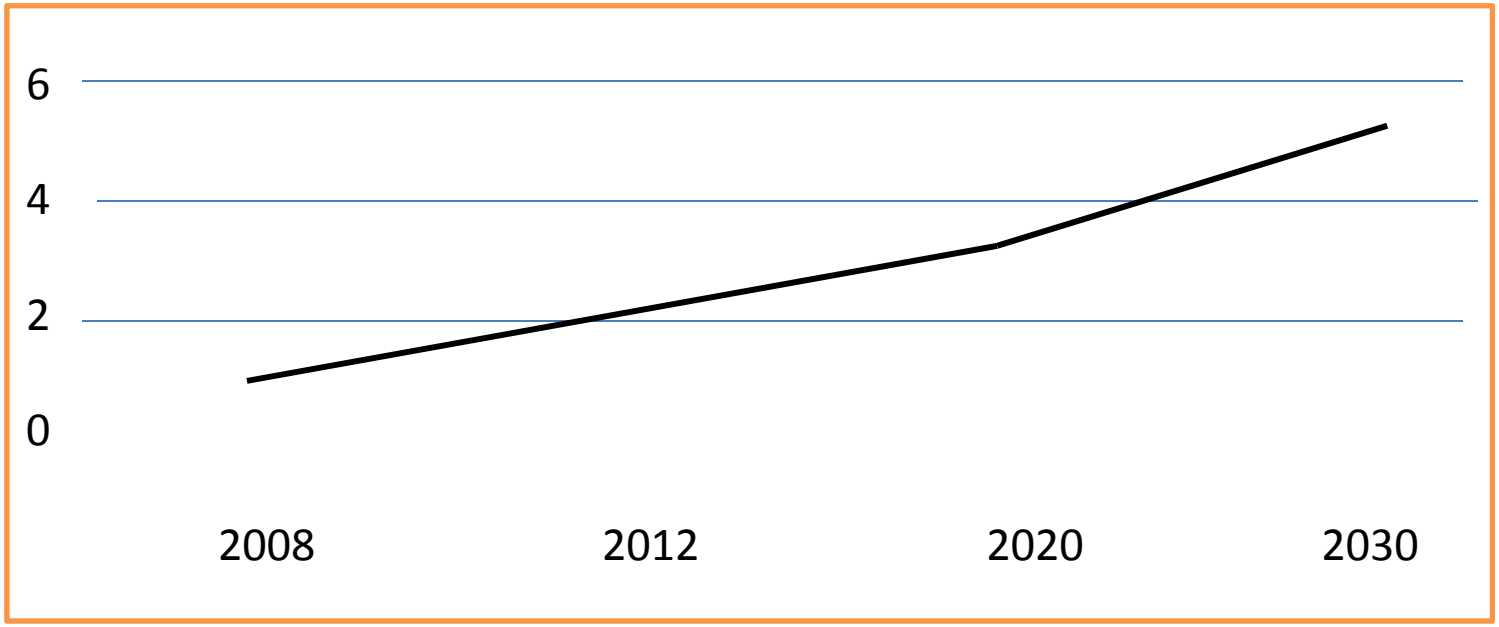
❖ Green technologies for medium-term application

- ➢ High-efficiency secondary battery technology
- ➢ High-efficiency low-emission automobiles



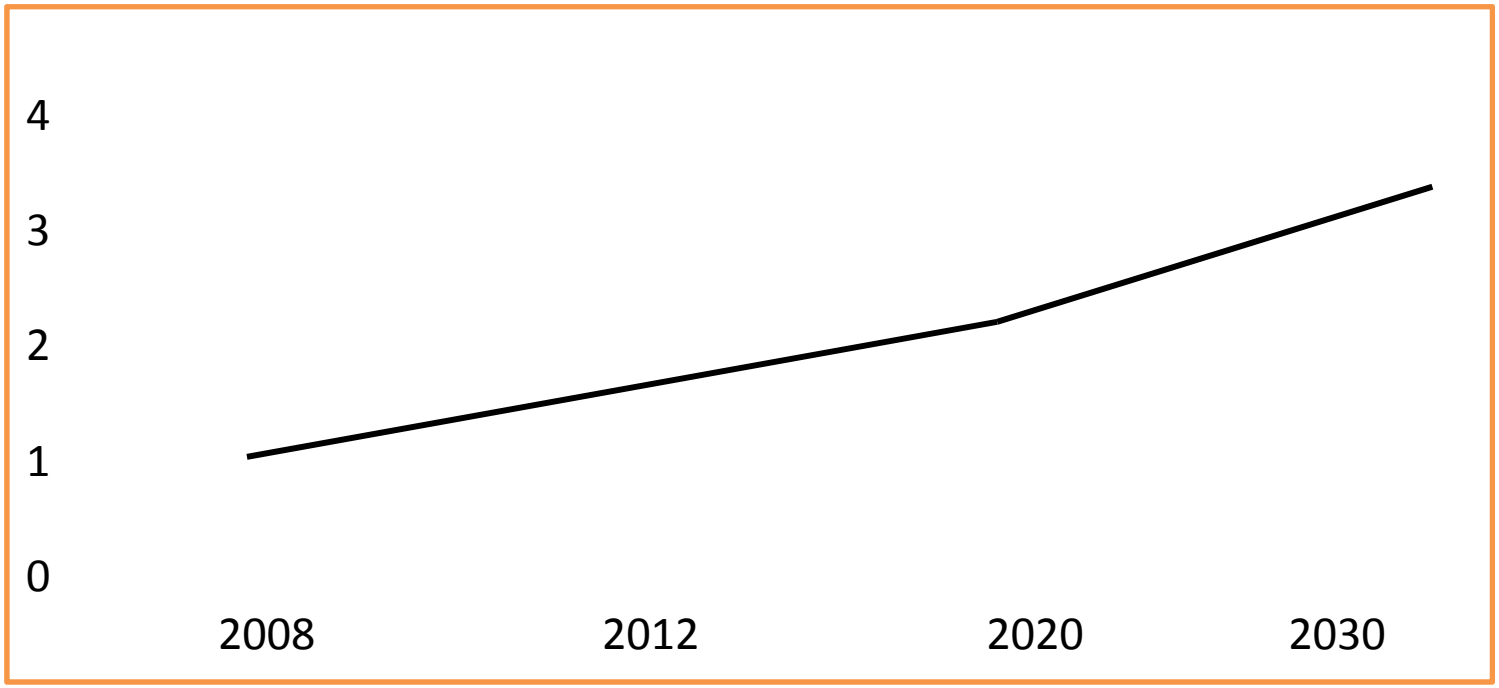
❖ Green technologies for long-term application

- ➢ Gasification of coal/Electric power generation technology
- ➢ Intelligent electric grid technology, etc.



❖ Green technologies for continuous development for future application

- ➢ Solar battery technology (non-silicon)
- ➢ Climate change forecasting model, etc.



2 Introducing ‘Degree of Greening‘ to the existing national R&D programs

❖ ‘Degree of Greening of Technology (DGT)‘ Index

- DGT Index is a measure showing how much a specific technology is conforming to the low carbon paradigm and is sociallu sustainable the long run.
- DGT Index can be used to make the exisiting national R&D programs much greener.

❖ Specific Indicators

- Green Technological Indicators, Economic Indicators and Environmentally sustainable Indicators

Green Technological Indicators	Economic Indicators	Environmentally sustainable Indicators
Technological Impact	Economic Impact	Ecological Impact
-Carbon Intensity -Pollutant Intensity -Energy Intensity -Material Intensity	-Incurred Internal Cost -Carbon External Cost -Other Pollutant External -Cost	-Disruption of Eco- system -Social Sustainability

3 Strengthening incentive schemes for inducing private investment in GT development

❖ Strengthening Public Procurement

- ➢ Preparation of inter- ministerial public procurement policy to promote GT development
- ▪ Draw up a road map for public procurement to promote GT development
- ▪ Introduction of obligatory portion of public procurement for green innovative products
- ▪ Provision of a comprehensive guideline to promote green innovation through the life cycle of public procurement

❖ Improvement of Tax and Financial Incentive Schemes for GT Development

- Increase of a proportion of tax deduction for GT R&D investment to more than 20%
- Preferential treatment of green technologies and companies for a loan or guarantee judgment
- Increase of investments by venture capital into young green innovative SMEs
- Introduction of discriminative tax & financial incentive schemes based on the intensity of GT development efforts by private companies

❖ Improvement of Cultivation System for GT R&D Personnel

- Preparation of supporting program for the cultivation of high quality GT R&D personnel in the universities
- Establishment of joint university-GRI graduate schools specialized in the GT areas
- Promoting empolyment of master or Ph.D. Personnel in GT areas by supporting labor cost
- Introduction of GT consultant program for related SMEs mainly utilizing researchers in GRIs

4 Promoting the international cooperation for GT development

❖ Promotion of Strategic Partnership with Foreign Countries for Global GT Development

- ➢ Implementing ‘Global Partnership for Green Technology Development‘ Program
- ➢ Designing and implementing ‘Korea-Japan-China GT Cooperative Program‘
- ➢ Promotion of international cooperative researches with foreign research institutes such as LBNL
- ➢ Active dissemination of GT into developing countries for solving global issues and creating global markets for green innovative products

❖ Participation in the Establishment of International Governance for GT Cooperation

- Active participation in activities related to GT of international organizations such as IPCC, OECD
- Improvement of infra structure for international cooperation for global GT development
  - Establishment of Korean branches of high quality foreign GT research institutes
- Activities for establishing Global GT standards
  - Establishment of East Asia GT standards council
  - Strengthening activities for GT standards in EU

IV. CONCLUSION

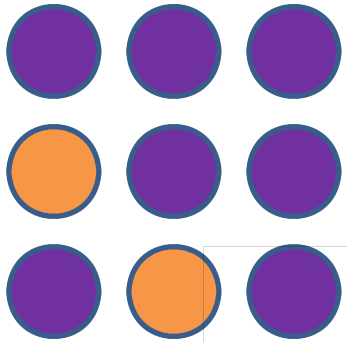
- *In a nutshell, Korea's green growth strategy is to develop green technology as a vehicle to not only environmental sustainability but also long-term industrial growth as well as short-term economic recovery….*
- *Actions in addition to GT development are being taken….*
  - *Introduction of environment-friendly tax system*
  - *Establishment of an information system to monitor and report on greenhouse gas emission and energy consumption…*
  - *Introduction of 'Cap-and-Trade' system for CO2*
  - *Green Growth Committee chaired by the Prime Minister to oversee…*

❖ What Korea aims to achive by 2030

- Secure energy independence and reduce GHG

	From (2006)	To (2030)
Energy Independence	3.2%	40.0%
Share of renewable energy	2.2%	11.0%
Petroleum dependence	43.6%	33.0%
Energy-poor population	7.8%	0.0%

- Develop GT as new growth engine: G Economy
- Restructure transportation, urban, and land system to be suitable for green culture
- Low-carbon life style
- Green eductation: diffusion of green culture



TAHNK YOU!!