National Competitiveness Agendas of Korea

July 1, 2004

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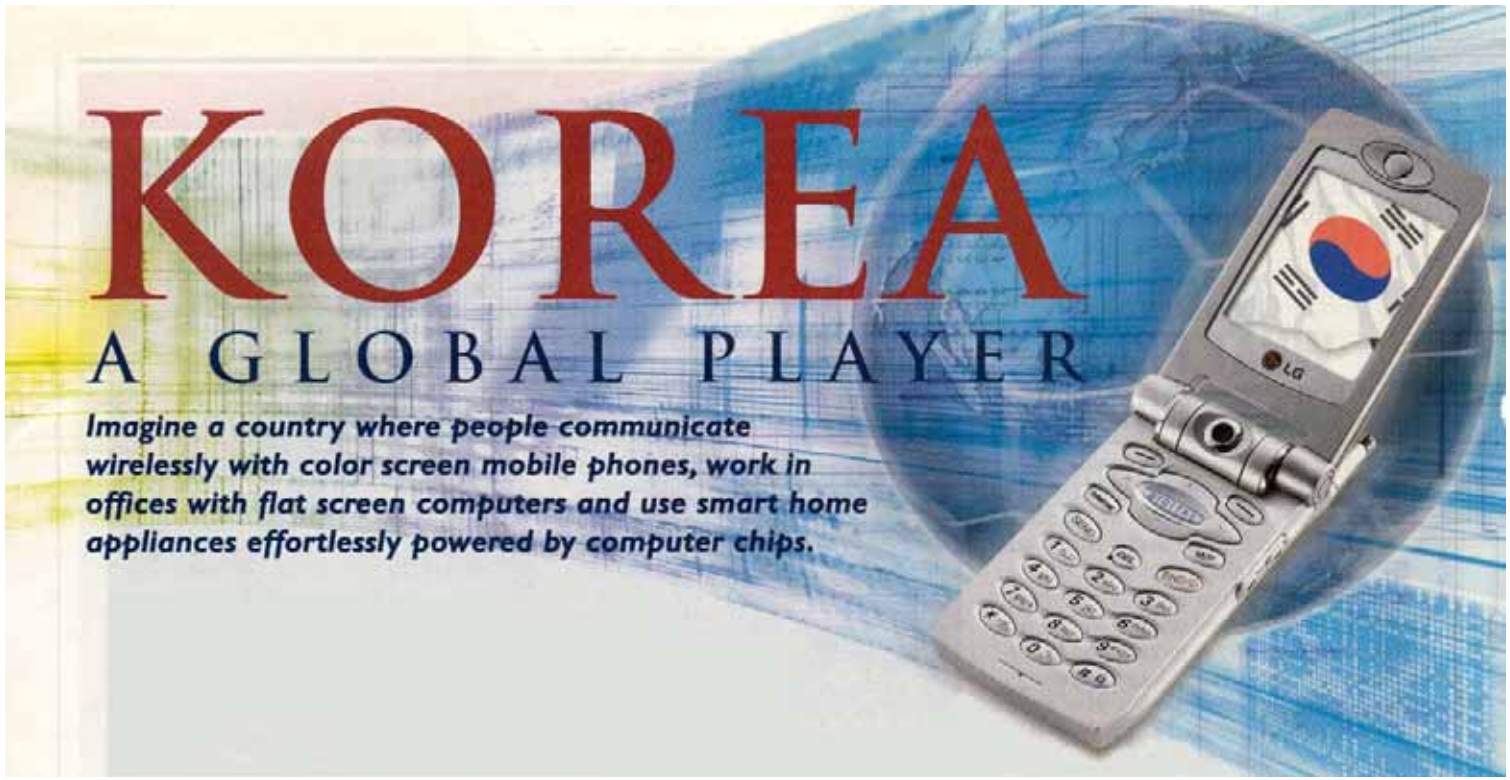

KOREA
A GLOBAL PLAYER
Imagine a country where people communicate wirelessly with color screen mobile phones, work in offices with flat screen computers and use smart home appliances effortlessly powered by computer chips.
LG

Contents

1. Introduction

□ Purpose

o A case study of Korea′s competence building

o Assessment of current challenges and response of Korea

□ Focus

o Focusing on the present and future agendas rather than the past

o Focusing on the relationship between technology (knowledge) and economic growth

□ The Korean economy at a crossroad

- Presently, Korea is facing several serious domestic and international economic challenges. In fact, the Korean economy is at a crossroads. If these challenges are mishandled, the economy may lose its dynamism and growth engine, which, in turn, would result in a long-term recession like Japan in the 1990s.

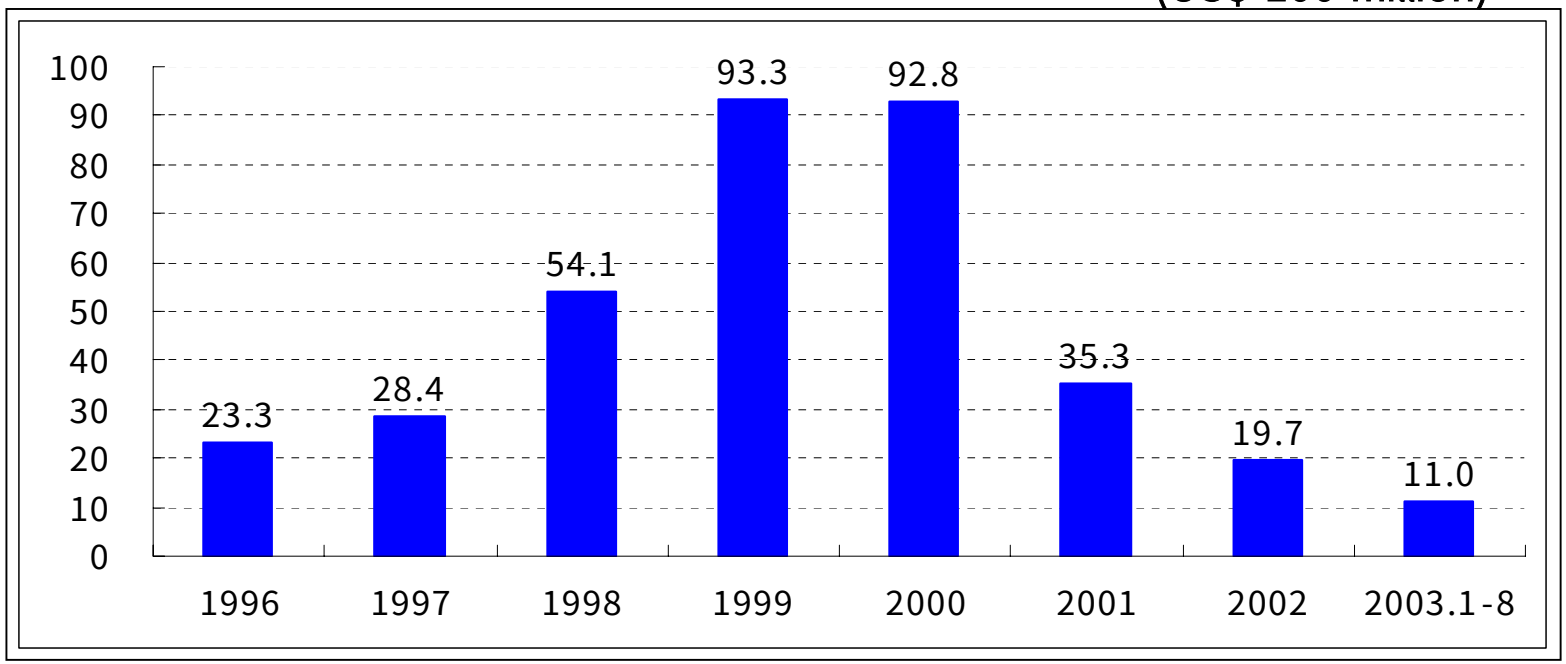
- In late April 2004, the Chinese government announced the need for cooling-down its over-heated economy. Some observers predicted serious negative impacts of the Chinese adjustment policies on the Korean economy.

- Although negative impacts have not been materialized yet, many analyses continue to warn that the Korean economy will enter a long-term recession due to the slow response to mounting internal and external challenges and problems.

- In addition to the oil price factor, the major external challenges are from the rapidly-growing and changing Chinese economy which renders both threats and opportunities to Korea.

FDI into Korea

(US$ 100 million)



Source: BOK

o FDI into Korea declined substantially despite many incentives and efforts by the government.

The Rate of Economic Growth in Major Countries

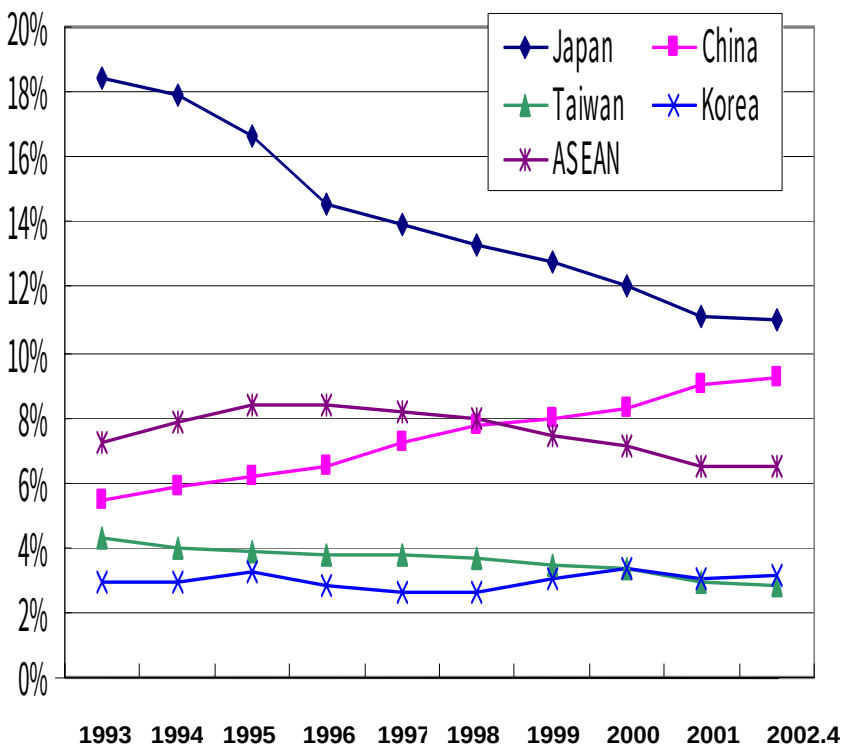
(GDP, %)

	1998	1999	2000	2001	2002	2003	2004 (IQ)
Korea	-6.9	9.5	8.5	3.8	7.0	3.1	5.3 (?)
China	7.8	7.1	8.0	7.3	8.0	9.1	9.7
Japan	-1.1	0.1	2.8	0.4	-0.4	2.7	5.6
Singapore	-0.9	6.4	9.4	-2.4	2.2	1.8	7.3
Thailand	-10.2	4.2	4.3	1.0	4.9	6.7	6.5
U.S.A	4.2	4.5	3.7	0.5	2.2	3.1	4.2

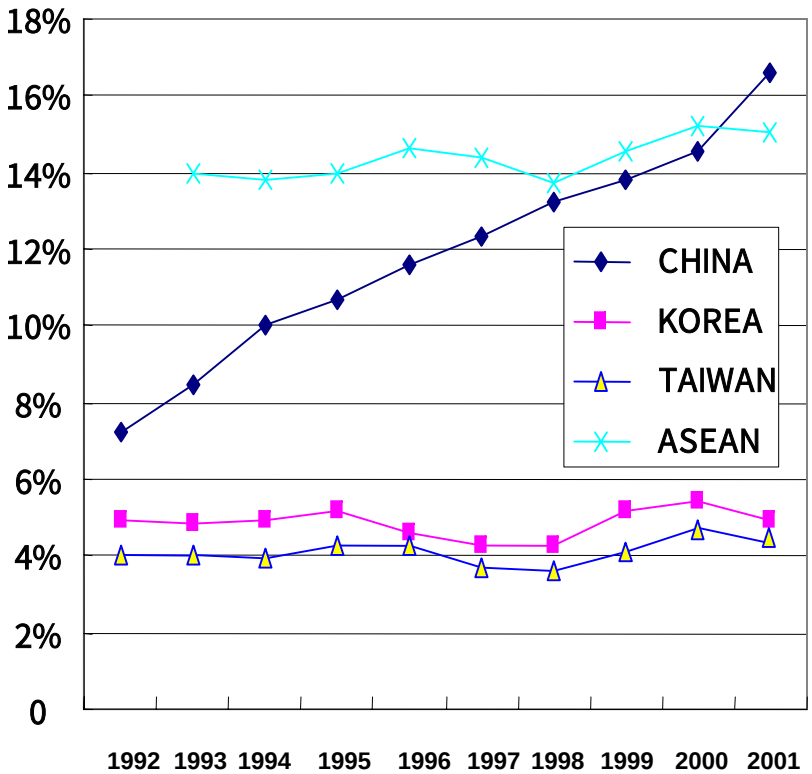
Source: ADB, IMF, Statistics Yearbook of China.

Competition between Korea and China in Major Markets

Share of total import of US (%)



Share of total import of Japan (%)



2. Towards an Innovation-driven Economy and Innovation of the NIS

Stages Of Economic Development

Factor-driven Economy	Investment-driven Economy	Innovation-driven Economy
o Basic factor conditions (low cost labor, natural resources, geographic location) are the dominant sources of competitive advantage o Technology is assimilated through imports, FDI, and imitation o Companies have limited roles in the value chain, and focus on assembly, labor intensive manufacturing, and resource extraction o The economy is highly sensitive to world economic cycles, commodity prices, and exchange rates	o Efficiency in producing standard products and services is the dominant source of competitive advantage o Foreign technology is accessed through licensing, joint ventures, FDI, and imitation o The nation is not only assimilating foreign technology, but has the capacity to improve on it o Heavy investment is made in efficient infrastructure, modern production processes, and ease of doing business	o innovative products and services at the global technology frontier are the dominant sources of competitive advantage o Characterized by strengths in all areas together with the presence of deep clusters o Companies compete with unique strategies that are often global in scope o The economy has a high service share, and is resilient to external shocks

Source: Porter, Michael E. *Competitive Advantage of Nations*. 1990.

Technology and Economic Growth

□ Why is technology so important?

- Technology (and productivity) is the main source of economic growth today.
- Technology is the main determinant of competitiveness.
- Technology affects welfare of individuals and society.

□ Two ways of economic growth

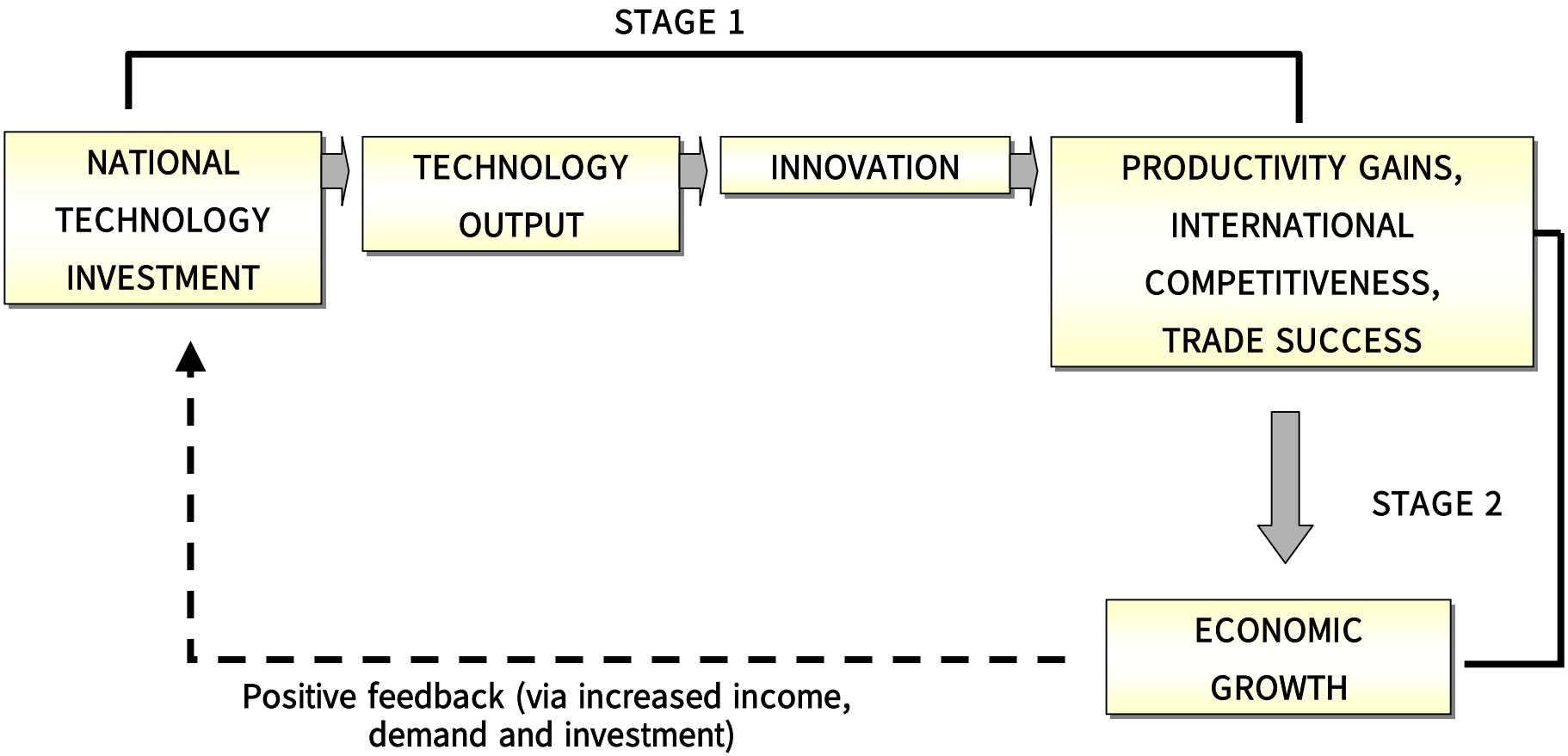
1) Extensive Growth
   - Mobilization of productive resources
2) Intensive Growth
   - Productivity increase with the same resources

Two Phases of Economic Growth

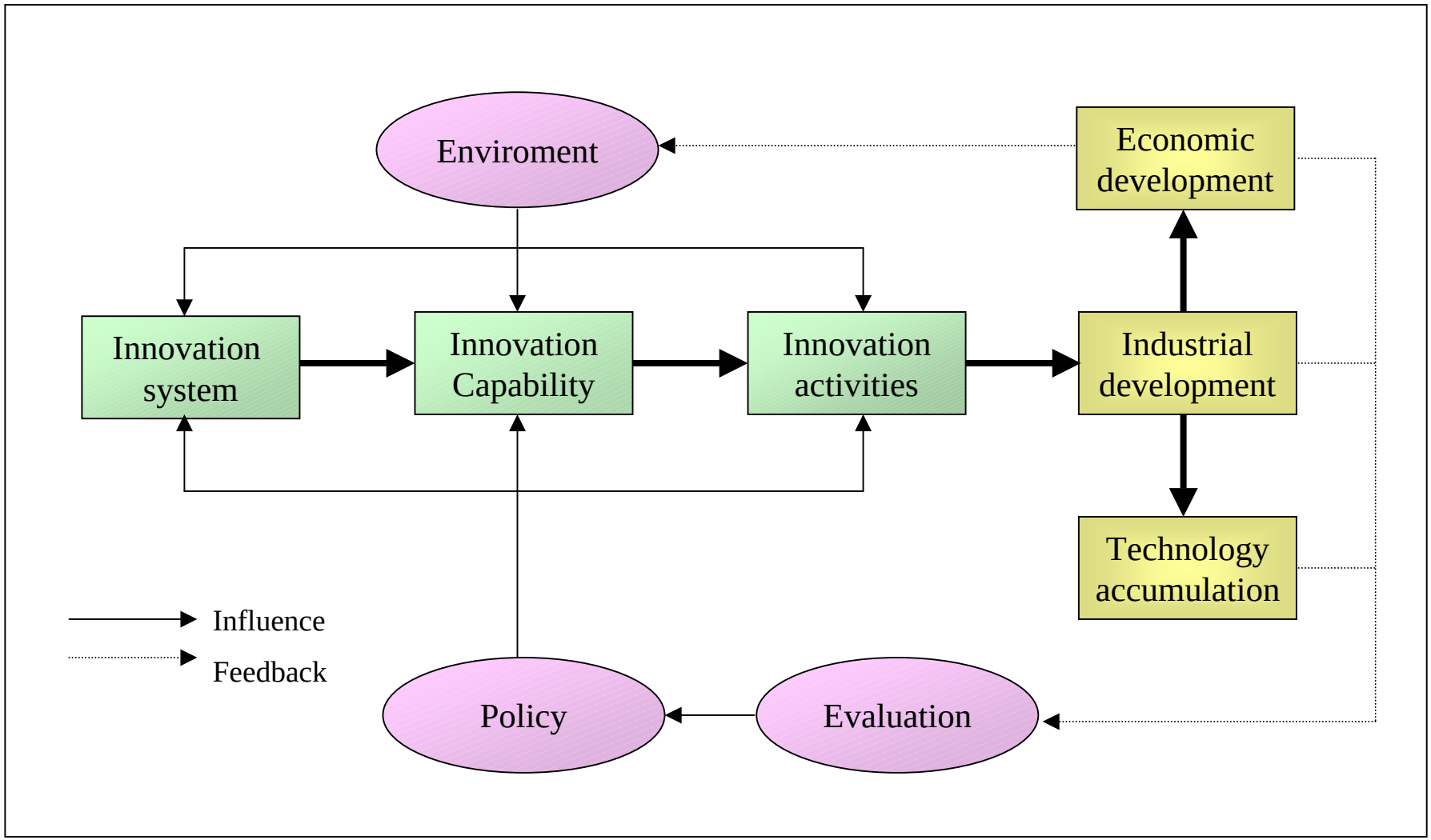
Input-driven growth*	Productivity (Efficiency)-driven growth**
- Increase in inputs (ex. employment, education level, stock of physical capital: mobilization of resources)	- Increase in the output per unit of input (ex. better management, better economic policy, increase in knowledge, technological progress)
- Diminishing returns	- Constant or increasing returns
- Limited Growth	- Sustained growth
- Based on perspiration	- Based on inspiration

Note: * = extensive growth ** = intensive growth

Technology and Economic Growth

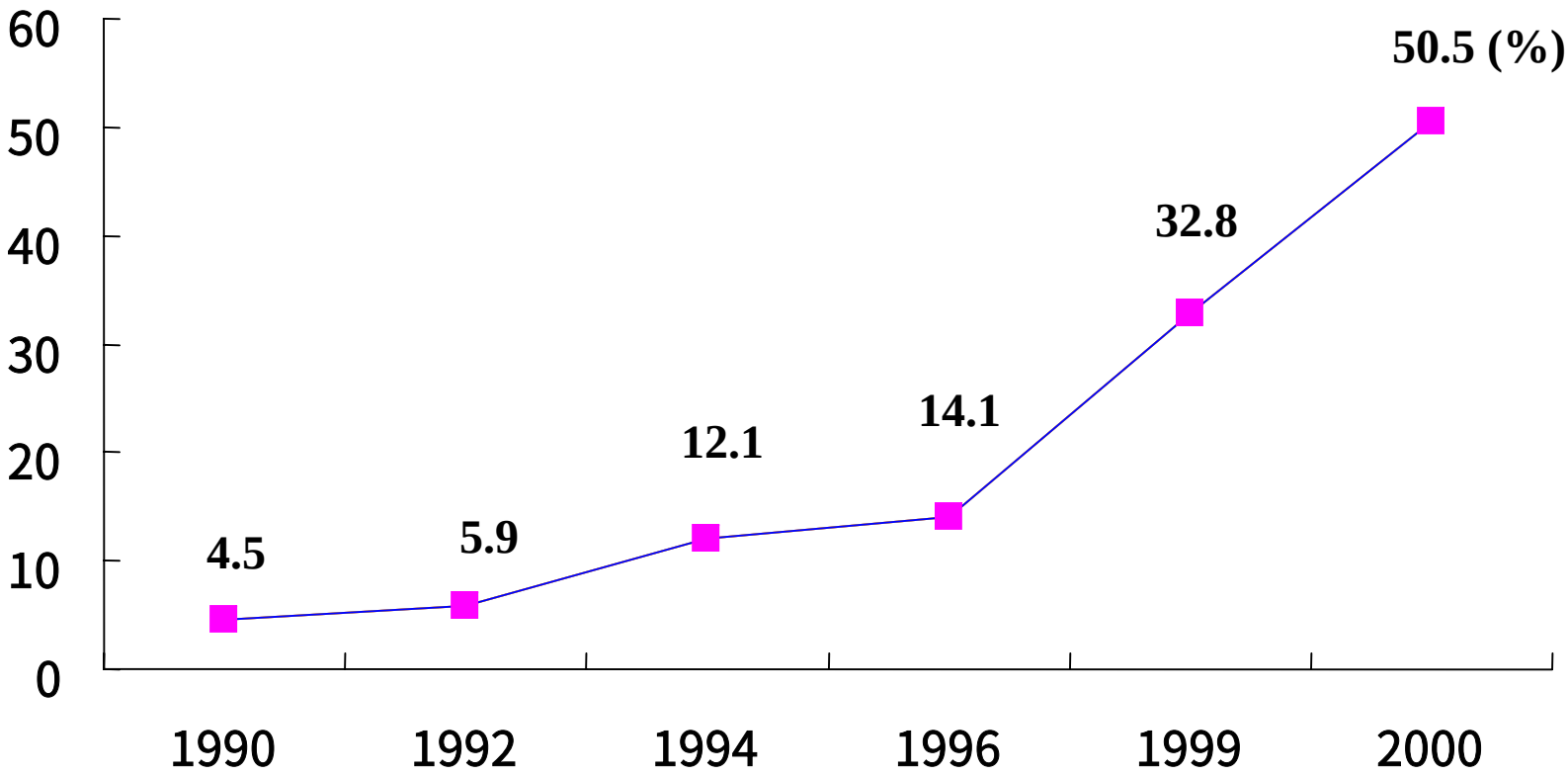


Core of the Innovation Economy



Source: Hong, Y. S.

Contribution of IT to GDP



Source: Bank of Korea (BOK)

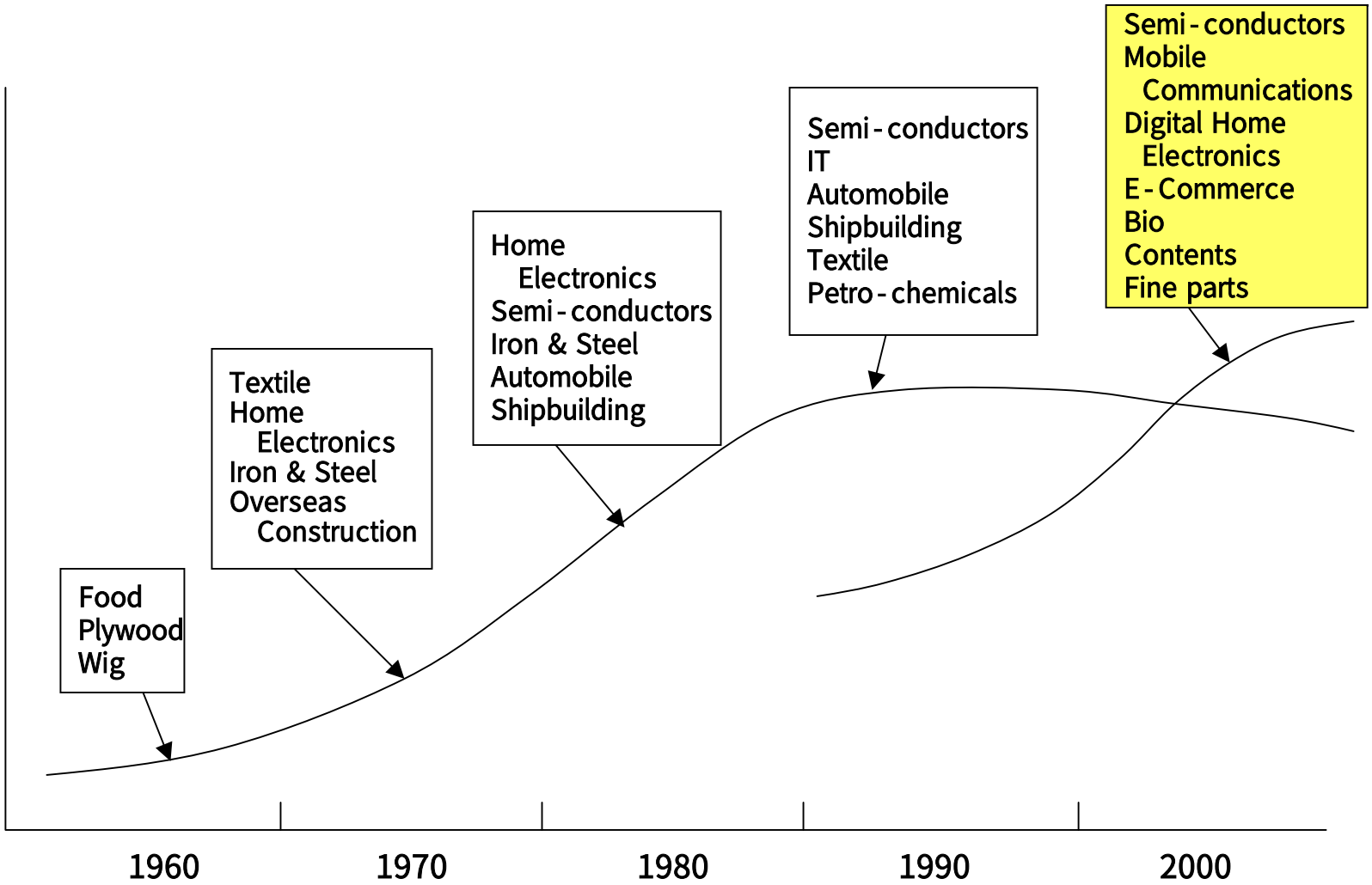
Development of Industry and Technology Policy

	Industrial Development	Technology Development	Highlight
1960s	- Develop import-substitution industries - Expand export-oriented light industries - Support producer goods industries	- Strengthen S&T education - Deepen scientific and technological infrastructure - Promote foreign technology imports	1960: 79/capita Labor
1970s	- Expand heavy and chemical industries - Shift emphasis from capital import to technology import - Strengthen export-oriented industrial competitiveness.	- Expand technical training - Improve institutional mechanism for adapting imported technology - Promote research applicable to industrial needs	1970: 253/capita Labor and Capital

(Continued)

	Industrial Development	Technology Development	Highlight
1980s	- Transform industrial structure to one of comparative advantage - Expand technology-intensive industry - Encourage manpower development and improve productivity of industries	- Develop and acquire top-level scientists and engineers - Perform national R&D projects efficiently - Promote industrial technology development	1980:$1,655/capita Capital and Technology
1990s	- Promote industrial restructuring and technical innovation - Promote efficient use of human and other resources - Improve information networks	- Reinforce national R&D projects - Strengthen demand-oriented technology development system - Institutional reforms	1990:$5,890/capita Technology and Innovation
2000-2003	- Move towards High tech and high value-added industries - Develop IT industry - Search the next generation	- Strengthen national and regional innovation systems - Internationalize R&D systems and information networks - R&D increase in IT, BT, NT, etc.	2000: 9,823/capita Innovation and KBE

Dominant Industries in Korea



Development of High-Tech Industries in Korea

□ Dominance of IT-related Industries

- The recent annual growth rate of IT-related industries was over 20 % in 1998-2000, although it decreased to over 6% in 2001-2002.
- The top 10 exports of Korea are dominated by IT-related products.

□ Weak Basic Research and Core Technology

- Korean high-tech producers are still weak in basic research and marketing, evaluated as about 50% of the level of advanced countries.

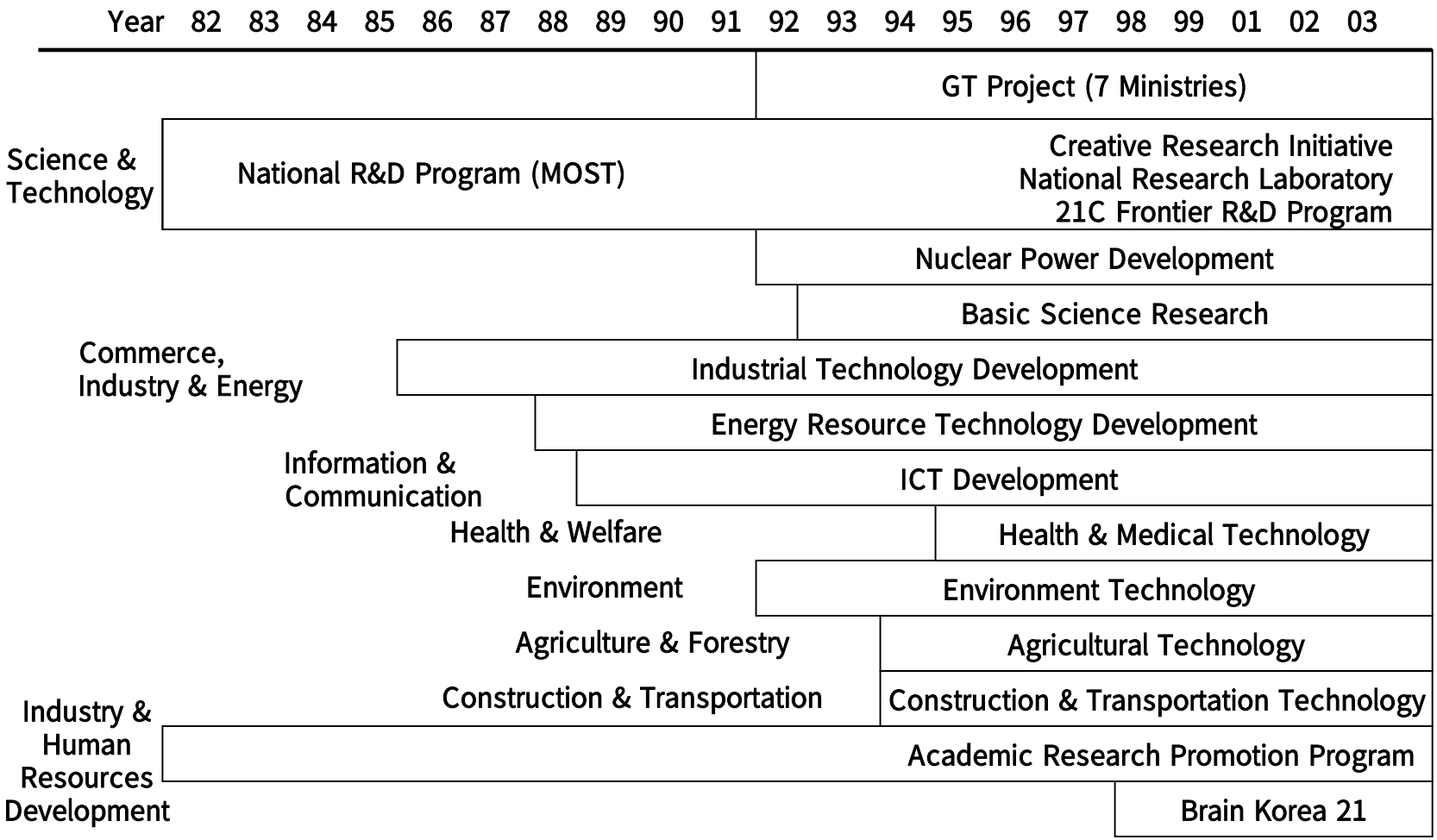
□ Problems in the NIS in Korea

- The Korean innovation policy system in the past and present is characterized by a strong hierarchical structure in decision-making. Although the system was relatively successful in mobilizing resources in the past, recently the system has been severely criticized to be inefficient for the new era of knowledge-based economy, where innovation is the most important factor.
- Korea is facing a serious challenge: Creating a new governance scheme for more efficient and democratic science, technology and innovation policy.
- The new administration, so-called “Participatory Government” has been formulating a grand strategy for reforming the Korean NIS in terms of structure, resource allocation, and balanced regional development.

History of Government R&D Programs

Decade	Emphasis and Initiatives	Remarks
1960 Infant Stage of ST Policy	- Imports of foreign technology - Laws for ST promotion - Established MOST, KIST, etc.	R&D/GDP = 0.3%
1970 Building Institutions	- Imitation and reverse engineering - Laws for R&D promotion - Established 16 GRIs	R&D/GDP = 0.4~0.8% Public : Private = 50 : 50
1980 National R&D Program	- Development of indigenous technology - Started National R&D program - Promotion of private sector's laboratories	R&D/GDP = 0.8~2% Public : Private = 20 : 80
1990 Diversification of Gov't R&D	- Development of high-tech - Promotion of university research - Started Highly Advanced National (HAN) Project	R&D/GDP = 2~3%
2000 Elaboration of Gov't R&D	- Development of knowledge-base economy - Started Creative Research program, National Research Laboratory Program, The 21st Century Frontier Program, etc.	R&D/GDP = 3~5%

Government R&D Programs by Ministry



Overall R&D Resources in Korea

		Unit	1998	2000	2002
Gross R&D Fund	GDP	$mil	317,079	461,519	496,819
	R&D Investment	$mil	8,089	12,245	14,433
	R&D Investment/GDP	%	2.55	2.65	2.91
R&D Source	Government & Public	$mil	2,178	3,052	3,787
	Private Funds	$mil	5,911	9,913	10,644
	Government: Private	%	27:73	25:75	26:74
R&D Allocation	Basic Research	$mil	1,131	1,544	1,977
	Applied Research	$mil	2,032	2,980	3,135
	Development Research	%	4,926	7,721	9,321
Resear-cher	Total Researchers	people	92,541	108,370	141,917
	Researchers/10,000 people (FTE)	people	20.0	23.1	29.8
R&D Fund/Researcher (FTE)		$	87,410	112,993	101,700

Source: Ministry of Science and Technology (MOST)

Contributing Factors to the Growth in Korea

(%)

	Lee (2001)	Collins and Bosworth (1996)	Young (1995)	Kim and Lau Ⅰ	Kim and Lau Ⅱ
Period	**1966~96**	**1960~94**	**1966~90**	**1960~90**	**1960~90**
Capital share	**0.33**	**0.35**	**0.297**	**0.564**	**0.35**
Sources of Growth					
Capital	**44.3**	**57.9**	**50.3**	**98.4**	**61.1**
Human Capital	**15.0**	**14.0**	**14.3**	**3.2**	**6.4**
TFT	**22.1**	**26.3**	**34.7**	**-0.0**	**32.5**
R&D Effect	**21.7**	**-**	**-**	**-**	**-**

Source: KIEP. Mimeograph.2001.

World Market Share of Major High- and Medium-Tech Industries in Korea, 2001

	Share in the world market (%)	Rank
Automobile	5.2	5
Machinery	1.4	15
Semiconductors	5.7	3
Digital electronics	5.1	4
Electronic medical equipment	1.5	13
Bio	1.4	14
Aerospace	0.4	15
Environment	1.2	16
Shipbuilding	32.4	2

Source: Ministry of Industry and Energy. 2002. Internal Document.

□ Why has Korea overall been doing well?

- Strong competitive spirit against superpowers in the neighborhood
- Quickly picked up on the opportunities of IT for future economic development
- Forced to restructure the economy and industry due to the 1997 Asian financial crisis
- Younger and more dynamic generation
- Risk-loving behavior and entrepreneurship
- Heavy investment in IT and support for ventures
- Strong individualism and fast changes for new fashion with a 'me too mentality'

□ The governance in science and technology policy in Korea

- Strong leadership or intervention from the government and a relatively weak private sector are the main features of ST governance.
- The government directly or indirectly affects the major decision-making process of leading government-sponsored research institutes (GRIs).
- As Korea moves toward becoming a knowledge-based economy, a new paradigm of science and technology governance is needed.

□ Problems and shortcomings of the Korean NIS

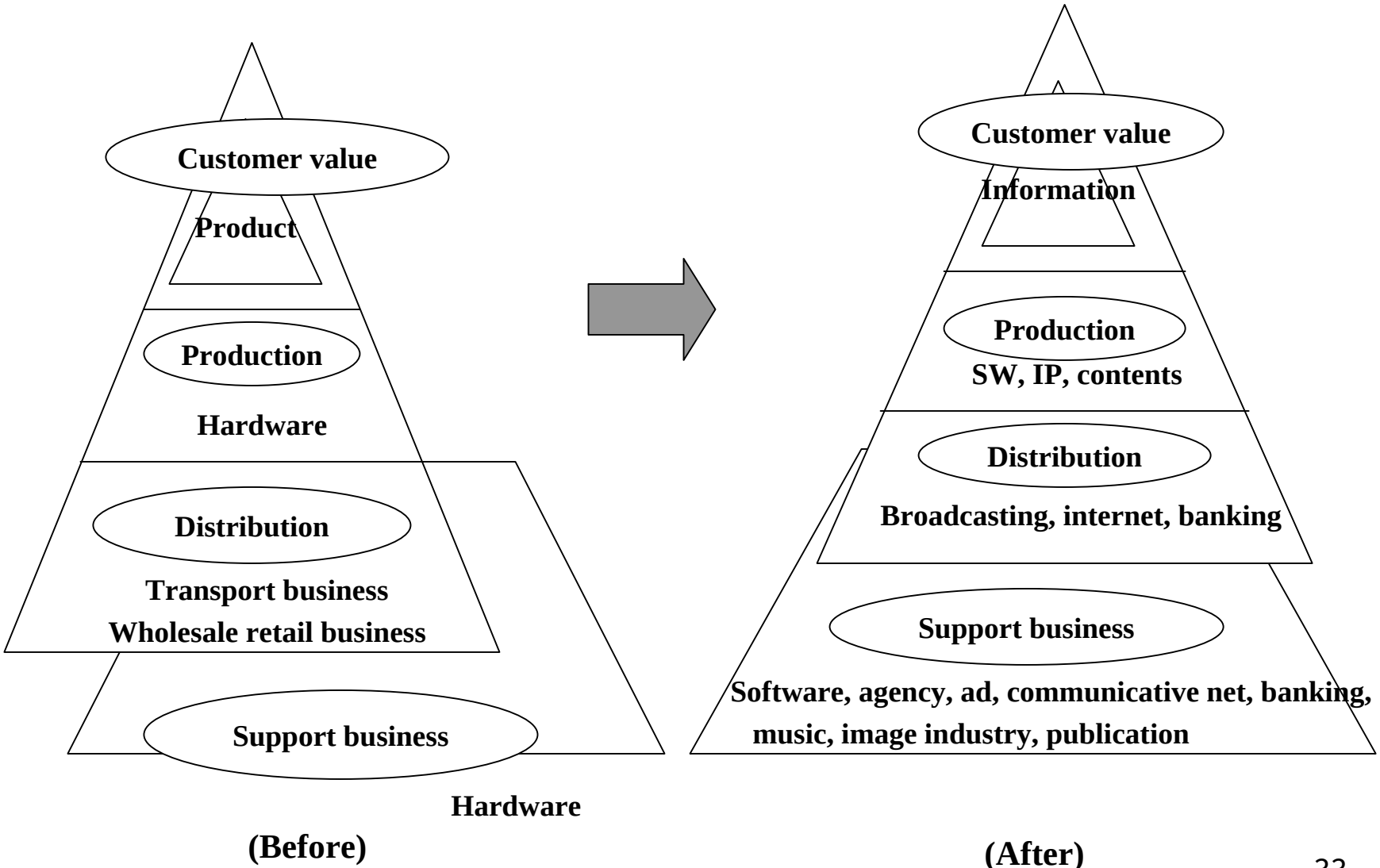
- Lack of comprehensive coordination.
- Weak link between ST policy and government budget
- Excessive competition among ministries
- Weak function of planning and evaluation of the National R&D Program
- Problems in management of GRIs
- Weak regional innovation systems

3. Human Resource Development

□ Development and provision of creative and qualified researchers

- Korea plans to cope actively with future demand for the development of new technologies by establishing master plans for rearing and utilizing 10,000 researchers in promising high-tech areas.
- Korea will encourage university manpower supply system more toward a demand-oriented one by establishing innovative education models for science and engineering colleges.
- More attention will be paid to strengthening science education at school curricula, training science laboratory teachers, and securing up-to-date laboratory and teaching materials. More scientists and engineers will be appointed to government offices.

Structural Change of Industry towards the Knowledge and Information-based Economy



Master Plan for HRD

☐ HRD Basic Plan (2001)
- Theme: HR, Knowledge, and new take-off
- Development of key work competences for all Koreans
- Making knowledge and HRs the driving force for further growth
- Upgrading the level of utilization and management of human resources
- Building infrastructure

☐ Key strategies
- Opening and networking
- Informatization
- Deregulation and self regulation
- Maximizing utilization of woman manpower

Status of IT Manpower and HR Mismatching

□ IT work force and growth (as of 2000)

- Total : 435,000
  - o IT equipment (64.5%) – growth rate : 3.6%
  - o Telecommunications service (21.4%) - growth rate : -0.4%
  - o Software and computer (14.1%) – growth rate : 11.8%

□ Importance of HRD

- Shortage of high-skilled IT workers will continue despite the recent recession.
- Especially, in software area with master's or doctor's degree
- Also, in the area of e-business consulting

□ Shortage in SME manpower
- 3D (difficult, dangerous, dirty) mentality of the youth
- Low wages

□ High youth unemployment rate
- 8% (vs. national unemployment rate = 3.6%)

□ Decreasing number of children and S&E college students
- Shortages in high-tech manpower will become more and more serious.

Programs for Knowledge or Skill Gap Reduction

□ Supply of equipment
- For primary schools, PCs are well provided.
- For the army or farmers in remote area, various means have been mobilized to supply equipment and increase PC literacy

□ Utilization of the youth
- Introduction of more effective VET (vocation, education and training)
- Close cooperation between schools and industry
- Encouraging young entrepreneurs and increasing FDIs
- Flexible labor market

□ From production to research

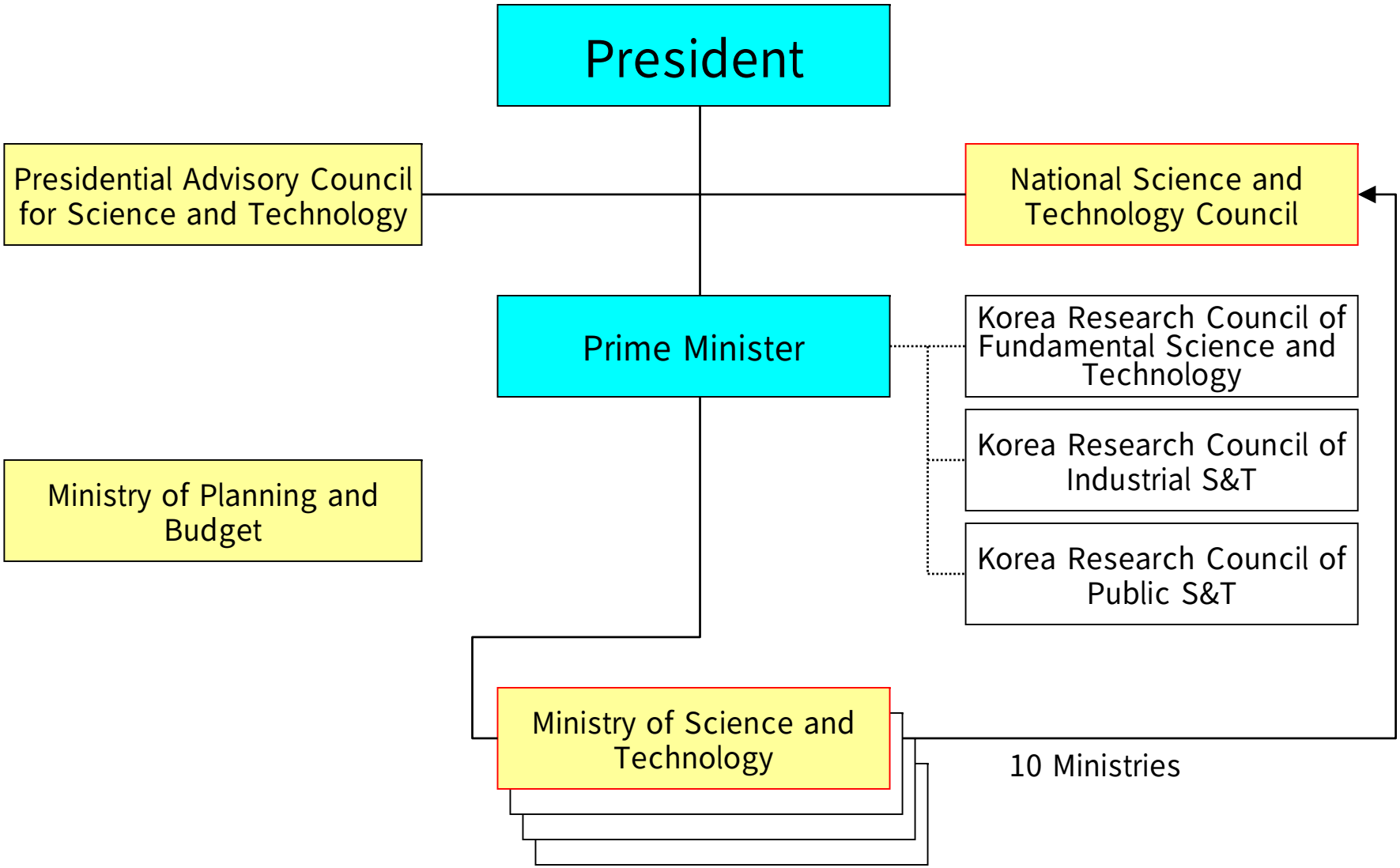
- For the development of IT, BT, NT, CT, ET, ST and the next generation engines of growth, more research institutes with highly qualified researchers are needed.
- Inducement of leading foreign R&D centers to Korea is a must.

□ Education Reforms

- The most urgent task is to reform the entire education system in Korea for a flexible and pragmatic education. (Private expenditures for education are too excessive)
- For this, wide and active opening of the education sector is a must.

4. Restructuring S&T Governance

STI Administration System in Korea



□ Expansion of National R&D Investment to strengthen potential for growth

- R&D budget has gradually increased from 4.8% ($4.49 billion) of the total government budget in 2003 to 7% ($8.35 billion) in 2007.

□ Promotion of Basic Science and Enhancement for Creative Innovation Capabilities

- In Korea, the portion of basic research among total R&D investment is relatively low compared to that of other advanced countries.

- The portion of basic research in government's R&D budget of $4,490 million in 2003 was 19.5%($877 million). The portion will be increased up to 25% by 2007 in basic research in order to join the world's top 10 countries in basic science capabilities.

Goals for Expanding Government's R&D Budget

(USD billion)

	2003	2004	2005	2006	2007
Share of R&D budget in total government budget	4.8%	5.2%	5.7%	6.3%	7.0%
Total government budget (estimate)	94.48	100.15	106.16	112.52	119.27
R&D budget (estimate) (Growth rate from the previous year)	4.49 (6.9%)	5.21 (16.0%)	6.05 (16.2%)	7.09 (17.2%)	8.35 (17.8%)

Note: The figures were attained using the assumption that the government budget would increase 6 percent annually. (The 2003 figures were attained using actual figures.)

Source: MOST

□ Reformation of National Innovation System

- The government plans to strengthen the role and authority of the National Science & Technology Council (NSTC) by:

○ Monitoring and coordinating strategies for new growth technology development
○ Ensuring that the results of NSTC's evaluation and coordination be reflected in budget-allocation
○ Improve the system for planning, management, evaluation, and outcome diffusion of R&D projects

Master Plan for S&T Development

□ Vision2015: Korea's Long-Term Plan for S&T Development

- To join the top 12 countries in the world in terms of S&T competitiveness.
- To emerge as the hub of scientific research in the Asia-Pacific region by 2015.
- Information, life science, new material, energy, environment, mechatronics, etc.

□ Basic S&T Plan (2003-2007)

- Realization of the S&T-based society
- IT, BT, "welfare technologies, national safety, high value-added industrial structure, etc.

□ Transforming the major function

- Transfer most of existing programs for applied R&D or R&D commercialization to relevant ministries

○ Machinery, electronics, aero-technology to the Ministry of Commerce, Trade and Energy (MOCIE)

- Strengthening pan-national function of planning, coordination, and evaluation by MOST

- Big science and fusion technology programs will be continuously under the jurisdiction of MOST

□ Operational improvement

- MOST will support objectively and systematically the activities of the National S&T Committee and will recruit capable civilian experts as many as possible.

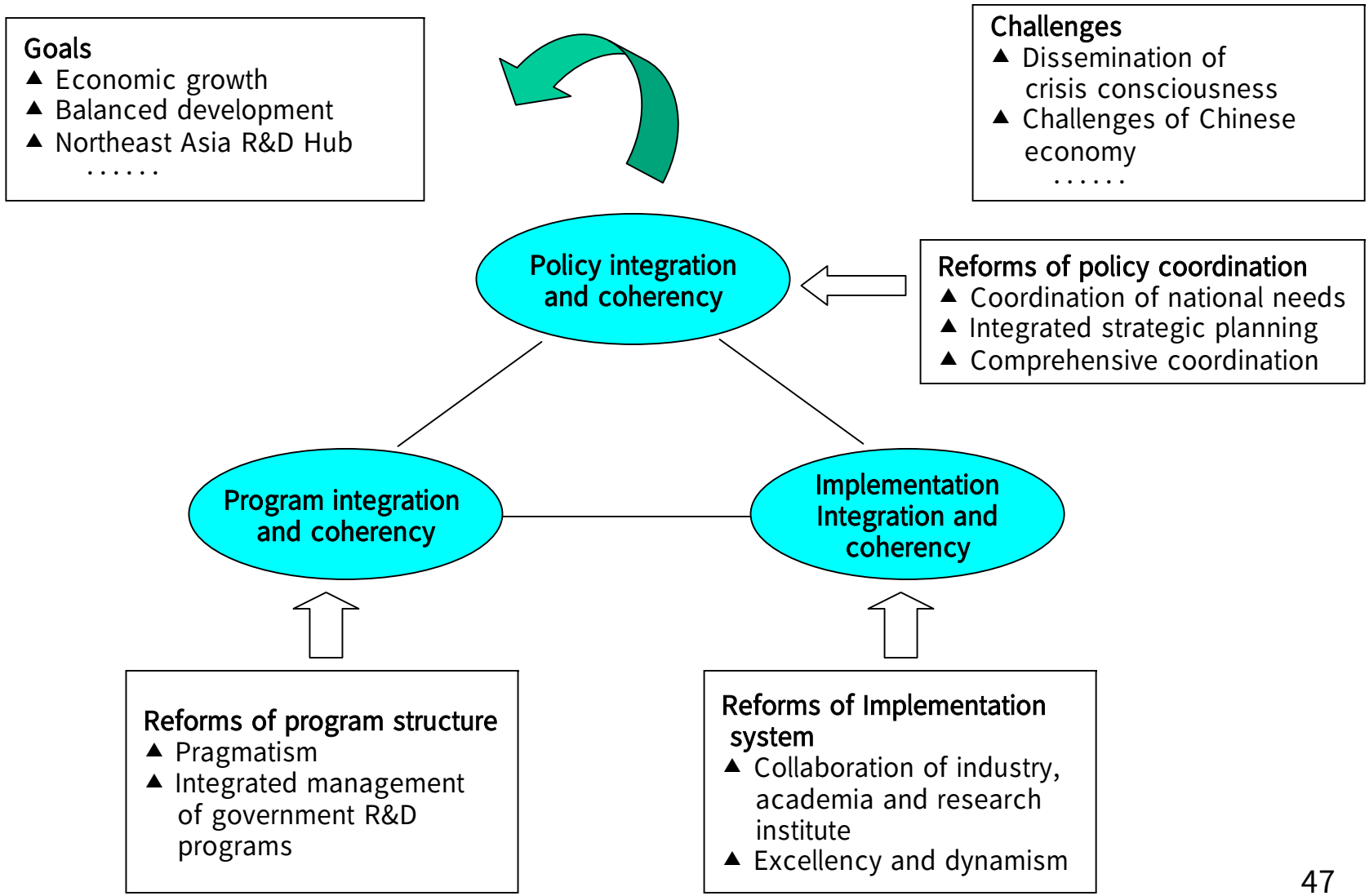
□ Governance restructuring

- Elevate the authority of MOST to be a Deputy Prime Minister and the Vice Chairman of the National S&T Committee

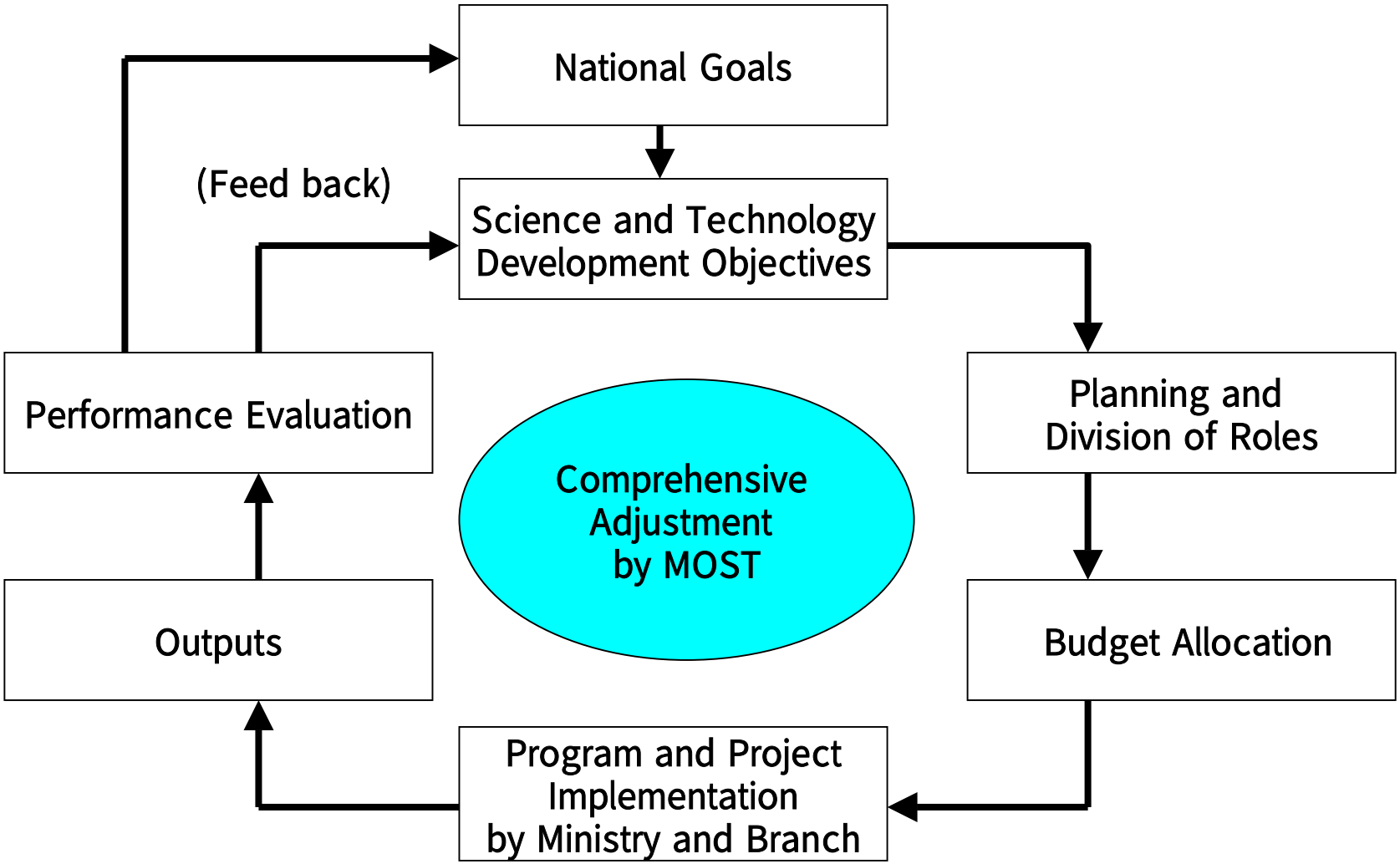
○ Legal power is given to MOST to coordinate other ministries.

○ MOST will have the review and adjusting power of the government S&T budget.

Direction of Reformation of National R&D System



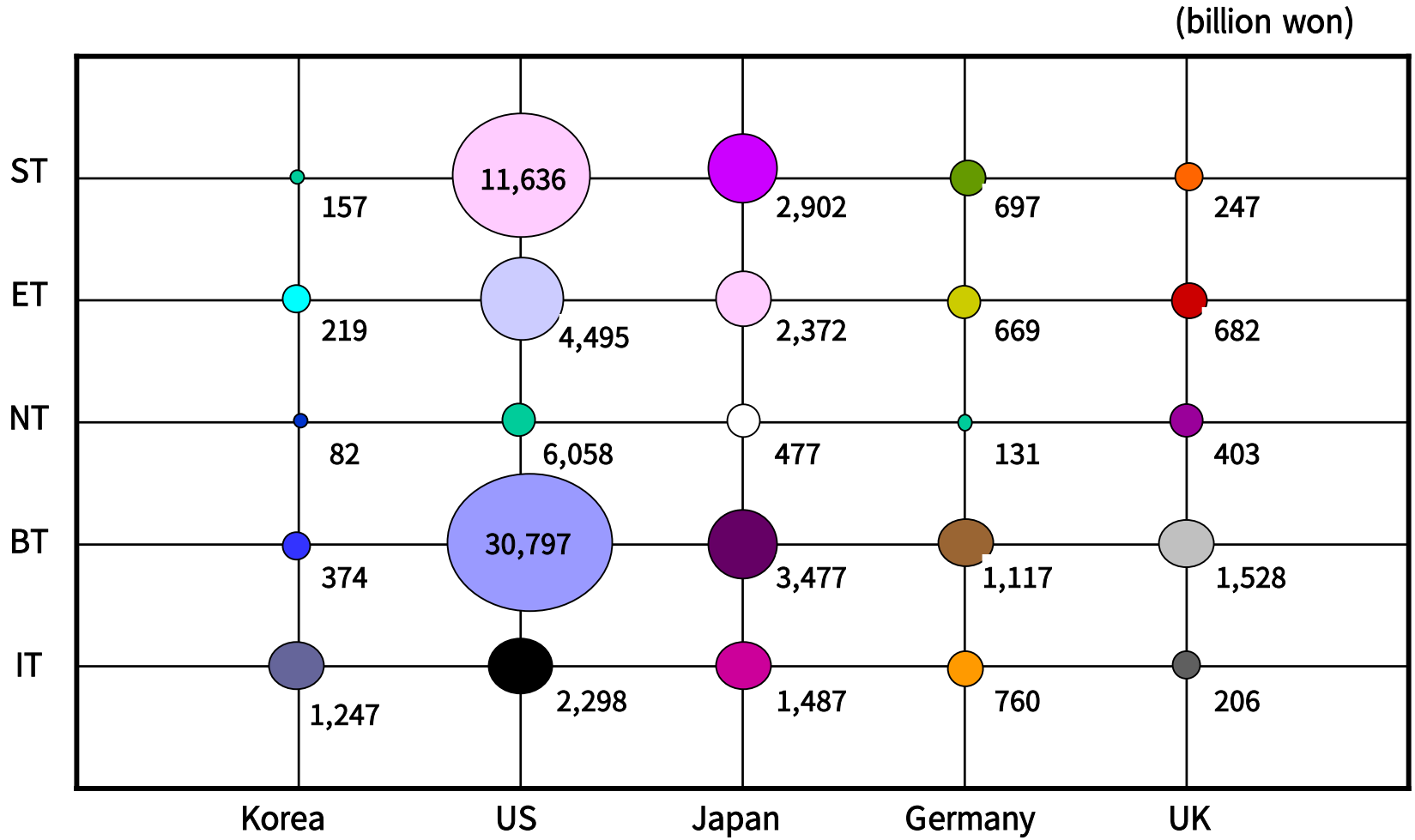
Basic Scheme for the New NIS



ST Policy Priorities

Tasks	Policy Objectives
Future growth engine creation	1. Selective and focused development of national strategic science and technologies
Strengthening bases	2. Promotion of basic science research for creative innovation capacity 3. Rearing ST manpower for knowledge-based society
Internationalization and localization	4. Internationalization of ST and establishing Northeast Asia R&D Hub 5. Regional STI for balanced national development
Advancement of the innovation system	6. Increasing ST investment and efficiency 7. Promotion of the private sector's technology development for industrial technology capacity 8. Strengthening infrastructure for higher ST productivity
Participation of the people in the ST process	9. Increase the role of ST in response to social demand 10. Dissemination of ST culture among the general public

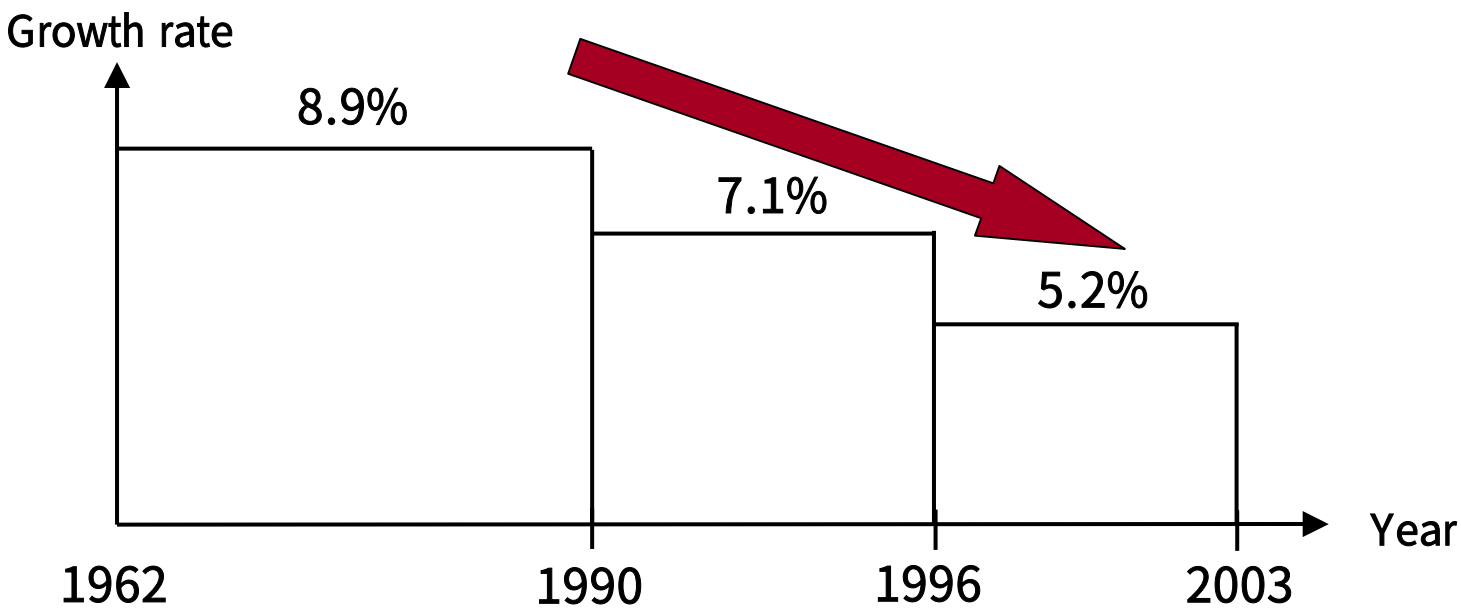
Comparison of R&D Investment in 6T Areas (2001)



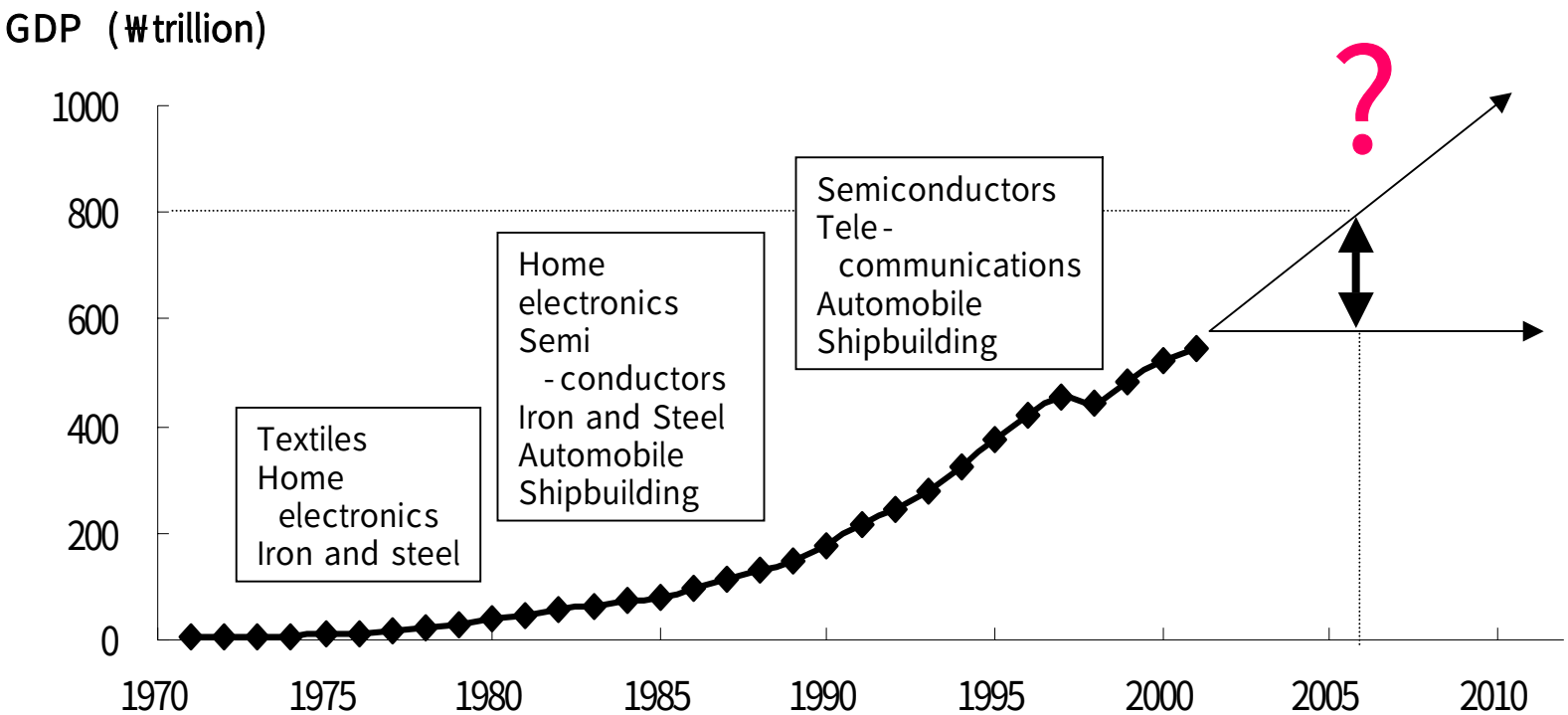
5. The Next Generation Growth Engines

Slow Economic Growth Rate in Korea

□ The long-run trend in economic growth in Korea shows a downturn.



□ In order to realize GDP per capita of $20,000, new growth engines are needed. This requires upgrading the existing industrial structure.

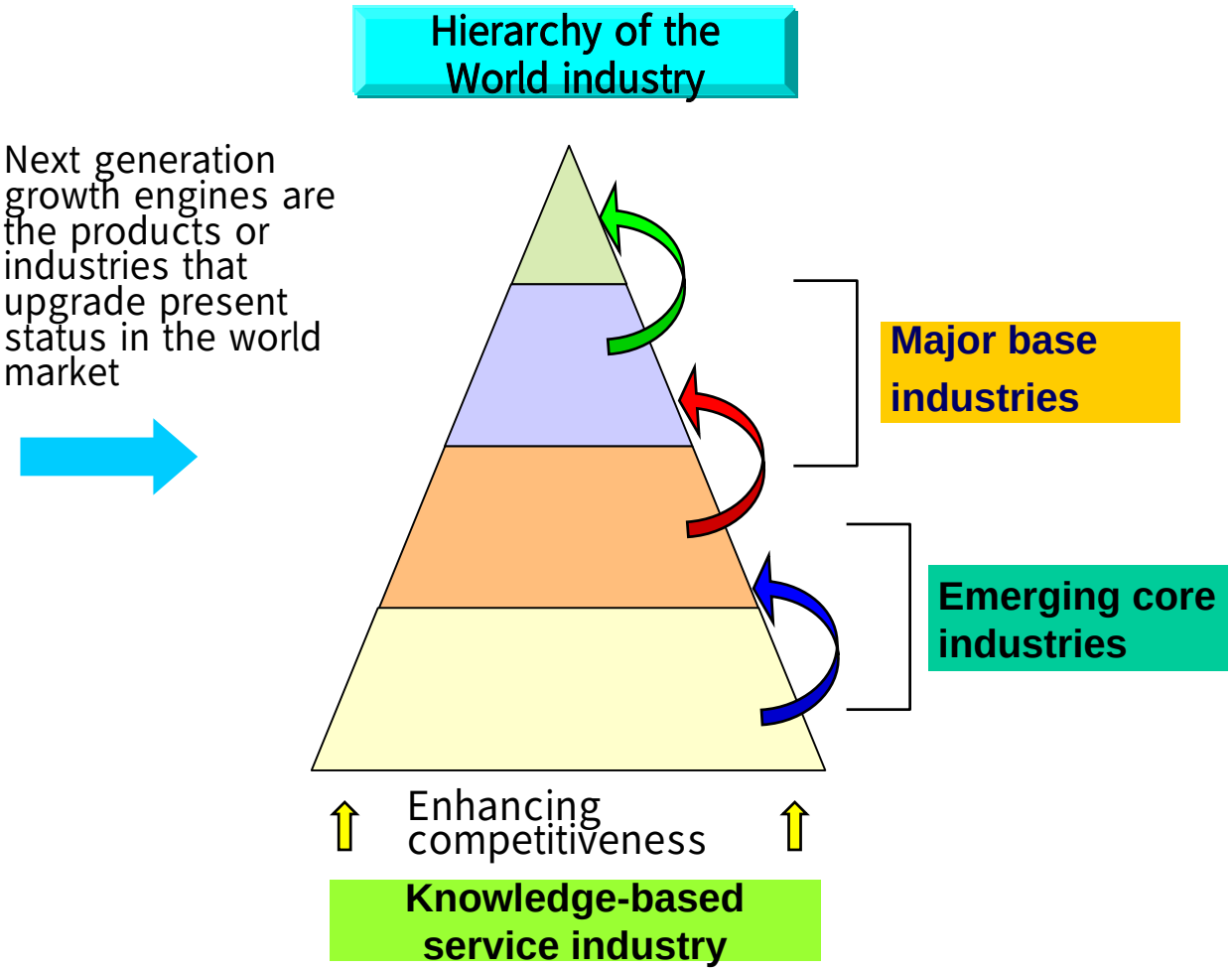


Concept of the Selection of Growth Engines

Criteria

- Domestic industrial competitiveness
- Demand projections in the world market
- Changes in the technology
- Commercialization feasibility
- Effect on employment

Next generation growth engines are the products or industries that upgrade present status in the world market



Source: Park, J. K. Mimeograph. 2003.

□ Promotion of national R&D projects for new growth technologies

- To prompt the early realization of national per capita income of 20,000 dollars, the government selected 10 new-growth industries in 2003, which will increase international competitiveness and lead job creation for the next 5~10years.

- New growth industries will be promoted through developing some 80 key technologies under the coordination of National Science & Technology Council.

The Next-Generation Growth-Engine Technologies

	Product/Technology (Non-Exhaustive)
Digital TV/Broadcasting	Broadcasting system, DTV, DMB, set top box, multi-equipment
Display	LCH, LED, PDP, glass EL, electronic paper, related material
Intelligent robot	Home service robot, IT-based service robot, micro work robot, metal robot
Future automobiles	Intelligent automobile, environment-friendly automobiles
Next-generation semiconductors	Next-generation memory, SonC, nanoelectronic chips, related material
Next-generation mobile communications	4G terminal equipment/system, telematix
Intelligent home network	Home server/home gateway, home networking, intelligent information home electronics, Ubiquity computing
Digital content/software	Digital content provision use distribution system, cultural content, embedded software, Intelligent total logistics system.
Next-generation batteries	2nd batteries, fuel batteries, related material
Biomedical products	New medicine, bio-internal organs, biochips

Source: MOST.

SWOT of Korea's High-tech Industry

Strengthes (S)	Weaknesses (W)
• Qualitative manpower with challenging spirits • Strong drive and strategic promotion of the government • Fast decision making and adaptability • Strong local demand • Commercialization ability • Excellent IT infrastructure	• Weak basic technologies and technological self sufficiency • Insufficient financial capability of investors • Complicated government policy measures • Half-finished economic, financial and industrial reforms
Opportunities (O)	**Threats (T)**
• Growing domestic markets • Transboundary strategic alliances and foreign investments • Development of the Chinese economy and market	• Discouraged venture business and SMEs • Domestic interest-group conflicts • Competitive threats from recovering Japan and rapidly growing China

Targets of Major High and Medium-Tech Industries in Korea

(%)

	2001		2010	
	Share in World Market (%)	Rank	Share in World Market (%)	Rank
Automobile	5.2	5	10.0	4
Machinery	1.4	15	5.0	7
Semiconductors	5.7	3	15.0	3
Digital Electronics	5.1	4	20.0	2
Electronic Medical Equipment	1.5	13	10.0	5
Bio	1.4	14	10.0	7
Aerospace	0.4	15	1.0	10
Environment	1.2	16	2.1	10
Shipbuilding	32.4	2	40.0	1

6. Domestic Regional Innovation Centers

□ Promotion of regional science, technology and innovation

- The government is promoting the following policies to improve local capabilities of innovation:

  ○ Allocates more national R&D budget to local government and induces local governments to invest a certain portion of their budget in S&T

  ○ Designates major high-tech science complexes as "National R&D Special District"

  ○ Executes regional innovation cluster projects aimed at supporting a more balanced regional development

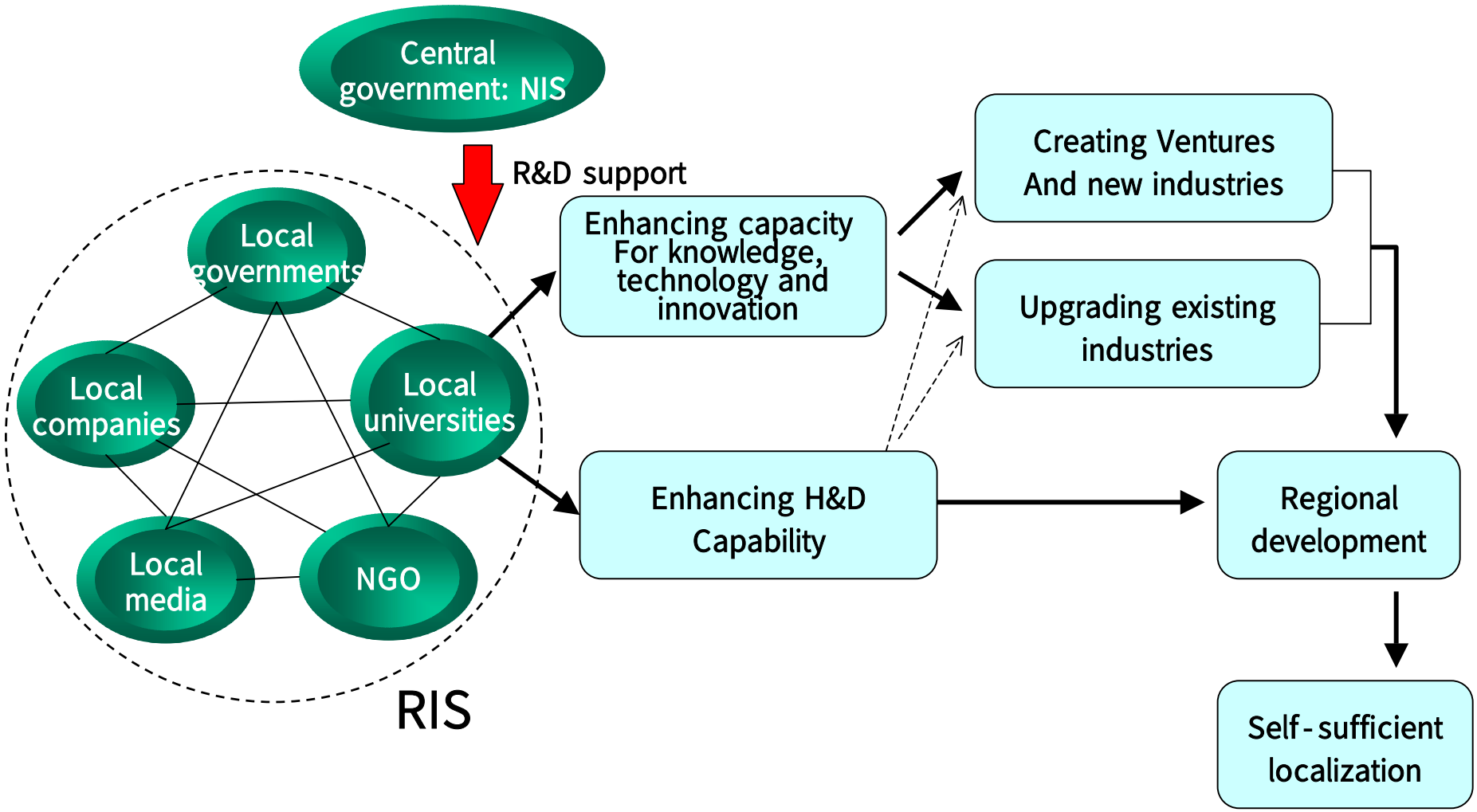
□ Support of R&D in the private sector

- The Technology Development Promotion Law established in 1972 supports various kinds of private industrial research organizations, such as, industrial R&D centers, industrial technology research associations, industrial research clusters, etc.

○ As of 2002, there are 9,705 industrial R&D centers, and 65 industrial technology research associations to activate mutual cooperation in R&D.

- The government will implement revolutionary policies for regionally based economic development, including ‘Regional Innovation Centers’, moving major intuitions to regions and construction of the new capital.

Strengthening Regional Innovation Capacity



7. Regional Dimensions

Education Level by country in Asia

	School Attendance Rate (2000) (%)			Illiteracy Rate of Age 15-25 (2001)	
	Elementary Education	Secondary Education	Higher Education	Male	Female
China	106	63	7	1	3
Japan	101	102	48	-	-
Korea	101	94	78	0	0
Chinese Taipei	100	99	77	-	-
Singapore	-	-	-	0	0
Hong Kong	-	-	-	1	0
Indonesia	110	57	15	2	3
Philippine	113	77	31	1	1
Thailand	94	82	35	1	2
Malaysia	99	70	28	2	2
Vietnam	106	67	10	5	4
United States	101	95	73	-	-
World	102	67	22	-	-

Source: World Bank, *World Development Indicators, 2001, 2002, 2003*

High-Tech Indicators by Country in Asia

	Number of Scientists (per 10,000 person)	Number of Experts (per 10,000 person)	R&D/GNI (%)	High-Tech Export		Royalty & License	
				Amount ($million)	Share of the Manufactured good (%)	Revenue ($million)	Payment ($million)
	1990-2000	1990-2001	1989-2000	2001	2001	2001	2001
China	545	187	1.00	49,427	20	110	1,938
Japan	5,093	667	2.98	99,398	26	10,462	11,099
Korea	2,319	564	2.68	40,427	29	688	3.221
Singapore	4,140	335	1.88	62,572	60	-	-
Hong Kong	93	100	0.44	3,716	20	107	461
Singapore	-	-	-	4,473	13	-	-
Philippine	156	22	-	21,032	70	1	158
Thailand	74	74	0.10	15,286	31	9	823
Malaysia	160	45	0.40	40,939	57	21	751
Vietnam	274	-	-	-	-	-	-
United States	4,099	-	2.69	178,906	32	38,660	16,360
World	-	-	2.38	-	23	72,356	73,148

Source: World Bank, *World Development Indicators, 2001, 2002, 2003*

Evaluation of Industrial Structure and Innovation Capacity

	Industrial Structure		Innovation capacity				Innovation system		Remarks
	Share of high-tech industry production	Value added of high-tech industry	Man-power	IT	R&D	Biz environ-ment	In-put	Out-put	
Japan	○	○	□	□	□	○	□	□	Good in general
Korea	○	□	□	□	□	□	□	○	Although good in general, needs system reforms
China	△	△	△	○	○	○	○	△	Low level although potential is great
Taiwan	n.a.	n.a.	□	□	□	□	□	○	Good in general
Singapore	□	○	□	□	○	□	□	n.a.	Good in general
Malaysia	□	△	△	○		□	○	n.a.	Medium level in general
Thailand	△	△	△	△	△	□	○	△	Low level in general
Philippines	△	○	△	△	△	□	△	△	Low level in general
Indonesia	△	○	△	△	△	○	△	n.a.	Low level in general

Note: □ = strong, ○ = medium, △ = low, n.a. = not available
Source: Hong. Y. S. 2003.

Evaluation of Strategies and Policies for the Development of the Innovation-driven Economy by Country

	Start year of major strategy or plan	Main target year	Core competence-related policies				Efficiency related policies		Remarks
			Man-power	IT	R&D	Business environ-ment	In-puts	Out-puts	
Japan	2000	2005	○	□	□	△	□	○	S&T, Emphasis on IT, Active strategy
Korea	1997	2010	△	□	□	△	□	○	Transitional period for a new paradigm and strategy
China	2003	2010	□	□	□	△	□	□	Acceleration of economic development
Taiwan	2000	2010	△	□	○	○	○	○	Exploring new strategies
Singapore	1991	2000	○	□	□	□	□	□	Problems of excessive foreign dependency
Malaysia	2000	2020	△	□	○	△	△	△	Entering a stable course
Thailand	n.a.	n.a.	○	○	△	○	○	△	Weak
Philippines	1998	2010	△	○	△	△	△	△	Weak
Indonesia	2001	2011	△	○	△	△	△	△	Weak

Note: □ = high, ○ = fair, △ = weak
Source: Hong. Y. S. 2003.

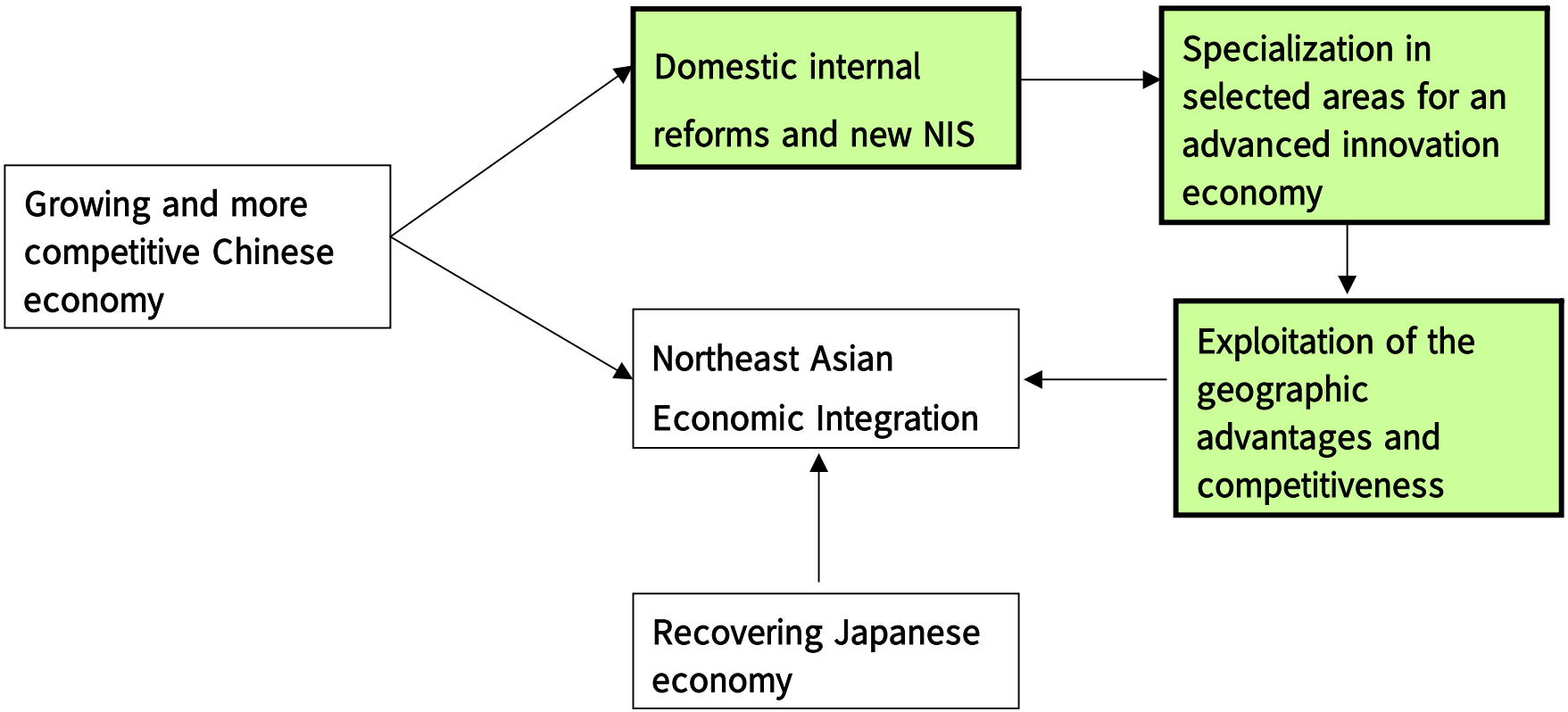
Overall International Competitiveness of Asian countries

(Rank)

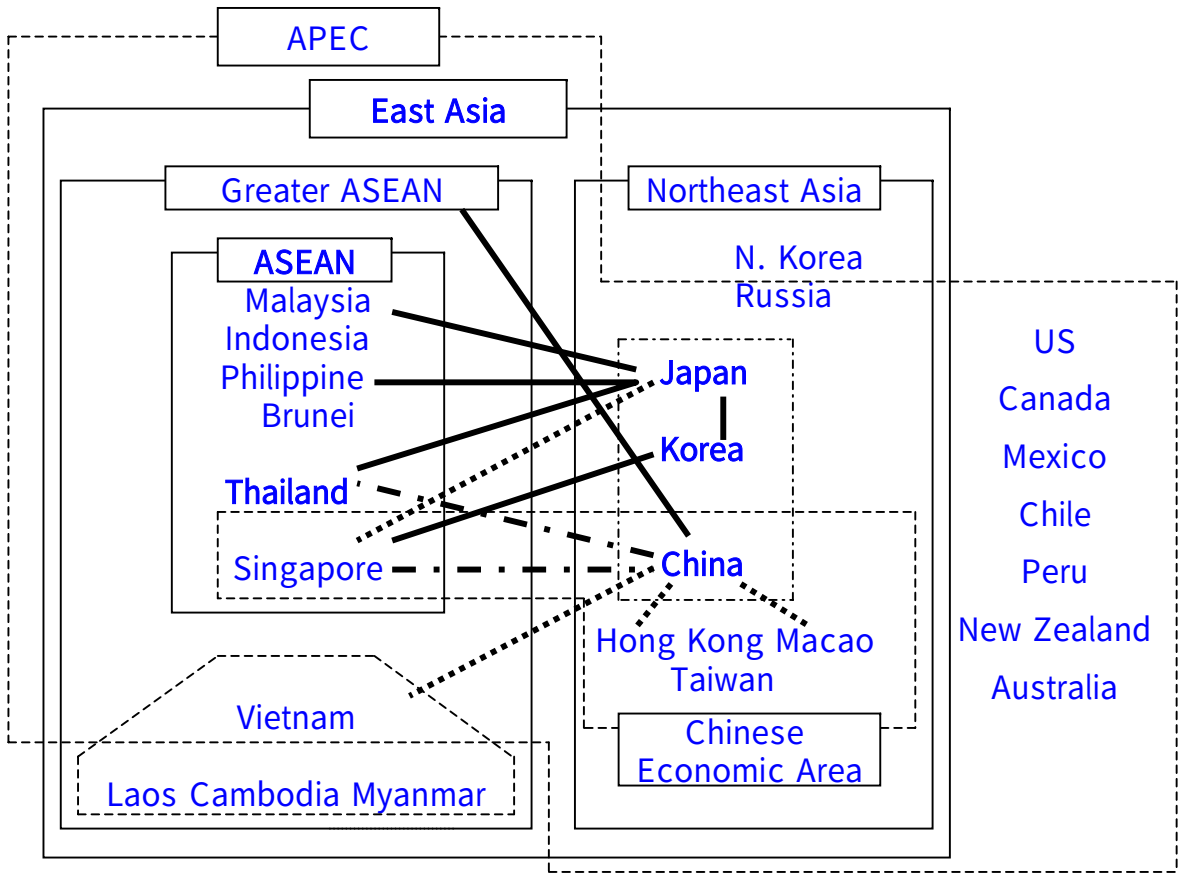
	2000	2001	2002	2003	2004
Korea	29	29	29	37	35
Japan	21	23	27	25	23
China	24	26	28	29	24
Taiwan	17	16	20	1	12
Singapore	2	3	8	4	2
Malaysia	26	28	24	21	16
Thailand	31	34	31	30	29
Philippines	35	39	40	49	52
Indonesia	43	46	47	57	58

Source: IMD. Website.

Basic Concept of Proposed Strategy



The Structure of the East Asian Intra-regional Economic Cooperation and FTA Phases



Notes: – · – = negotiations expected to start in 2004; —— = negotiations underway;
····· = completed negotiations or agreements coming into effect.

☐ Korea has taken an active stance towards East Asia FTA

- Promoted the creation of East Asian Vision Group (EAVG) in 1998
- Suggested the creation of East Asia FTA in 2001
- Emphasized the need for Korea+China+Japan FTA
- Pre-condition for establishing Korea as a business hub in Northeast Asia

☐ Korea's current FTAs activated or under negotiation

- Korea-Chile FTA
- Korea-Japan FTA
- Korea-Singapore FTA

□ Step-wise Approach

- In the case of high-tech cooperation, the involved parties should have a long-range time horizon. Technological cooperation takes a long time to materialize and to be fruitful since there is a long time lag between the idea formulation and the emergence of a new technology.

○ Stage I: Strengthening IT-lead bilateral cooperation in Northeast Asia

- IT Initiatives, Business Forum, FTA, etc.
- Cooperation with ASEAN (e.g., ASEAN+3, APEC)

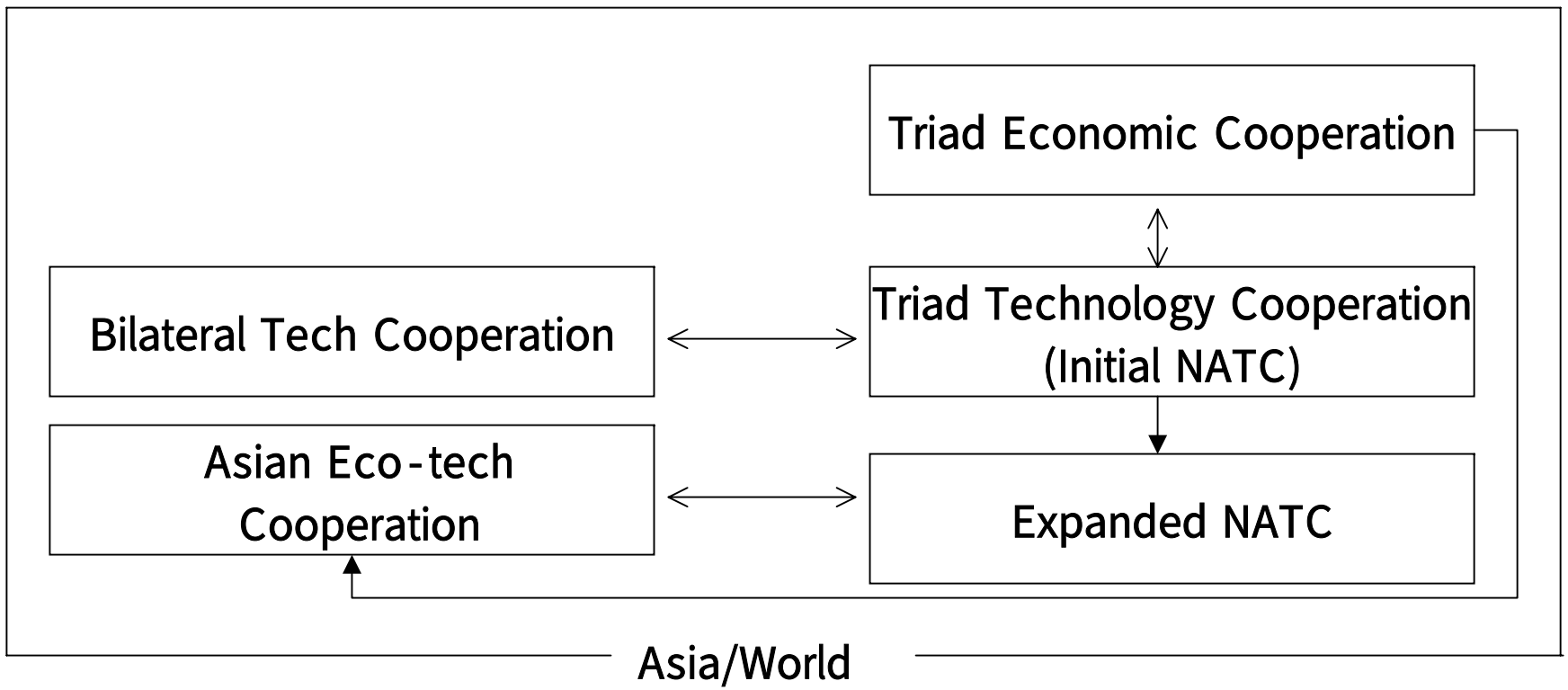
○ Stage II : Pilot programs for the NATC (North Asian Technology Community) cooperation

- Standardization, collaborative R&D, tech-trade, investments and venture capital, training, exchange of experts and information.

○ Stage III: Building Asian Technology Community (ATC)

- A grand program, similar to the EU Framework

Conceptual Framework for NATC



8. Concluding Remarks

□ Needs for change

- Korea's NIS is characterized by the strong leadership or intervention of the government and the relative weak position of the private sector except for some conglomerates. In the time of extensive growth, this kind of governance was effective. However, as the economy moves toward becoming a knowledge-based economy that is dependent more on knowledge, technology and innovation than labor and capital, a new structure of NIS is needed.

- Although the need for reforming the NIS and governance structure has been pointed out by many experts and the media, it is the new administration which promised broad and deep reforms of the whole social system that actually materialize the required reforms.

□ Recognition of problems and needs of reforms

- It takes a very long time to recognize problems of an NIS and even longer to reach a consensus on the direction and measures for reform. This recognition is a result of combined and accumulated efforts of various actors in the system. A kind of crisis consciousness is a crucial factor. In the case of Korea, the challenge of the rapidly rising Chinese economy contributed a lot to this.

□ Managing conflicts and vested interests and consensus building

- This is the most difficult part in the process of reforms. Korea is still in the process. Although the management of conflicts is an endless job, pressures for reform and capable political entrepreneurship can achieve it.

- Importance of political entrepreneurship and change agents

  - The new administration started from 2003. The catchphrase of the new administration and its supporting political group is a creative destruction of the “ancient regime”. Many political entrepreneurs and change agents were recruited and involved in the reform process. A political power shift like this can render a critical momentum.

- Benchmarking and creative approach

  - The fundamental problem of the Korean NIS and ST governance is that the system was designed for the imitation era, which is inefficient and a bottleneck for the innovation era. Benchmarking of many leading countries contributed to the discussion on the problem and its reformation.

□ More opportunities than threats

- The hollowing-out of Korean manufacturing is the main threat from the fast growing Chinese economy and its black hole like absorption capacity.
- However, as far as the Chinese economy keeps high growth, Korea can benefit from closer cooperation with China in terms of trade, investment, technology, culture and learning.

□ Domestic reforms

- Korea's future ability to utilize the opportunities of Chinese economy and Asian markets depends on the results of several economic, social, and political reforms underway.

□ HRD and learning by doing

- Most countries are currently suffering from shortages of high-tech manpower, especially in IT sector. There is no easy solution but “et(education and training), et, et”.
- Effective national qualification system is a must.
- The Korean experience indicates that technology-production-HRD goes hand in hand. That is, learning by doing is the most important process in capability building.
- HRD takes a long time for realizing the full effects and benefits and advance investments, public and private are the key.

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