Korean Strategy for Green Growth and Role of IT

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Contents

I. Introduction

I. Introduction (1)

- **Existing industry/economy paradigm has aggravated global environmental issues including climate change**
  - ❖ If the current condition continues, the earth's temperature will rise by 1.1~6.4℃ by 2100 (IPCC, 2007)
  - ❖ Environmental burden on the Earth to be intensified by the rapid economic development and population growth in the developing countries
  - ❖ Human society is now at a critical juncture of migrating into low-carbon green revolution based on energy/environmental technologies after the agricultural, industrial, and information revolutions in the history of mankind

I. Introduction (2)

- **Though it was a late-comer in industrialization, Korea has made significant achievements in industrialization as well as in information revolution based on IT**
  - ❖ However, Korea is now faced with challenges of improving environmental quality, achieving energy independence, restructuring industrial and socioeconomic structures of high-carbon society.
  - ❖ Korea needs to transform into a creative post catch-up economic model from simple catch-up and imitation-based economic mode

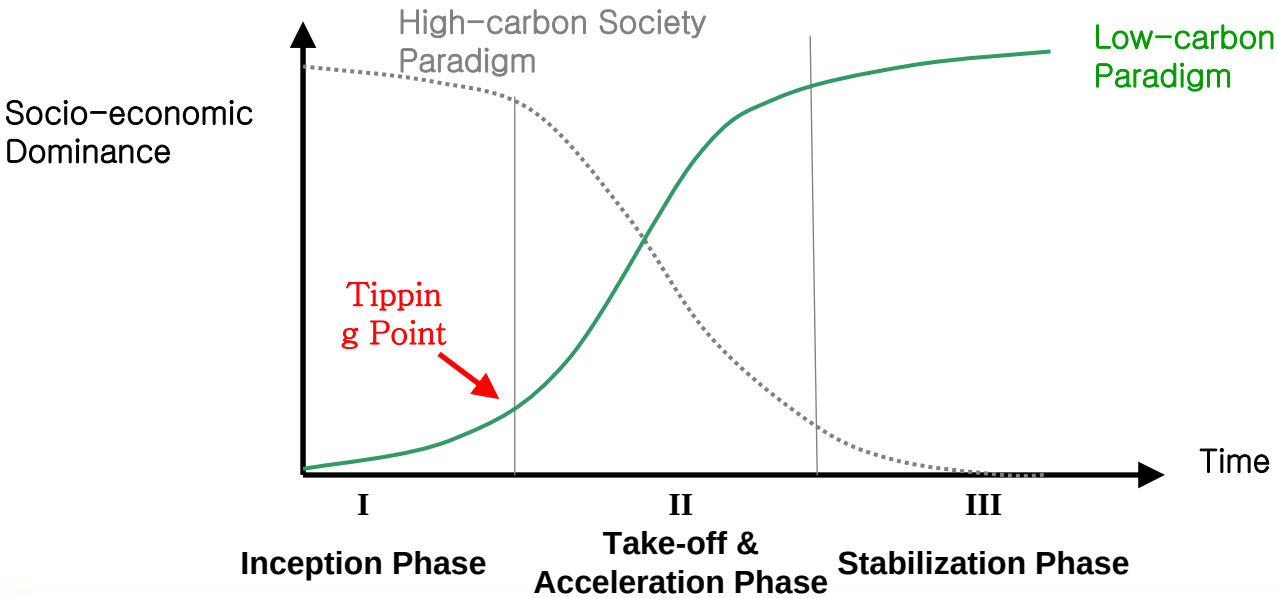
- **This presentation will address Korean strategy for green growth and role of IT in the following order**
  - ❖ Paradigm of low-carbon society; characteristics and dynamics
  - ❖ Korea's low-carbon green growth; vision and goals
  - ❖ Korea's "Green New Deal Policy"
  - ❖ Functions of green innovation system and the role of IT in green growth

II. Paradigm of low-carbon society; characteristics and dynamics

II. Paradigm of low-carbon society; characteristics and dynamics (1)

❑ Dynamic relations in the paradigm shift from high-carbon to low-carbon society

- ❖ Paradigm of low-carbon society has been created as the existing paradigm of high-carbon society has many problems
- ❖ Paradigm of low-carbon society should root in amidst the competition against the existing dominant paradigm of high-carbon society
  - ⇨ During the early stage, the conflict between the two paradigms is especially intense



II. Paradigm of low-carbon society; characteristics and dynamics (2)

❑ During the inception phase of low-carbon society paradigm, it is disadvantaged as this new paradigm needs to root in on infrastructure and value chain of high-carbon society

❖ Wedge roles of science and technology, policy, and civil society are needed to overcome the disadvantage of low-carbon society paradigm

⇨ Technological push: green technology

- ✓ Green technology minimizes consumption of materials and energy while utilizing recyclable and renewable materials and energy
- ✓ Green technology reduces environmental load and weakens the increase of entropy

⇨ Socio-economic pull of a new paradigm through policy

⇨ Support from civil society through education and change in mindset: bringing about change in consumption pattern

II. Paradigm of low-carbon society; characteristics and dynamics (3)

- ❖ Reaching time to “Tipping Point” from the inception phase is determined by the following two factors;
  - ⇨ Gap in the socio-economic dominance between the old and the new paradigms
  - ⇨ Intensity of the wedge in the new paradigm

❑ Once the tipping point is reached, the new low-carbon paradigm rapidly expands during the take-off phase

- ❖ Gain in market competitiveness
- ❖ Increase in job creation
- ❖ Shift in the socio-cultural superstructure including changes in consumption pattern
- ❖ Reducing policy support for low-carbon technologies that have already gained competitiveness and, instead, increasing policy support for less competitive low-carbon technologies (wedge support gradually reduced)

❑ During the stabilization phase, both economic substructure and socio-cultural superstructure are operated under the new low-carbon paradigm

- ❖ Paradigm reproduction structure is solidified

II. Paradigm of low-carbon society; characteristics and dynamics (4)

❑ Comparison of high-carbon vs. low-carbon society paradigm

Classification	High-carbon society	Low-carbon society
Relations between economy and environment	- Coupling: economic growth is coupled with increased load on environment - Trade-off of economy and environment	- Decoupling: economic growth is not coupled with increase in environmental load - Economy is operated within the limit of environmental capacity
Use of resources vs. knowledge	- Resource-intensive	- Knowledge-intensive
Goals of environmental management	- Environmental performance - Satisfying environmental standards	- Environmental sustainability - Consideration of future generation - Social sustainability is also relevant
Focus of management	- Supply-side	- Demand-side
Innovation system	- Innovation system focused on resource consumption - Innovation system based on catch-up mode	- Green innovation system focused on human and value - Creative innovation system

II. Paradigm of low-carbon society; characteristics and dynamics (5)

❑ Comparison of high-carbon vs. low-carbon society paradigm(continued)

Classification	High-carbon society	Low-carbon society
Framework of game	- Competition - Zero-Sum	- Mutual benefit - Win-Win
Ownership relations	- Ownership emphasized	- Sharing emphasized (e.g.: “Velib”, a bike pool in Paris)
Development index	- GDP	- Green GDP - Social/ecological/economic indices
Technology/ process/product competitiveness	- Price and quality	- Price and quality - Degree of Greening*
Energy source	- Fossil fuel energy	- Renewable energy
Material source	- Petrochemical-based material	- Bio-based material

* Low energy + low material + low pollution exhaustion + long life span + dematerialization

II. Paradigm of low-carbon society; characteristics and dynamics (6)

❑ Comparison of high-carbon vs. low-carbon society paradigm(continued)

Classification	High-carbon society	Low-carbon society
Main technology level	- High-Tech	- High-Tech - Low-Tech
Key industry	- Petrochemical-based industry - Manufacturing - IT - Finance	- Energy/environment - Energy/environment + IT - Knowledge-based service
Booming market	- Manufacturing market - IT and other new technology market - Financial market	- Carbon market - Energy/environment market (including water) - Markets where emerging technologies are related with energy/environmental industries (e,g.: IT)
Socio-economic structure	- Centralization - Focus on central government	- Decentralization - Focus on local autonomy
International relations	- Standing issues between South and North - International relations dominated by advanced countries	- Cooperation between developed and developing countries on global issues - Multilateral cooperation

III. Korea's low-carbon green growth; vision and goals

III. Korea's low-carbon green growth; vision and goals(1)*

❑ President Lee Myung-bak emphasized Korea's efforts to reduce greenhouse gas at the G8 summit meeting held in Hokaido, Japan (July 9th, 2008)

- ❖ Korea actively joins with the global community in realizing the target of reducing greenhouse gas by half by 2050 and plans to announce the medium-term target for greenhouse gas reduction by 2020 next year based on the public consensus
- ❖ Technology development to reduce greenhouse gas will become a new growth engine that will lead the economic growth by creating new markets and jobs
- ❖ Korea will become an early-mover in the field of climate change and energy
- ❖ Key challenges in establishing "Post-2012 Earth Climate Change Framework" include presenting clear mid-term reduction targets for developed countries and introducing incentive system for developing countries, which will help achieve "green growth" and migrate to the "low-carbon society" where economic growth is coupled with greenhouse gas reduction
- ❖ Propose the establishment of the "Climate Partnership in East Asia" mainly participated by East Asian countries

* Developed based on Prime Minister's Office (2008)

III. Korea's low-carbon green growth; vision and goals (2)

- **President Lee Myung-bak announced "Low-Carbon Green Growth" vision on August 15th, 2008, commemorating the 60th anniversary of the country's foundation**
  - ❖ Sustainable growth reducing greenhouse gas and environmental pollution
  - ❖ New development paradigm creating jobs and new growth engines with using green technology and clean energy

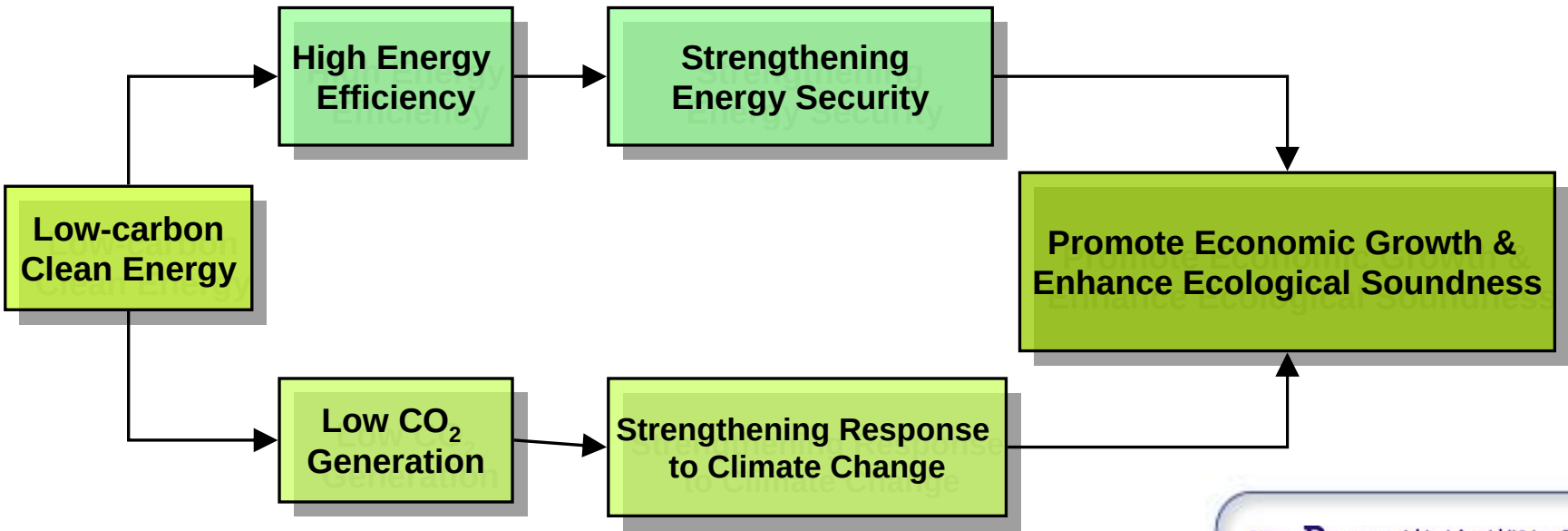
III. Korea's low-carbon green growth; vision and goals (3)

- **Green growth is a growth model of a new paradigm which pursues both "growth" and "environmental conservation" at the same time**
  - ❖ **In the existing economic theories, growth and environment are in contradicting relations**
  - ❖ **Pursue to realize the new paradigm by improving eco-efficiency, changing consumption patterns, and strengthening knowledge-intensive service**

III. Korea's low-carbon green growth; vision and goals (4)

❖ **Low-carbon green growth: new development strategy turning the current "vicious cycle" among energy, economy, climate, and eco-system into the "virtuous cycle"**

< Low-carbon green growth paradigm>



Source: Prime Minister's Office (2008)

III. Korea's low-carbon green growth; vision and goals (5)

❑ Korea is a birthplace of green growth strategy

❖ **Green growth was first adopted as a sustainable development strategy for the Asia-Pacific region at the 5th MCED Asia-Pacific Environmental Development Meeting of the UN ESCAP held in Seoul in March, 2005 and it was also the first occasion where the UN adopted green growth strategy**

❖ **Since 2006, the "Seoul Initiative for Green Growth" has been diffused throughout the Asia-Pacific region**

III. Korea's low-carbon green growth; vision and goals (6)

❑ Rationale of implementing low-carbon green growth in Korea

❖ Energy issues

- ⇨ Dependency on overseas energy sources: 97%
- ⇨ Petroleum import: ranked 4th in the world
- ⇨ CO_2 emission: 6th among OECD countries and 1st in terms of growth rate

❖ Environmental issues

- ⇨ ESI (Environmental Sustainability Index): ranked 122th in the world (2005)

❖ Identifying new growth engines and creating jobs

- ⇨ Continuous decline of potential growth rate
- ⇨ Decrease in jobs for youth

III. Korea's low-carbon green growth; vision and goals (7)

❑ Three axes of green growth vision

❖ **Green growth as a future national vision creating "triple effects"**

- ⇨ New development by securing new growth engines
- ⇨ Improving Koreans' life quality as well as environment
- ⇨ Contribution to the efforts of the international society

Source: Prime Minister's Office(2008)

III. Korea's low-carbon green growth; vision and goals (8)

❑ Three elements of green growth

3 elements	Description
Minimize energy consumption while pursuing solid growth	• Pursue industrial restructuring focused on low energy consuming industries (focus shifted from manufacturing to knowledge-based service) • Save energy consumption and improve energy efficiency • Improve the eco-efficiency
Minimize environmental load such as CO_2 emission while using energy resources	• Develop/diffuse clean energy including new renewable energy • Strategically utilize low-carbon energies • Establish a mechanism to reduce CO_2 emission • Build low-carbon/environment-friendly infrastructure • Promote consumers' purchasing of green products
Develop new growth engines	• R&D investment in green technologies • Develop green industries like new renewable energies and promote them as export industry • Support the increase in global market share

Source: Prime Minister's Office (2008)

III. Korea's low-carbon green growth; vision and goals (9)

- **Various policy measures presented by the Korean government to achieve the "low-carbon green growth"**
  - ❖ Strengthen support for financial and funding allocation policy as more than 23 billion dollars* is expected to be required over the next 5 years
  - ❖ Plan to invest total 3.7 billion dollars by 2012 by increasing R&D investment by more than two times in core technologies like thin film solar cell and large wind generator

* US$ 1 = KRW 1350

III. Korea's low-carbon green growth; vision and goals (10)

❑ Goal: Secure energy independence and reduce greenhouse gas

❖ Move away from the past input-oriented growth model and pursue decoupling of economic growth from environmental pollution through low-carbon environment-friendly policies

⇨ Maximize efficiency of resource utilization and minimize environmental pollution

<Five visions for green growth in the National Energy Master Plan> (2006-2030)

5 visions	Index	2006	2030
Realize energy-independent society	Independent development rate	3.2%	40%
	Penetration rate of new renewable energy	2.2%	11%*
Transform into low energy consuming society	Energy intensity	0.347	0.185
Transform into post-petroleum society	Petroleum dependency	43.6%	33%
Realize co-prospering energy society	Energy-poor population rate	7.8%	0%
Creating jobs and new growth engines	Energy technology level	Compared with advanced countries 60%	World top class

* Require investment of 74 billion dollars

III. Korea's low-carbon green growth; vision and goals (11)

❑ Goal: Develop green technologies and turn them into new growth engines

❖ **Green Technology (GT): a wide range of technologies including those responding to climate change and energy/resources/environmental technologies**

- ⇨ Market size of green technology estimated at 2.3 trillion dollars in 2020
- ⇨ R&D investment in green technology to be increased by more than 2 times

❖ **Develop/promote fusion green technology combining IT, BT, and NT to form export industry**

- ⇨ 6 major Korean conglomerates are planning to invest about 5.9 billion dollars in green energy as of October, 2008

❖ **Need to secure breakthrough technologies to compete with advanced countries who are dominating core green technologies**

- ⇨ Green home technology using natural energy (ET+NT+IT+BT) ➔ GT: Solar cell/super-adiabatic windows/integrated maintenance network/ self-cleaning electronics
- ⇨ Technology to develop and apply hydrogen energy (ET+NT+IT) ➔ GT: Produce/store hydrogen using biomass and solar energy and develop green car applying fuel cell

III. Korea's low-carbon green growth; vision and goals (12)

- **Goal: Restructure transportation, architecture, cities, and land to be suitable for green growth**

- **Goal: Pursue low-carbon life revolution**
  - Emphasize role of consumers as a driving force for green growth
  - Pursue total life improvement in food, clothing, and housing
  - Actively collaborate with NGOs
  - Implement carbon-neutral at government events

- **Goal: Pursue green education and cultural policy**
  - Diffuse green culture campaign using media and education
  - Focus on "green" concept as a core element of culture/tourism industry

III. Korea's low-carbon green growth; vision and goals (13)

❑ A draft of the "Basic Act on Green Growth" was developed to provide legal and institutional support for low-carbon green growth

❖ **Establish "Green Growth Committee"**

❖ **Develop and implement the national green growth strategy**

⇨ The 'National Strategy for Green Growth" to be developed and implemented through the deliberation of the Green Growth Committee and the Cabinet Meeting, which includes policy goals, implementation strategies, and key initiatives to realize low-carbon green growth

❖ **Develop and support green economy and green industries**

⇨ Identify and develop new green industries with high growth potential and facilitate a gradual migration to green economy and industry

III. Korea's low-carbon green growth; vision and goals (14)

❖ **Operate environment-friendly tax system**

⇨ Increase tax on goods and services that cause environmental pollution, and create greenhouse gas with low energy efficiency
⇨ Operate tax policy in the direction to reduce the inefficiency of resource allocation

❖ **Develop "Energy Master Plan" and "Basic Plan Responding to Climate Change"**

⇨ The "Basic Plan responding to Climate Change" and the "Energy Master Plan" to be developed and implemented through the deliberation of the Green Growth Committee and the Cabinet Meeting, which includes mid/long-term greenhouse gas reduction targets, reduction measure by area and by phase, effective energy demand management, and stable energy supply

❖ **Set and manage mid/long-term targets and targets by phase**

⇨ Set mid/long-term targets as well as targets by phase and develop supportive measures including management support and technical advice to achieve greenhouse gas reduction, energy saving, energy independence, improved energy efficiency, and increased penetration of new renewable energy

III. Korea's low-carbon green growth; vision and goals (15)

❖ **Establish and operate total information management system and reporting system on greenhouse gas emission**

- ⇨ For companies with high greenhouse gas emission and high energy consumption, their greenhouse gas emission and energy consumption volume are reported to the government
- ⇨ Total information management system on greenhouse gas to be established and operated by the government

❖ **Introduce "Cap-and-Trade System"**

- ⇨ Allocation methods, registration and management methods, opening and operation of trade centers, and timing of the opening to be specified in a separate law

❖ **Build a consensus when developing plans relevant to green growth**

- ⇨ When developing green growth related plans including the S&T Mater Plan and the National Land Plan, seek for feedback from the Green Growth Committee

III. Korea's low-carbon green growth; vision and goals (16)

- **The Green Growth Committee to be co-chaired by Prime Minister and an expert from the private sector with total 50 members both from public and private sectors**

  - **Natural members from the public sector include ministers of relevant ministries and those designated by the presidential order**

    ⇨ Minister of Strategy and Finance, Minister of Knowledge and Economy, Minister of Environment, Minister of Land, Transport and Maritime Affairs

  - **Member from the private sector to be appointed by President among leading figures in the fields of economy, industry, society and culture, who have relevance to green growth topics such as climate change, energy, and sustainable development**

III. Korea's low-carbon green growth; vision and goals (17)

❖ **The functions of the three existing committees, the Committee on Climate Change, the Energy Committee, and the Sustainable Development Committee, were merged into the Green Growth Committee**

⇨ The Green Growth Committee is a higher-level committee coordinating all the green growth-related policy functions while the existing committees were mainly playing the role of an execution body

⇨ Develop the national strategy for green growth and other key national basic plans, decide key policies (national reduction target, negotiation strategy, energy supply/demand policy), and check and manage implementation progress

III. Korea's low-carbon green growth; vision and goals (18)

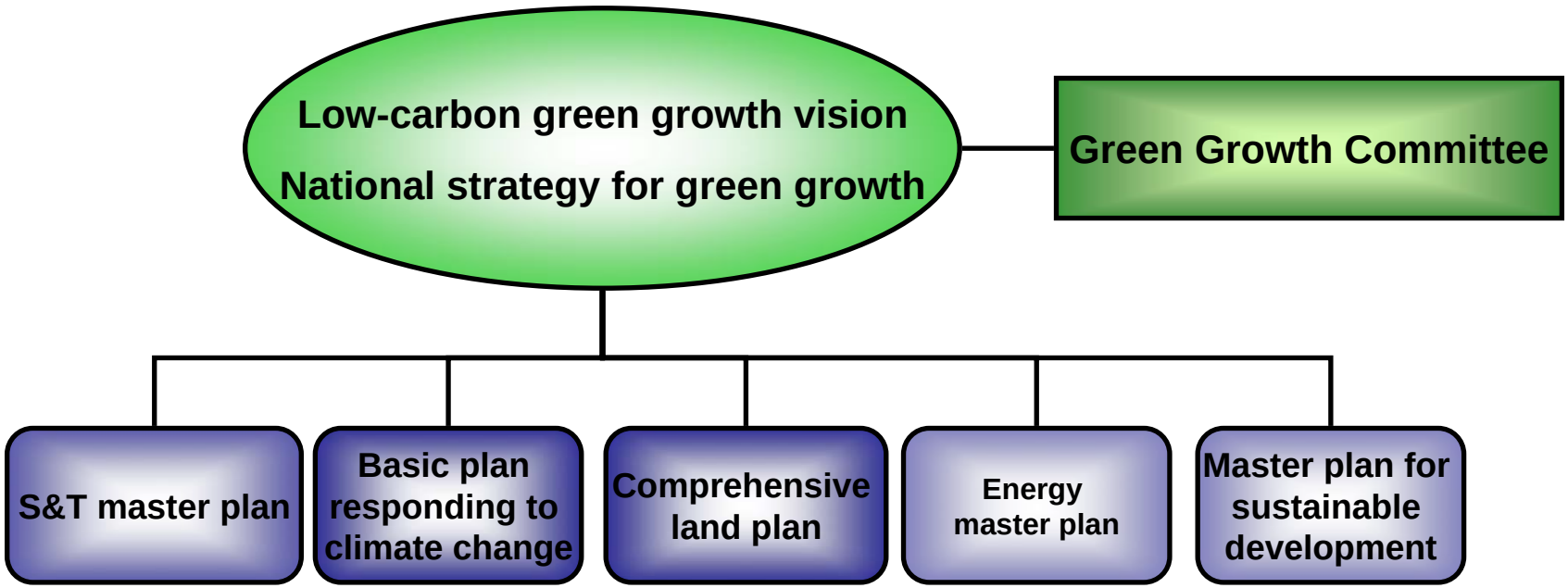
- **The National Strategy for Green Growth to be reviewed by the Green Growth Committee**

- **The National Strategy for Green Growth is a higher-level strategic plan giving the national policy direction for pursuing low-carbon green growth**

  ⇨ Give direction for plans by area such as green economy and industry, climate change, energy, and sustainable development

III. Korea's low-carbon green growth; vision and goals (19)

❑ **Positioning of vision and strategy for green growth in the national development plan**



IV. Korea's "Green New Deal Policy"

IV. Korea's Green New Deal Policy* (1)

❑ **Korea's Green New Deal Policy is aiming at specific achievements like creating jobs and potential growth engines by simultaneously pursuing both "Green" and "New Deal"**

❖ **Develop "Green New Deal Project" by combining job creating policies with green growth strategy like low-carbon, environment-friendly growth and energy saving**

❖ **Maximize policy impact by systematically integrating overlapping green projects without clear orientations, and lead the realization of green economy and the conservation of earth's environment**

* Developed from The Ministry of Education, Science and Technology et al. (2008)

IV. Korea's Green New Deal Policy (2)

❑ Scope of "Green New Deal": projects that can facilitate transformation into a green economy and create growth and jobs

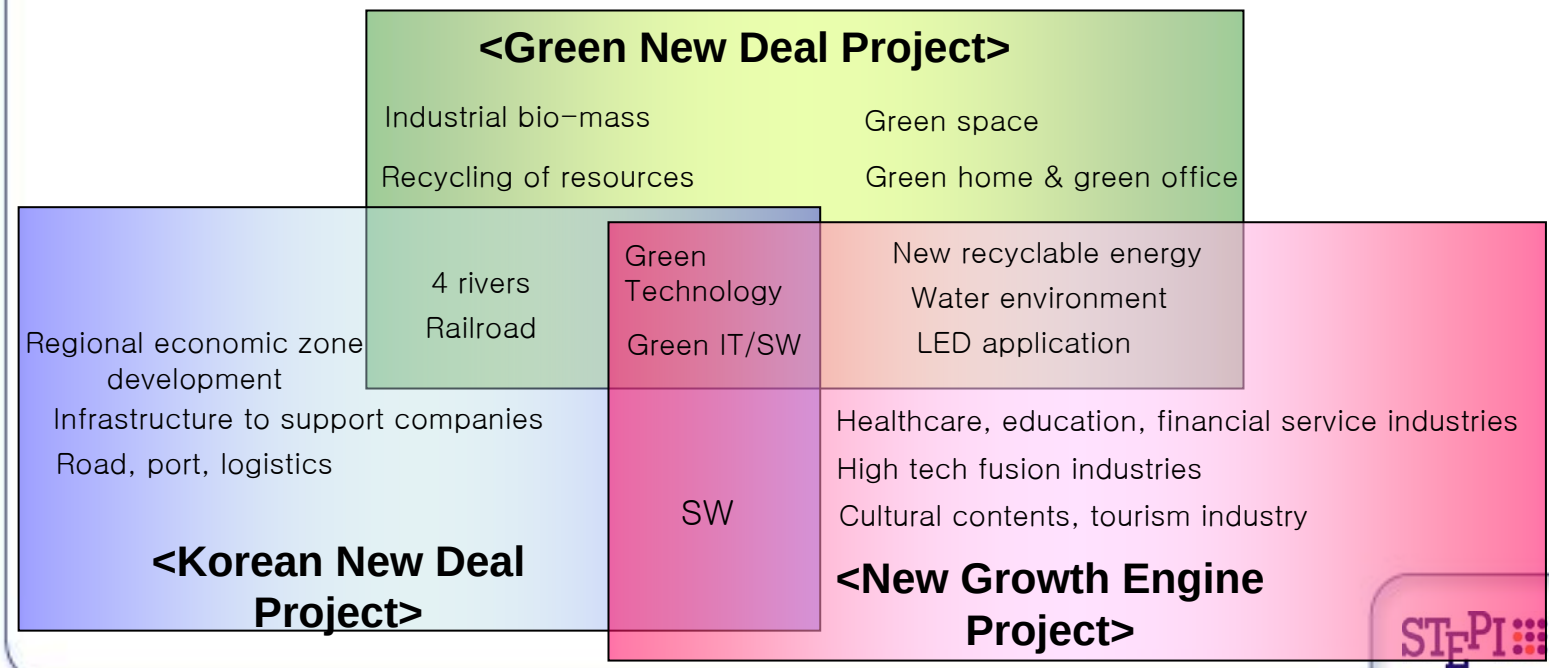
- ❖ Projects to build resource-saving economy through energy saving, recycling of resources, and development of clean energy
- ❖ Projects to improve life quality and provide convenient and comfortable living environment by establishing green transportation network and supplying clean water
- ❖ Preventive projects for earth's future and safety of the next-generation through carbon reduction and water security
- ❖ Projects essential for preparing for the future and improving energy efficiency including the establishment of industry/information infrastructure and the technology development

IV. Korea's Green New Deal Policy (3)

❑ Relations with other policies/strategies

❖ Green New Deal Project is composed of ① projects with high impact in growth and job creation and high relevancy with green industry among "Korean New Deal" projects and "New Growth Engine" projects and ② other green projects with high impact in job creation

❖ Given that "New Deal Project" is large-scale public investment project intended to create jobs, mainly select investment project in the public sector



IV. Korea's Green New Deal Policy (4)

❑ Green New Deal and Green Growth Projects by key ministries

❖ **The Ministry of Land, Transport, and Maritime Affairs develops and refines the land space and expands green transportation infrastructure**

- ⇨ Revamp areas exposed to disasters, turn the area along the rivers into green, recover rivers
- ⇨ Construct and supply "Green Home"
- ⇨ Build a nationwide network of bicycle lanes and expand public transportation and railroad networks
- ⇨ Form "Eco-Road"

❖ **The Ministry of Environment focuses on water recycling and the expanded use of green car**

- ⇨ Recycle sewage treatment water
- ⇨ Increase the penetration of green car

IV. Korea's Green New Deal Policy (5)

❖ **The Ministry of Knowledge and Economy is focused on developing and diffusing recyclable energy technologies**

- ⇨ Increase the penetration of bio-ethanol vehicles
- ⇨ Turn bio-mass into energy: sea algae, wood fiber
- ⇨ Develop and apply energy saving technologies with medium to large size
- ⇨ Separation and recovery of carbon dioxide
- ⇨ Develop and diffuse renewable energy technology like photovoltaics

IV. Korea's Green New Deal Policy (6)

❖ **The Korea Forest Service implements the "Green Forestation Project"**

⇨ Forestation, recovery of damaged forests, and prevent forest disasters

❖ **The Rural Development Administration implements such projects as "turning livestock excrement into resources" and "turning food wastes into compost"**

❖ **The Ministry of Education, Science and Technology focuses on R&D of low-carbon technologies and environmental education**

⇨ Develop high-efficiency hydrogen energy technology
⇨ Develop next-generation super-conductor application technology
⇨ Develop technologies to reduce and treat carbon dioxide

IV. Korea's Green New Deal Policy (7)

❑ Green New Deal Project; funding requirements and expected size of job creation

Project		Funding requirements ($100 mil.)			Jobs to be created		
		Already reflected (2009)	Additional requirement (~2012)	Total	Already reflected (2009)	Additional requirement (2012)	Total
Total		32.32	338.42	370.73	93,360	863,060	956,420
Nine key projects	Revive 4 rivers	3.62	103.63	107.24	7,000	192,960	199,960
	Build green transport network	13.59	57.92	71.51	25,042	113,025	138,067
	Build integrated national land information system	0.19	2.57	2.75	816	2,304	3,120
	Rain discharge facilities and small/medium-sized dams	1.37	5.61	6.98	3,063	13,069	16,132
	Supply green car and clean energy	2.38	12.83	15.21	1,643	12,705	14,348
	Recycle wastes	0.37	6.51	6.89	2,377	13,819	16,196
	Green forestation	2.32	15.59	17.91	22,498	148,204	170,702
	Green home and green school	-	59.63	59.63	-	133,630	133,630
	Eco-river	0.04	3.55	3.58	393	10,396	10,789

Source: The Ministry of Education, Science and Technology and et. al. (2008)

V. Functions of green innovation system

V. Functions of green innovation system (1)

❑ Three phases in the transformation to a green innovation system

Phase 1	Phase 2	Phase 3
End-product management	**Preventive approach**	**Systematic approach**
-Present regulations and economic incentives to manage “end of pipe” for the purpose of reducing emission of pollutants	-Develop technologies that can prevent environmental problems in advance through process/product innovation	-Establish green innovation system where environment-friendly innovation is continuously created and socially accepted

❑ Korea has just entered Phase 2 and needs to move to the green innovation system of Phase 3 for a full-fledged carry-out of green growth

❖ **In Phase 3, environment-friendly technologies are continuously created and socially accepted**

⇨ Innovation in environmental technologies develops into a new growth engine and improves socio-economic sustainability

V. Functions of green innovation system (2)

❑ **Green innovation system is an innovation system where characteristics of technologies to be developed, organizational activities of innovation agents, and operational mechanism of market and institution are aligned in an environment-friendly mode**

❖ **Characteristics of technologies**
- ⇨ Technology innovation driven by environment-friendly technology paradigm
- ⇨ Efforts to promote environment-friendly R&D
- ⇨ Environment-friendliness considered as an important criteria in selecting and evaluating government R&D projects

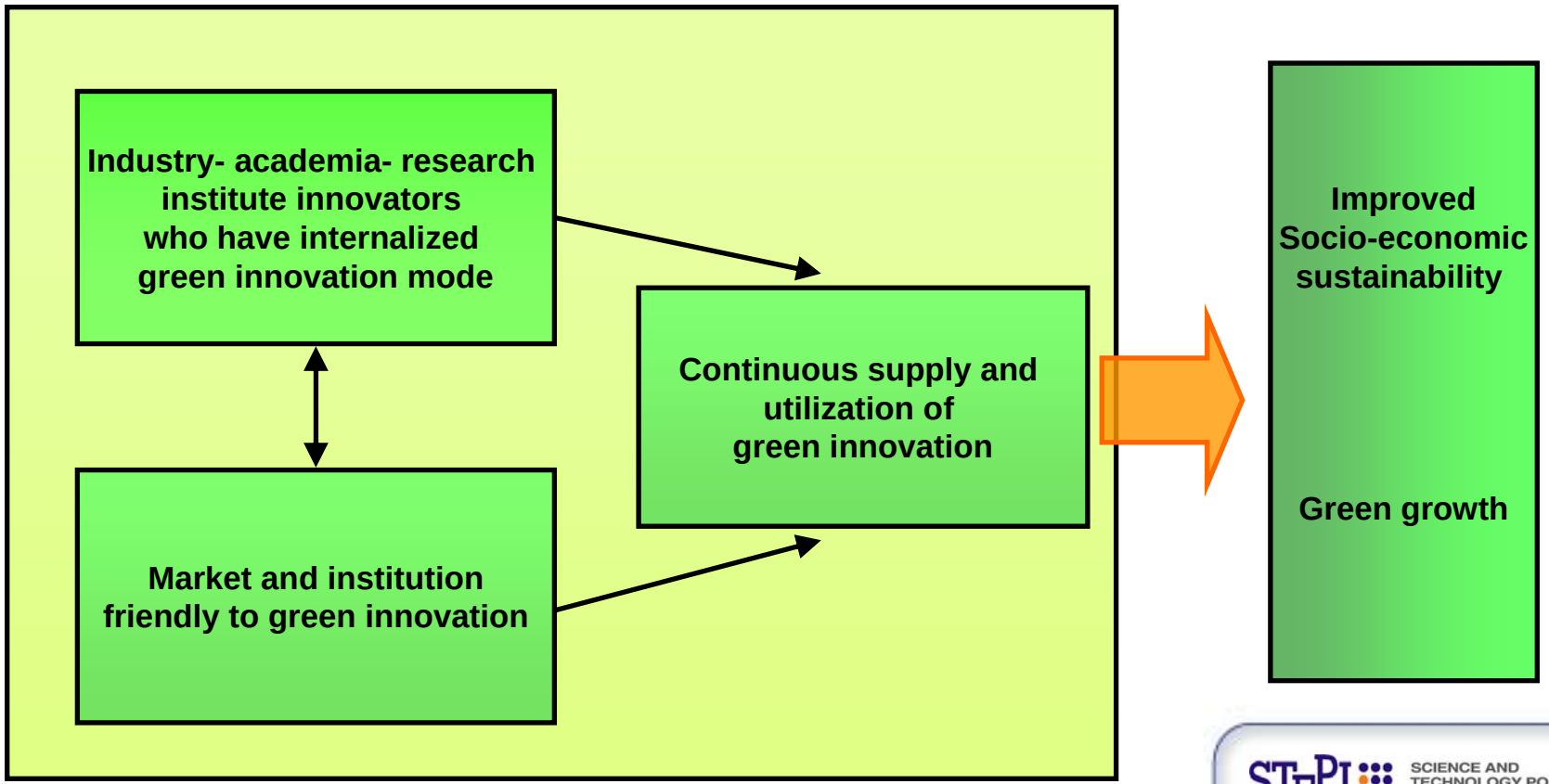
❖ **Organizational activities of innovation agents**
- ⇨ Environment issue is not recognized as a regulatory factor but as a business opportunity as environment-oriented organizational structure is established at universities, research institutes, and companies
- ⇨ Environmental values are placed as important criteria for decision-making at organizations

❖ **Market and institution**
- ⇨ Market structure and incentive system that can facilitate environment-friendly innovation

V. Functions of green innovation system (3)

❑ Structure and roles of green innovation system

< Green Innovation System >



V. Functions of green innovation system (4)

- "System transformation" approach is needed to build green innovation system

  - Past innovation system composed of highly resource-consuming technologies, organizations, market and institution tends to prevent the formation of a new system

  - To overcome this and build a green innovation system, co-evolution strategy is needed that can strengthen environment-friendliness of organizations and networking of innovation agents, market and institution

V. Functions of green innovation system (5)

❖ **System transformation is on-going activities pursued under a long-term vision. Therefore, conducting small-scale experiments first and then a roll-out will be an effective approach**

⇨ Strategic niche management; develop niches (regions, fields) that form new technology, organization, and institution, and roll-out them effectively

⇨ Co-evolution process; involving not only technology development but also innovation agents, institution and market that are relevant to the issue of social acceptance

⇨ Successfully implement pilot projects in some regions or fields through cooperation between innovation agents (industry, academia, and research institutes) and regional society

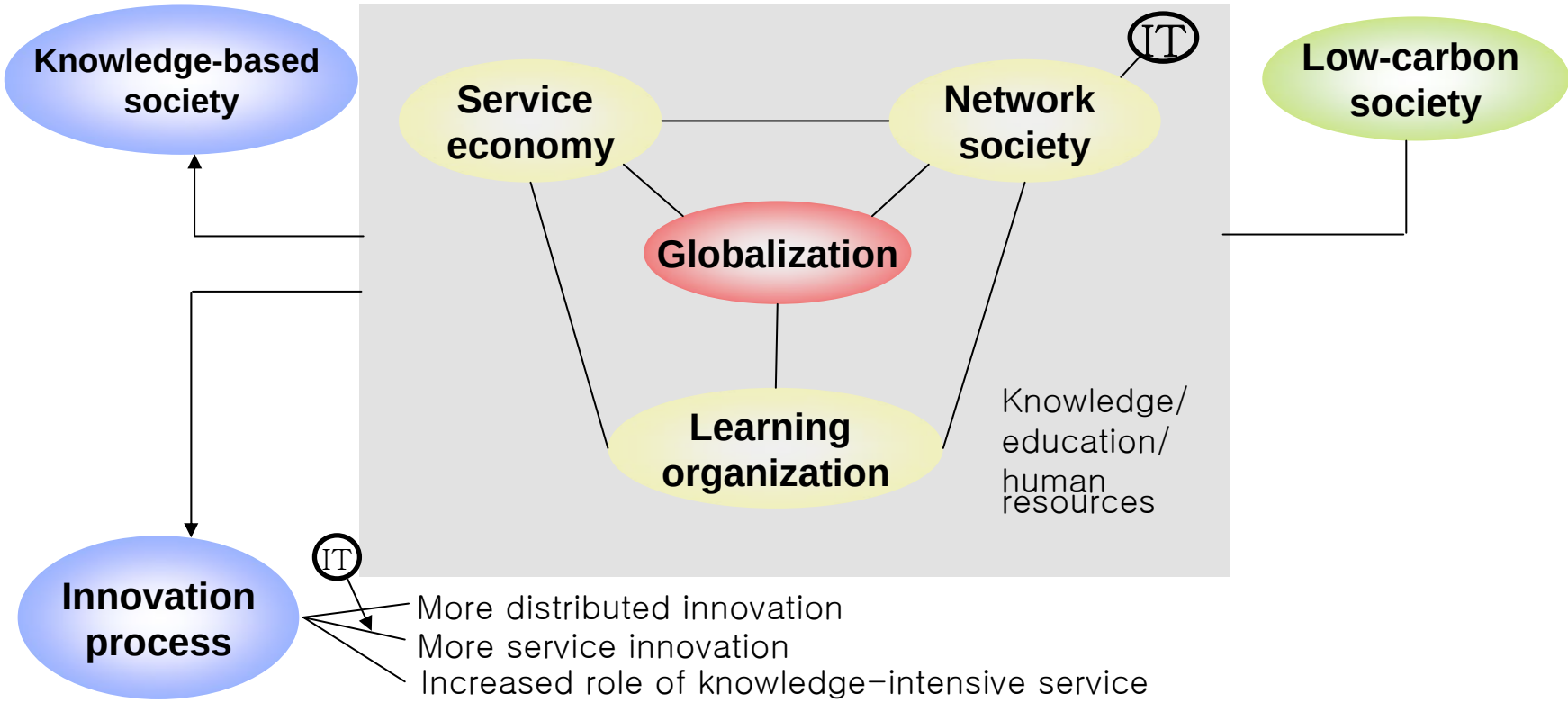
⇨ Use national R&D project or regional development project like Eco-City Project as the subject of experiment

⇨ Building a green platform is an effective means by which various innovation agents can discuss the development vision and concrete directions of innovation system and identify options, thus ensuring the sustainability of the project

VI. Role of IT in low-carbon green growth

VI. Role of IT in low-carbon green growth (1)

❑ IT facilitates synergies between knowledge-based society and low-carbon society paradigm



Source: Modified from Lengrand & Associés (2002)

VI. Role of IT in low-carbon green growth (2)

❑ Service economy is activated in knowledge-based society and low-carbon society paradigm

❖ **Increased share of service in knowledge-based society (in terms of GDP and employment)**

- ⇨ Demand for upgrading manufacturing industry in terms of service
- ⇨ Focus on mutual innovation between suppliers and consumers
- ⇨ Demand for distributed innovation to meet diverse needs

❖ **Service economy is important in low-carbon society**

- ⇨ Minimize consumption of resources, based on service
- ⇨ Activate green knowledge-intensive consulting service: for example, consulting on the establishment of green facilities and infrastructure

❖ **IT facilitates service economy of knowledge-based society and low-carbon society paradigm**

VI. Role of IT in low-carbon green growth (3)

❑ Focus on learning in knowledge-based society and low-carbon society paradigm

❖ Government, institutes, and companies are considered as learning organizations in knowledge-based society

⇨ Focus on knowledge management: knowledge and wisdom decide the value added

⇨ Role of CEO changed to CLO(Chief Learning Officer)

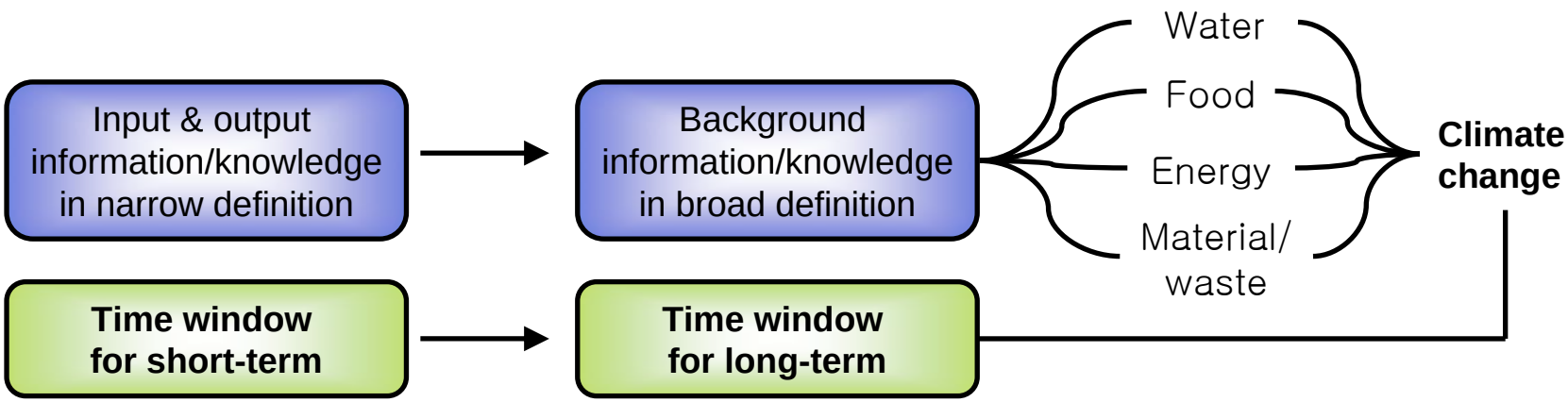
⇨ Weaker distinction between the 1st (producer of products and services) and the 2nd (provider of value to society and environment) roles of companies

VI. Role of IT in low-carbon green growth (4)

❖ **Learning is important in low-carbon society as new ideas are needed to break the existing paradigm of high-carbon society**

⇨ Companies move from short-term to long-term perspective through IT

<Shifted focus of corporate information/knowledge>



VI. Role of IT in low-carbon green growth (5)

⇨ CLO extends and sustains the contacts between the business model and broad social and environmental issues like climate change

⇨ Knowledge on paths to improved efficiency to realize low-carbon society is essential for companies to understand a big picture

⇨ Green knowledge is created and diffused through open "Collective Intelligence" based on Web 2.0 using IT as a medium

⇨ In realizing low-carbon society, need to consider not only the technological aspect but also socio-economic system, political system, and local specificity

❖ **IT drives learning of knowledge-based society and low-carbon society paradigm**

VI. Role of IT in low-carbon green growth (6)

❑ Network society is strengthened in knowledge-based society and low-carbon society paradigm

❖ Knowledge-based society represents characteristics of network society

⇨ IT is a key element networking the Korean knowledge-based society: important role in producing, accumulating, and distributing knowledge

❖ Accumulating and diffusing green knowledge through IT is essential in low-carbon society

⇨ The distributed nature of low-carbon technology itself requires IT linking different modules or facility systems harmoniously

⇨ IT-based Ubiquitous environment is important in energy supply/ consumption monitoring and energy efficiency evaluation

⇨ IT is required for smart grid that complements intermittent energy sources like solar energy or wind power

VI. Role of IT in low-carbon green growth (7)

❑ **Increased importance of globalization and international cooperation in knowledge-based society and low-carbon society paradigm**

- ❖ **Resolution of global issues requires regional and global collaboration going beyond the boundary of an individual nation**
- ❖ **IT can contribute to international inter-disciplinary R&D activities and talent sharing in realizing low-carbon society**

VI. Role of IT in low-carbon green growth (8)

❑ **IT contributes to low-carbon society paradigm by changing social structure of production and consumption**

❖ **Reduce traveling distance and facilitate changes in transportation structure**

⇨ Telework and home-based work
⇨ e-Health, e-Learning
⇨ Logistics using IT: reduce traveling distance using GPS

❑ **IT sector itself contributes to the reduction of greenhouse gas emission by improving the energy efficiency**

❖ **Improve energy consumption efficiency of IT equipments**

❖ **Reuse and recycle waste heat generated from IT equipments**