Industrial Cluster Policies of the Korean Government in the 2000s: Retrospect and Prospect

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Menangiyn Plain
Nei Mongol
Qiqihar
Daqing
HARBIN
Yichun
Hegang
Jiamusi
Shuangyashan
Jixi
Mudanjiang
Sikhote
Sapporo
Hokkaidō
Muroran
Hakodate
Aomori
Akita
Sendai
Niigata
Kanazawa
Komatsu
Fukui
Takaoka
Toyama
Nagano
Matsumoto
Gifu
Nagoya
Kawasaki
TOKYO
Chiba
YOKOHAMA
Hamamatsu
Honshū
Kyōto
OSAKA
Sakai
Kōbe
Amagasaki
Okayama
Kurashiki
Hiroshima
Matsuyama
Takamatsu
Tokushima
Kochi
Shikoku
Kyūshū
Kumamoto
Miyazaki
Kagoshima
Nagasaki
Sasebo
Kitakyūshū
Fukuoka
Shimonoseki
PUSAN
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SHENYANG
Fushun
Benxi
Liaoyang
Anshan
Haicheng
Fengcheng
Dandong
Jinzhou
Chengde
Yingkou
Dalian
Tangshan
TIANJIN
BEIJING
Langfang
Baoding
Shijiazhuang
Botou
Xinji
Dongying
Pingyang
Yantai
Weihai
ZIBO
Weifang
Jinan
Tai'an
Qingdao
Rizhao
Qufu
Zaozhuang
Lianyungang
Xuzhou
Bengbu
Huainan
NANJING
Hefei
Changzhou
Wuxi
Suzhou
SHANGHAI
Nantong
Huzhou
Jiaxing
Haining
Yangzhou
Zhenjiang
Yangcheng
WUHAN
Kaifeng
Zhengzhou
Xinxiang
Handan
Anyang
Liaocheng
Datong
Zhangjiakou
Chifeng
Qiqihaer
Gulf of Tonkin
Korea Bay
Bo Hai
Gulf of Chihli
YELLOW SEA
EAST CHINA SEA
SEA OF JAPAN
PACIFIC OCEAN

South Korea

Pop: 48 Million

GNP: $16,000

Land: 99,000Km²

Economic and Industrial Growth

1945 : Liberated from Japan

1948 : New government

1950 – 1953: Korean War

1962 – 1996: Economic Development Plans

1972 – 2020: Comprehensive Land Development Plans

The Success

1960s

1970s

1980s

1990s

2000s

Resulting Problems

1. Widening Regional Gaps

   between the Capital and the Rest

   between the East and West

   between Urban and Rural

   between old core and new areas within cities

2. Widening Social and Economic Gaps

3. Environmental Pollution

4. The Lack of Social Infrastructure

Past Approaches to the Problems

Rural Development: New Community Movement

Growth Control in Seoul

Construction of Industrial Estates Mainly in the South

Coordinated Development by Spatial Planning: CNLDPs

Decentralization

New Approaches in the 2000s

Regional Innovation Policies

Industrial Cluster Strategies

New Administrative Capital

Innovative Cities and Enterprise Cities

RIS Programs by Ministries

Ministry in Change	Projects	Main Actors	Beneficiaries
Ministry of Commerce Industry & Engergy	Techno-Park Project	Universities Governments	Universities Local Governments
	Regional Technology Innovation Center(TIC)	Universities	SMEs outside of Seoul
	New Technology Business Incubator Center (TBI)	Universities (29)	University Professor, Engineer, Research Staffs
	Growth Engine for the Next Generation	Companies, Local Governments	Companies
	Pilot RIS Project	Universities, Research Institutes Companies	Universities, Companies
	Regional Research Center (RRC)	Universities	Universities, Companies

Source: Revised from Kwon and Hur (2000: 177).

RIS Programs by Ministries

Ministry in Change	Projects	Main Actors	Beneficiaries
Bureau of Small & Medium Enterprises	Business Incubator Assistance Project	Corporation of Promoting SMEs	Individuals
	Business Incubator Assistance Project	Corporation of Promoting SMEs Local Governments	Individuals
Ministry of Science & Technology	Science Research Center (SRC)	Universities(26)	University Professors and Students
	Engineering Research Center (ERC)	Universities (35)	University Professors and Students
	Center for High-Tech Commercialization	KAIST	University Professors and Students
	Center of New Technology Start-ups	KAIST	Individuals

Source: Revised from Kwon and Hur (2000: 177).

Daejeon: a Science City

Pop: 1.5 Million

Land: 537 Km^2

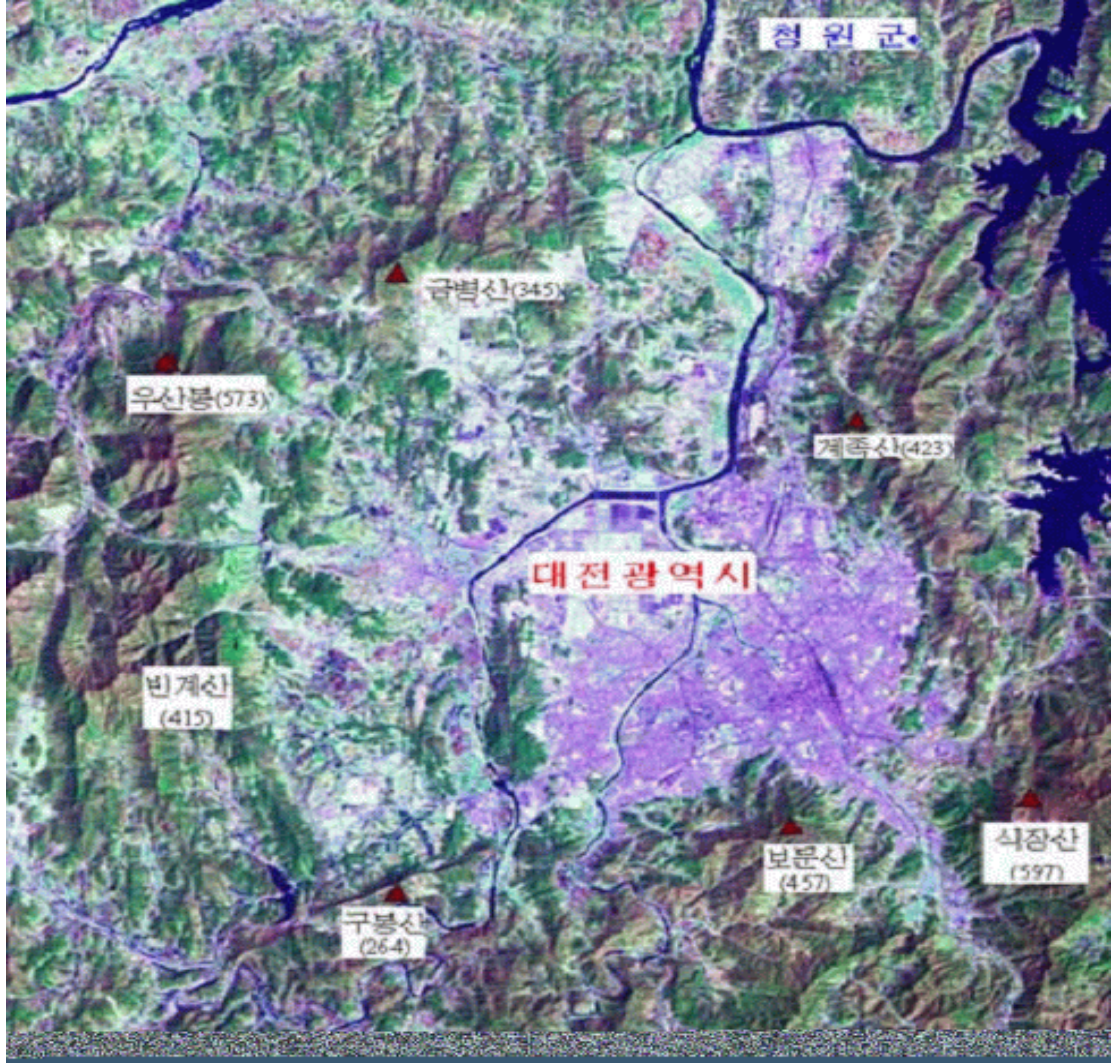
Characteristics:

- **Science City**
- **Transportation Hub**
- **Administrative Centre**
- **Educational Centre**
- **Regional Centre**

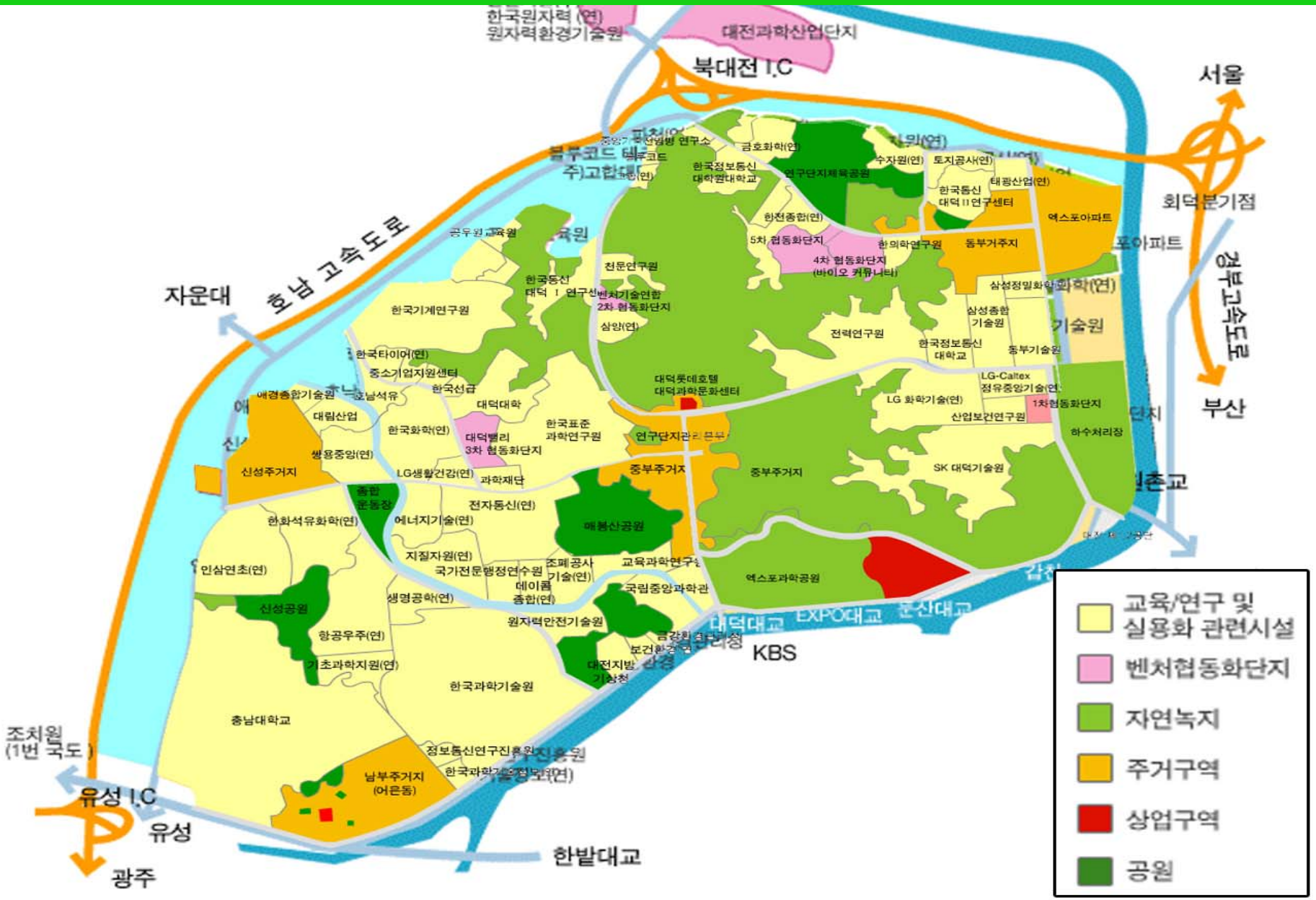
Modern Economy: Science & Administration

Traditional Economy: Leather, Textiles

History: 1905 Railway Station


청 원 군
금병산(345)
우산봉(573)
계족산(423)
대 전 광 역 시
빈계산
(415)
보문산
(457)
식장산
(597)
구봉산
(264)

Daeduck Science Town



Changes in the DST

Time	Major Activities
1973	Area Designated (24.7 Km2)
1974	Master Plan (Ministry of Science & Technology)
1974	Construction Started
1978	Location of Research Institutes Began
1983	Daejeon Was Expanded to Include DST
1992	Land Development Completed
2002	Renamed as “Daeduck Valley”
2004	Renamed as “Special R&D District”
2005	Area Expanded, Governing Structure Changed

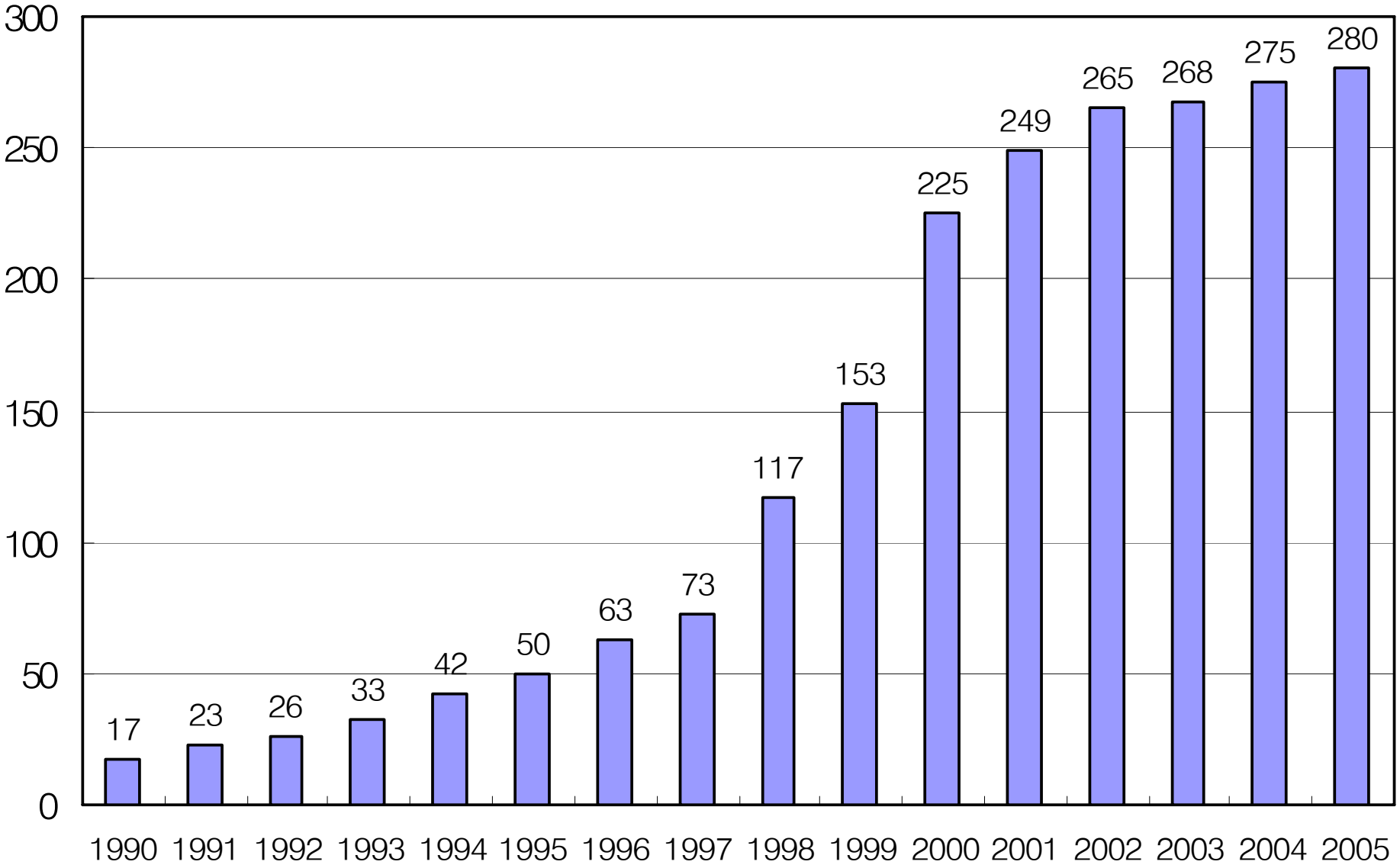
Growth in the DST

Year	1979	1985	1990	1997	2002	2005
Gvt. Institutions	0	0	3	7	9	12
Private Res. Ins.	0	0	0	0	7	6
Res. Institutions	8	11	27	49	54	64
- Gvt	5	8	19	16	17	20
- Private	3	3	8	25	26	33
- Semi-gvt	0	0	0	8	11	11
Universities	1	2	3	3	4	6
SMEs	0	0	na	na	111	152
Total	9	13	33	59	185	239

Growing Employees in the DSP

Year	1979	1985	1990	1997	2002	2005
Gvt Institions	0	0	244	420	426	726
Private Comp.	0	0	0	0	54	55
Res. Institutions	4,698	6,848	10,218	14,220	12,036	14171
- Gvt	3,879	6,129	6,920	7,473	6,277	7217
- Private	719	719	1,432	4,475	3,224	4399
- Semi-gvt	0	0	0	2,272	2,535	2555
Universities	1,146	1,257	2,084	2,423	2,385	2,707
SMEs	na	na	na	na	1,919	3097
Total	5744	8105	10,680	17,063	16,820	20756

Spin-offs form the ETRI



ZEROtherm
VGA COOLER
Floating Technology

PACK.Inc.

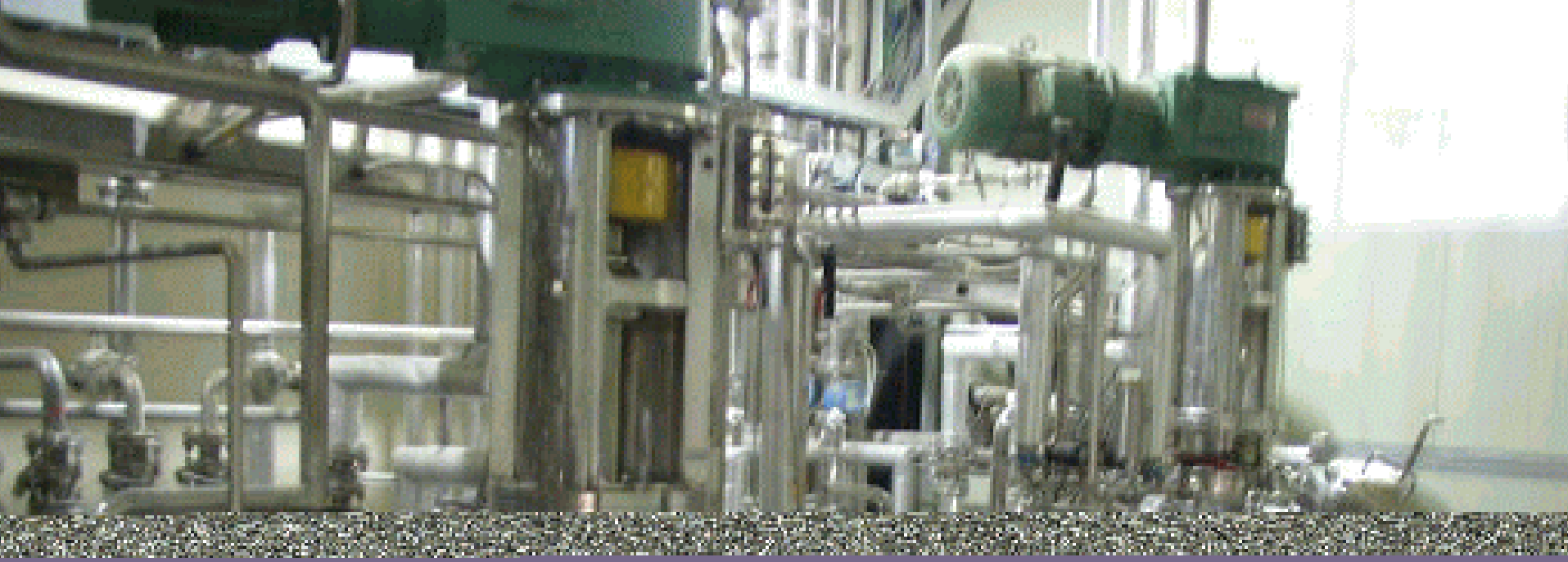
SOLAPACK

HANOOL
ROBOTICS
주)한울로보틱스

KIA

InBioNET
InBioNET

Commercial Biotechnology Innovator
Business Portfolio
Animal Healthcare Products
Bioenvironmental Products
Bioagricultural Products
Biopharmaceuticals
Pharmaceuticals
Biotechnology Network



Insect Biotech

ASTEL

XL PHOTONICS
IDIS

아이티

ASTEL

Problems of the DST

Unclear Role Definition

- **Public vs Private**
- **R vs D and B**

Limited Local Economic Impacts

- **Problems in Local Economic Structure**
- **Problems in its Governing Structure**

Lack of Internal Linkages

- **Poor Advanced Services in Daejeon**
- **Low Political Commitment & Poor Strategies**

Limited Resources

NURI: Concept

BK21 and NURI, Created by MEHRD

NURI focuses on forming industrial clusters

Aims to supply trained graduates and applied knowledge

Improves the quality of university education

Strengthens university-industry relationships

Creates mutual support between universities and industry

Plans investing 260 million dollars annually for 5 years

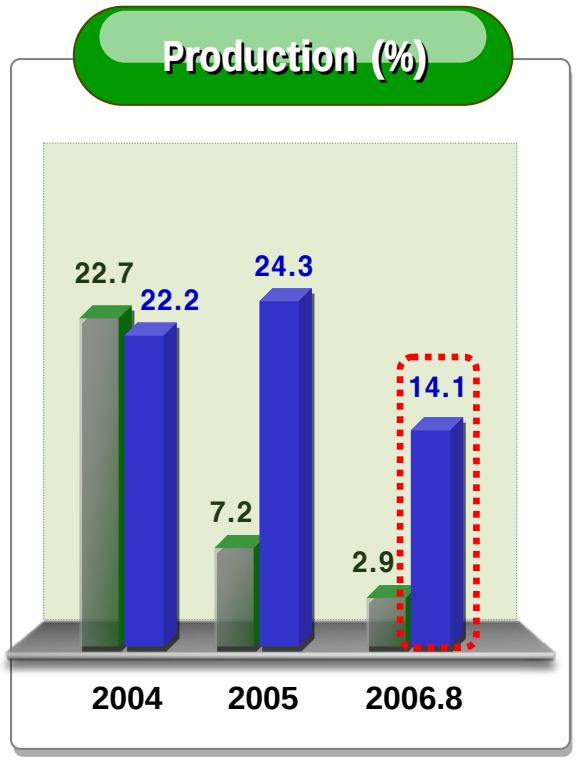
Constituted of 3 types: large-, medium-, and small-scale

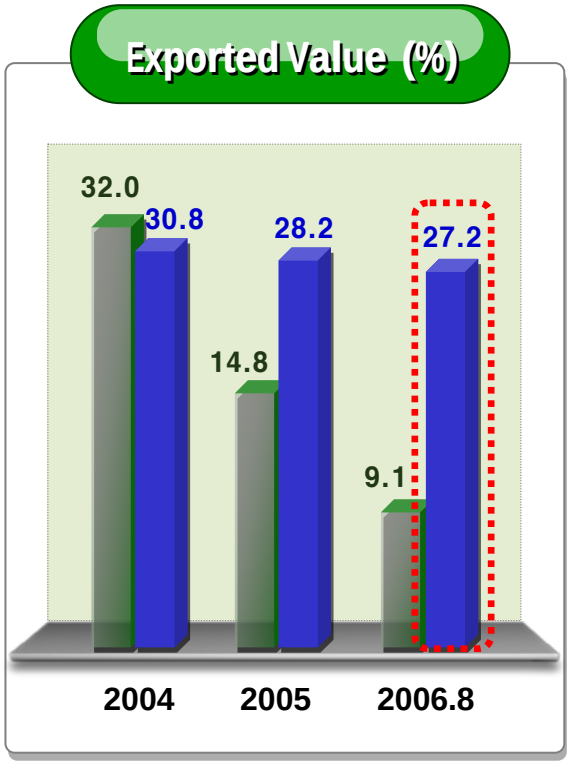
In 2004, 111 projects have been selected

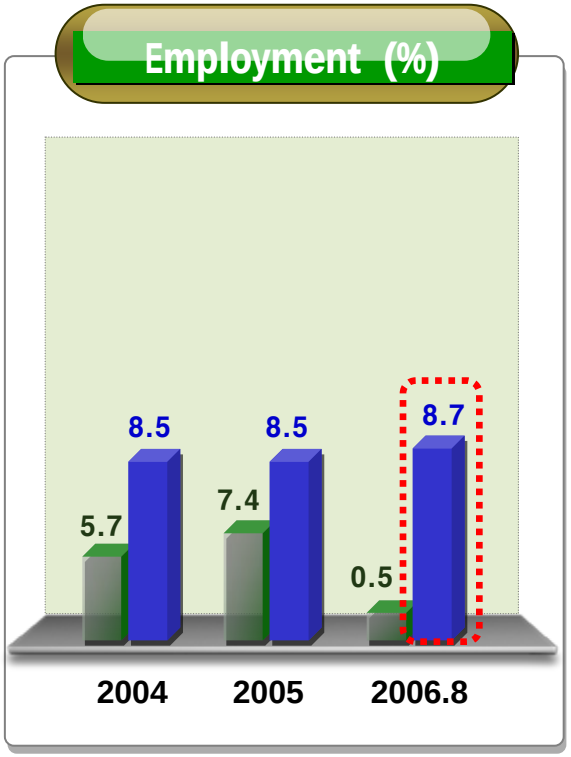
NURI: Evaluation

- Daejeon hosts 11 NURI projects
- According to the BK21-NURI Evaluation Committee
- Initial success by downsizing the number of college students
  - Improved ratio of teaching staffs versus students
  - Increased No of intern & OJT students
  - Increased No of special lectures by corporate managers at universities
- No clear signs of creating new jobs and better trained people

Outcomes of the Strategy



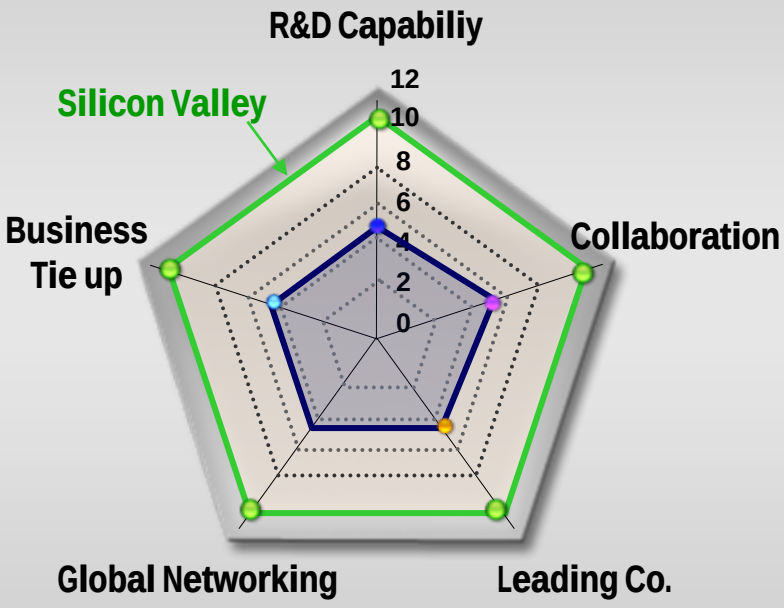




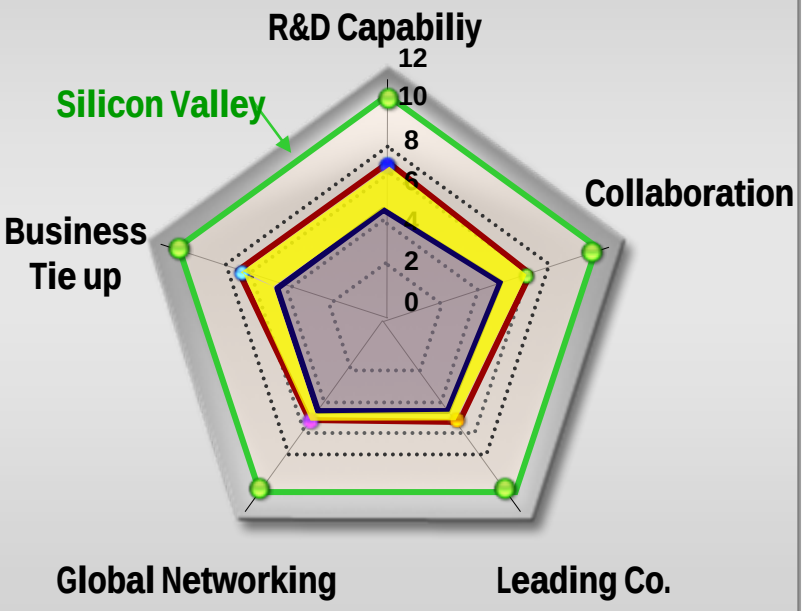
Non participant Co. Participant Co.

Changes in Innovative Capacity

Innovation Capability ('04.3)



Innovation Capability ('06.9)



Changes in Firm Relationships

Exchange information on policies and networking

Exchange know-how in technology commercialization

Cooperate with technology, commercial trade and inward investment

Participate and run entrepreneurship programs

Participation in related conferences and seminars

Conclusion: The Industrial Cluster Strategy

Positive Side

- Right choice to tackle the problems
- Succeeded in orienting concerns to applied R&D

Negative Side

- Too much focus on high-tech & manufacturing, i.e., BT, IT
- Considerable expenses for learning effects

Alternative

- Creative industry: culture and technology
- Need flexibility and diversity to create jobs
- Use local resources: cultural, material, and technological
- Focus on services as well