

OECD/IMHE project

Supporting the Contribution of Higher Education Institutions to Regional Development

Self-Evaluation Report:

Busan, Republic of Korea

Jang-soo Ryu, Sung-joon Paik, Dae-shik Lee,
Hyun-joong Jun, Eui-soo Cho and Jong-han Kim

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This self-evaluation report has been created with the help and support of regional partners such as universities in the Busan region, the central government, the regional government, and businesses. There are a total of six authors to this report including a regional co-ordinator and their expertise cover a wide range of fields including economics, education, and sociology.

This report would not have been possible without the active help from our regional partners. In preparing the questionnaire the authors referred to many materials, including past OECD reports, and at the same time reflected Busan's regional characteristics. Questionnaires were distributed to twelve universities in the Busan region to research and analyze each university's role in regional development. Representatives from all twelve universities participated in the questionnaire review meeting and gave outstanding opinions, and the researchers actively reflected those opinions in creating the final questionnaire. Everybody from the Busan region universities gave sincere answers to the question and provided much data.

After creating the self-evaluation report, the authors collected opinions from the regional steering committee, and the regional steering committee authorized the report as Busan's self-evaluation report.

The Ministry of Education and Human Resources Development (MOE) and Busan Metropolitan City gave unreserved support in creating this report. Not only did the MOE judge this project as a means to accurately identify university's roles for regional development so far, but had plans to promote similar researches in other regions, based on this report. Busan Metropolitan City recognized universities to be very important for a city to become world class. Due to such reasons, the Ministry of Education and Human Resources Development and Busan Metropolitan City supported the creation of the report in many ways.

This report has been created through the help of active support from regional partners, yet it has some issues to resolve. Business participation was relatively low in this project. The issue was raised in the regional steering committee that businesses should play a more active role in the future. Plus, junior colleges' role in the Busan region was not a part of this research analysis, and was an area for improvement.

Nevertheless this report will be remembered as the most outstanding report that was created with the participation of regional partners from the region. The 'role of higher education institutions for regional development' is recently becoming very important in Korea as well, and we wish this report to be remembered as one that analyzed the issue.

Table of Contents

Chapter 1: OVERVIEW OF BUSAN	1
1. The Geographical Situation.....	1
2. The Demographic Situation.....	4
3. The Economic Base.....	6
4. Governance Structure	8
Chapter 2: CHARACTERISTICS OF THE HIGHER EDUCATION SYSTEM.....	10
1. Overview of the national system of higher education.....	10
2. Regional dimension 'inside' the national higher education policy	16
3. Regional higher education system and governance	18
Chapter 3: CONTRIBUTION OF RESEARCH TO REGIONAL INNOVATION.....	21
1. Framework conditions for promoting research and innovation	21
2. Responding to regional needs and dimensions	24
3. Interfaces facilitating knowledge exploitation and transfer	30
4. Conclusion.....	33
Chapter 4: CONTRIBUTION OF TEACHING & LEARNING TO LABOR MARKET AND SKILLS.....	36
1. Localizing the learning process.....	36
2. Student integration into the region	38
3. Student Recruitment and Regional Employment.....	39
4. Employment promotion activities	41
5. Promoting lifelong learning, continuing professional development and training ..	42
6. Changing forms of educational provision	44
7. Enhancing the regional learning system.....	45
8. Conclusion.....	46
Chapter 5: CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT	48
1. Overview	48
2. Social Development	50
3. Cultural Development	52
4. Environmental Sustainability	56
5. Conclusion.....	58

Chapter 6: CAPACITY BUILDING FOR REGIONAL COOPERATION.....	60
1. Mechanisms to promote HEI-regional involvement	60
2. Promoting regional dialogue & Joint marketing initiatives	66
3. Evaluating and mapping the impact of the regional HE system	67
4. Institutional capacity building for regional involvement	68
5. Human & Financial resources management.....	70
6. Creating a new organization culture.....	70
7. Conclusion.....	71
 Chapter 7: CONCLUSIONS: MOVING BEYOND THE SELF-EVALUATION.....	73
 BIBLIOGRAPHY	75
 Appendix I	78
 Appendix II	93

List of figures and tables

Figures

Figure 1.1 Busan within the world	1
Figure 1.2 Busan, second largest city in Korea.....	2
Figure 1.3 Administrative map of Busan Metropolitan City.....	3
Figure 1.4 13 Universities in Busan	4
Figure 1.5 GRDP growth rate in Busan and Korea.....	8
Figure 2.1 Higher education system in Korea.....	10
Figure 2.2 Higher education budget flow.....	14
Figure 2.3 System of Major Laws on Higher Education in Korea.....	15
Figure 2.4 Conceptual framework of NURI project.....	17
Figure 2.5 The Number of Faculty Members and Students at HEIs in Busan	19
Figure 5.1 Name of Democracy	48
Figure 5.2 Torch of Democracy	48
Figure 5.3 BEXCO	53
Figure 5.4 Busan Museum of Modern Art	53
Figure 5.5 Performance Facility in Busan.....	53
Figure 5.6 Museums in Busan.....	54
Figure 6.1 Busan Regional Innovation Committee	62

Tables

Table 1.1 Advancement Rate of Higher education by sex	5
Table 1.2 High School Locations of the university students in Busan	5
Table 1.3 Change of Production Structure by Industry.....	6
Table 1.4 Key Indicators of the Labor Market.....	7
Table 2.1 Higher education enrollment rate by age	11
Table 2.2 Number of HE institutes, students, professors and staffs.....	11
Table 2.3 Number of institutes by HE institute's type.....	11
Table 2.4 Number of students by HE institute's type	12
Table 3.1 Trend of R&D expenditure by user group	22
Table 3.2 Sources of R&D expenditure by user group (2001).....	22
Table 3.3 Government R&D budget by region	22
Table 3.4 Degree of regional engagement in research	26
Table 3.5 Relative importance of regional partners in research.....	26
Table 3.6 Collaboration between regional stakeholders and HEIs	33
Table 4.1 Employed Regions of Graduates from Busan's Undergraduate Courses	40
Table 5.1 7 Major Strategic Business Plans and Development Area of Busan.....	49
Table 5.2 Evolution of Pusan International Film Festival.....	55
Table 6.1 Busan Regional Innovation Committee Members	62

Chapter 1: OVERVIEW OF BUSAN

1. The Geographical Situation

Busan is a cultural city surrounded by scenic mountains, rivers and the ocean. Blessed with a beautiful landscape created by the narrow Nakdong River valley and the popular Haeundae Beach, the city plays a key role in the development of the region's and the nation's culture.

Figure 1.1 Busan within the world



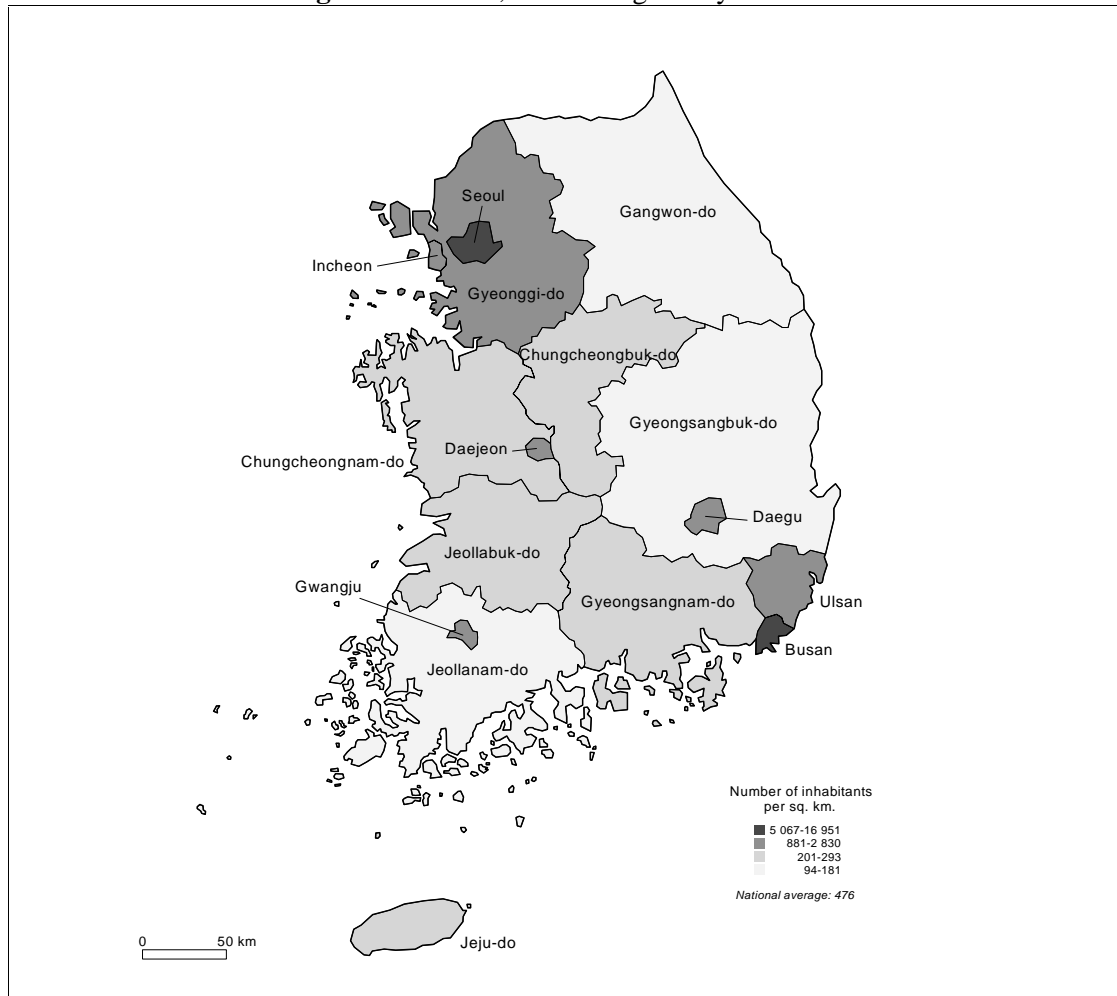
Busan shares the city border with Ulsan to its right. It also shares borders with Gyeongsangnam-do to its north and west. Metropolitan Cities of Busan and Ulsan together with Gyeongsangnam-do form what we call the southeast economic zone. With today's development in transportation and improvements in urbanization, the southeast economic zone is a single day economic bloc as a super metropolitan region, with much movement of people and goods. (cf. Figure 1.2). As of 2004, the total size of the southeast economic zone is 12,338.85km², accounting for 12.5% of the whole nation, and is wider by 608.5km² compared to the capital region of Seoul, Incheon and Gyeonggi-do Province put together (total area of 11,730.35km², accounting for 11.8% of the whole nation).

Busan is also the second largest metropolis and the largest international port city in South Korea. Owing to its strategic location, it serves as a gateway to the Eurasian continent from the Pacific Rim and vice versa, connecting neighboring Japan and faraway countries in Western Europe. Busan is at roughly the same latitude as Kimhae, Masan and Gwangju in Korea, as well as international cities like Tokyo, Los Angeles, Baghdad and Athens. Busan's local time is 8 hours 37 minutes earlier than GMT and 24 minutes later than Korea Standard Time (135 degrees east).

Busan Metropolitan City is composed of 15 autonomous districts (called *gu*) and one rural unit of government (called *gun*), which are in turn divided into sub-districts (ie 2 *eup*, 3 *myeon*,

221 dong), covering an area of 763.30km² or 0.77% of the nation's territory. In terms of geographical boundaries, the city confronts the Korean Strait to the south, Yangsan City and Gimhae City to the north, Ulsan Metropolitan City to the east, and Jinhae City and Gimhae City to the west. As the gateway to Korea and the continent, Busan is one of the most strategic locations in Korea, situated 430km from the capital city of Seoul, accessible by express train (KTX) in two and a half hours.

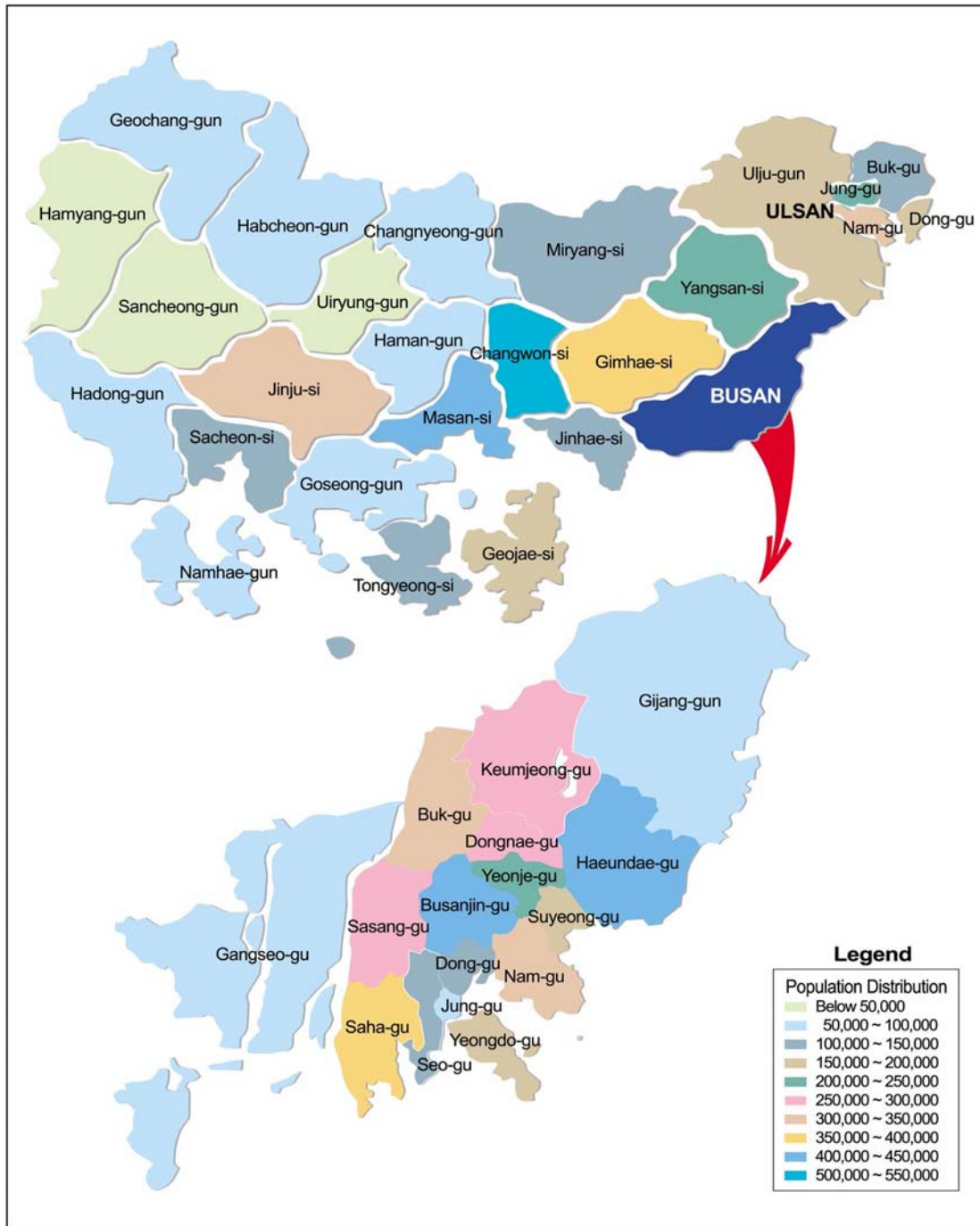
Figure 1.2 Busan, second largest city in Korea



Despite its status as the largest port city and the center of the southeastern region in Korea at the opposite diagonal of Seoul, Busan lacks flat land compared to its 3.6 million inhabitants, thus suffering from a relatively poor urban condition in terms of roads and transportation. More recently, depletion of land for industrial use and the decline of the light manufacturing sector have weakened the region's economy, with its share of the nation's exports contracting from 25% in the 1960-70s to a mere 3% at present.

In many ways, however, Busan has a potential for further development. Its geographical location requires the city to be developed into a leading hub in southeast Korea, ensuring a balanced development across the national territory and serving as a critical link between Pohang~Ulsan and Changwon~Geojae~Gwangyang industrial belt along the southern seaboard. The government currently has plans to build on the city's past evolution patterns and divide the city into West Busan, Downtown and East Busan for further development.

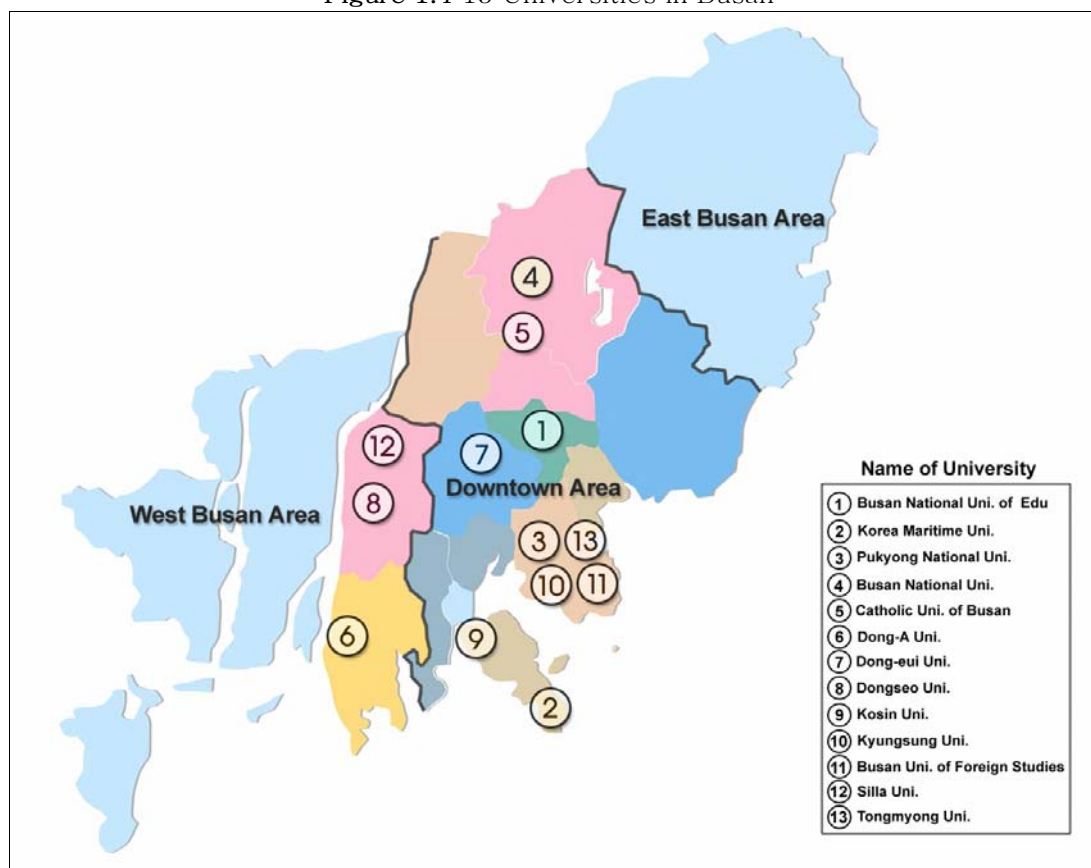
Figure 1.3 Administrative map of Busan Metropolitan City



Busan has 13 universities and 10 junior vocational colleges at the time of writing. Thirteen universities, which will be addressed by this report, comprise four national universities (Pusan National University, Pukyong National University, Korea Maritime University and Busan National University of Education) and nine private universities (Kyungsoong University, Kosin University, Tongmyong University, Dongseo University, Dong-A University, Dong-eui University, Catholic University of Pusan, Pusan University of Foreign Studies and Silla University). Most of these universities are located in Downtown and West Busan area. By

district, Nam-gu alone has 4 universities, followed by Geumjeong-gu, Sasang-gu and Yeongdo-gu with two each, and Busanjin-gu with one (Figure 1.4, Appendix Table 1.1).

Figure 1.4 13 Universities in Busan



Most of these institutions are equipped with systems offering distance learning or online classes, and are building or have already built their own Mobile Campus. In reality, however, the proportion of online classes or tele-learning remains low.

2. The Demographic Situation

2.1 The key demographic indicators

The population of Busan Metropolitan City was around 3.6 million in 2004, representing 7.5% of 48 million, or the total population in South Korea. While the nation as a whole saw an increase in the number of inhabitants in the last decade, Busan's population has been falling consistently. This trend is expected to continue, leaving Busan with 3.491 million residents in 2015 and 3.19 million in 2030. The age profile of Busan also indicates that the population is ageing. Compared to the national average, however, Busan has a younger age structure, typical of a large city.

In 2003, there was a migration inflow of 144,123 people into Busan from other regions, while an outflow of 186,386 from Busan to other regions, resulting in a net loss of inhabitants. The negative growth in population has been an ongoing trend for the last ten years.

As an indicator of health and welfare levels in Busan, the number of hospitals and medical workers, as well as participation in Health Insurance and National Pension schemes were surveyed. As of 2003, Busan had 3,834 hospitals and 25,559 people working in the medical sector, with 88% and 35% of the city's population covered by Health Insurance and National Pension respectively.

2.2 The participation levels of the local population in higher education (HE)

In 2004, 85.2% of high school graduates in Busan went on to receive higher education against the national average of 81.3%. Both male and female enrollments in higher education were ahead of national average. Percentage of HE students in Busan has grown steadily over the past ten years and at a faster rate than the rest of the nation.

Table 1.1 Advancement Rate of Higher education by sex(High School Graduation→ Higher education Advancement

	Total		Male		Female	
	Busan	Korea	Busan	Korea	Busan	Korea
1995	51.7	51.4	48.8	52.8	55.0	49.8
1996	54.5	54.9	53.5	56.7	55.5	53.1
1997	58.9	60.1	57.3	62.4	60.7	57.7
1998	62.7	64.1	61.6	66.4	63.8	61.6
1999	63.6	66.6	63.5	69.2	63.7	63.9
2000	68.2	68.0	68.0	70.4	68.5	65.4
2001	70.9	70.5	70.7	73.1	71.2	67.6
2002	74.8	74.2	73.4	75.8	76.2	72.4
2003	83.5	79.7	82.9	81.5	84.1	77.8
2004	85.2	81.3	84.0	82.8	86.5	79.7

Source: MOE & HRD

Table 1.2 High School Locations of the university students in Busan

(unit: %)

	2001	2002	2003	2004	2005
Busan	80.4	78.8	76.4	75.2	71.4
Ulsan, Gyeongsangnam-do	14.2	15.7	17.0	17.8	19.9
Daegu, Gyeongsangbuk-do	1.0	0.9	1.1	1.2	1.5
Seoul, Incheon, Gyeonggi-do	2.7	2.5	3.3	3.2	4.0
Daejeon, Chungcheongnam-do, Chungcheongbuk-do	0.5	0.4	0.5	0.6	0.8
Gwangju, Jeollanam-do, Jeollabuk-do	0.7	0.9	1.0	1.3	1.4
Gangwon-do, Jeju-do, Others	0.6	0.6	0.8	0.8	1.0
Total	100.0	100.0	100.0	100.0	100.0

Source: Survey questionnaire by universities in Busan

Analysis of 12 universities subject to this research shows that 71.4% of their freshmen in 2005 came from high schools in Busan and 19.9% from neighboring Ulsan and Gyeongsangnam-do region, suggesting that up to 90% of the university students in Busan are from Busan and the nearby area. However, the share of high school graduates in Busan entering universities in the same city has continued to fall from 80.1% in 2001 to 71.4% in 2005. The gap is being filled with students from Ulsan, Gyeongsangnam-do, Seoul and Gyeonggi-do area.

3. The Economic Base

3.1 The economic base of the region

The tertiary industry accounts for the largest share in the structural mix of Busan, followed by secondary and primary industries. The shift towards service industries has become more visible over the last twenty years. In 2003, the tertiary industry including electricity, gas, water supply, construction and services represented around 80% of the regional economy, higher than the national average of 67%. Mining and manufacturing accounted for 19.0% of Busan's economy in the same year, substantially lower than the national average and on a downward trend over the last two decades. The city government has designated port logistics, mechanical parts and materials, tourism and convention, film and IT as four core strategic industries, and finance and futures, bio-marine, industry for the elderly, footwear, processed marine products, textile and fashion as six endogenous strategic industries to concentrate its resources.

Table 1.3 Change of Production Structure by Industry

(unit: %)

	Agri.,Forestry & Fishery		Mining & Manufacturing		Electricity, Gas, Water & Construction		Services & Others	
	Busan	Korea	Busan	Korea	Busan	Korea	Busan	Korea
1985	5.1	10.9	31.0	27.7	8.2	9.6	55.7	51.8
1990	2.7	6.4	28.5	28.8	11.1	13.0	57.7	51.8
1995	2.3	5.2	24.1	26.4	11.1	13.0	62.5	55.5
1996	2.3	5.0	22.5	26.8	12.1	13.0	63.1	55.2
1997	2.7	4.8	20.4	26.3	12.4	13.4	64.4	55.5
1998	2.5	5.1	19.1	25.7	12.7	13.4	65.6	55.9
1999	2.3	5.0	18.9	27.9	10.9	11.8	67.9	55.3
2000	1.9	4.6	19.2	29.3	10.5	11.0	68.4	55.1
2001	1.9	4.5	18.9	28.6	12.2	11.2	67.1	55.7
2002	1.5	4.0	19.8	28.8	11.3	10.9	67.4	56.2
2003	1.6	3.7	19.0	29.2	11.3	11.4	68.1	55.7

Notes: 1) Services & Others: Wholesale, Retail, Restaurant & Hotel, Transport, Storage & Communications, Finance, Insurance, Real Estate & Business Services, Social & Personal Services, Government & Private Non-Profit Services

Source: National Statistical Office(NSO) KOSIS

Busan's main exports are ships, footwear, leather, steel and fish among others. Shipbuilding topped the list of export industries in 2003 with around 480 million dollars in sales. With Busan's share of the nation's export volume shrinking, however, ships and other items Busan was a big exporter are also losing their share in the nation's exports.

Machine operation, assembly and other simple labor-intensive jobs made up the largest share of Busan's workforce at 36.8% in 2004, which confirms a national pattern. The second largest group of workers was in service and sales at 29.3%, followed by professionals/technicians/administrators and office workers representing 17.6% and 14.7% respectively. The proportions of simple labor-intensive jobs and office work were higher than national average, while that of professional, technical and administrative work was lower in 2004. The trend over the last decade shows a decline in simple labor-intensive jobs and a gradual increase in professional, technical and administrative work.

Busan's investment in research and development represented only 1.46% of total R&D investment in Korea in 2002. In Busan, there were 11,934 people working in the R&D sector, 8,595 of which were employed by the Busan region universities. This illustrates that local universities play a relative big role in the region's R&D, while the region struggles with lack of R&D infrastructure.

3.2 The key labor market and other indicators

Labor market conditions in Busan are weaker than the average standard in Korea. The city's unemployment rate has improved significantly since the economic meltdown in late 1997 to 4.0% in 2004, but is still slightly higher than the national average of 3.5%. Busan's jobless rate being higher than the nation's average has been an ongoing trend for the last ten years. The rate of economically active population in Busan was 57.8% in 2004, below the national average of 62.0%.

Educational attainments among Busan's employed population reflect overall education levels in the area. In 2004, 30.8% of those employed in Busan had received higher education, and the proportion was higher for male workers. The percentage of people in Busan who had completed higher education was similar to national average.

Table 1.4 Key Indicators of the Labor Market

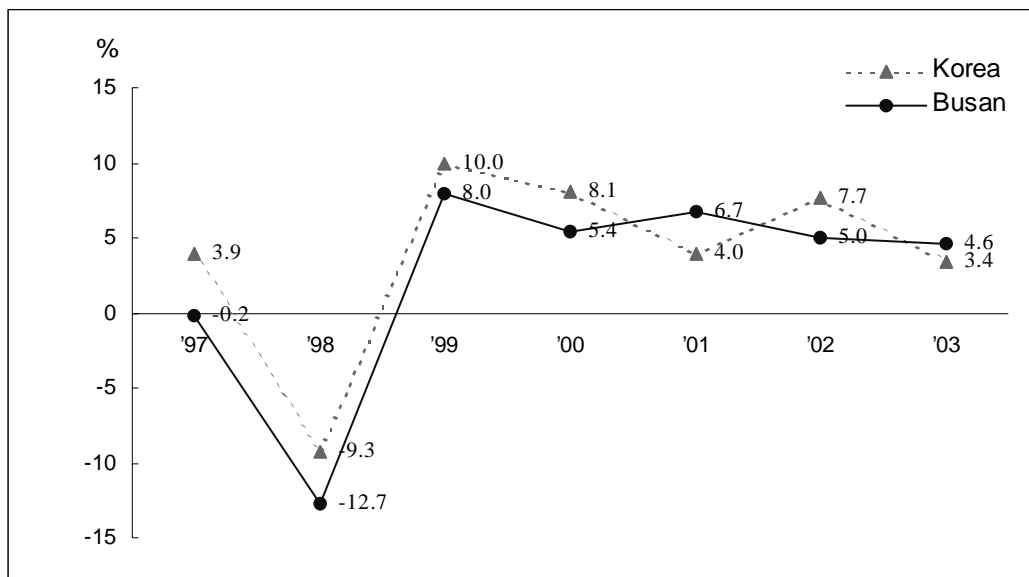
	Economically Active Population		Unemployment Rate	
	Busan	Korea	Busan	Korea
1996	59.8	62.0	3.4	2.0
1998	59.1	60.6	8.9	7.0
2000	58.9	61.0	6.2	4.1
2002	60.0	61.9	3.6	3.1
2004	57.8	62.0	4.0	3.5

Source: NSO

Of the students who graduated one of the HEIs (including graduate schools) in Busan in early 2005, 68.6% have landed jobs and 21.0% are unemployed. The others have advanced to the next level in their education or joined the military. The figures compare with the employment and unemployment rates of HEI graduates in Korea as a whole at 66.2% and 19.3% respectively.

Busan's per-capita GRDP (Gross Regional Domestic Product) in 2003 registered KRW 10.68 million, taking the year 2000 as the base year. Except in the particularly difficult years for the Korean economy of 1998 and 1999, per-capita GRDP recorded a precipitous growth over the last two decades. Conversely, the share of Busan's GRDP in the nation's GDP has been constantly falling over the same period, reflecting the gradual decline of the region's contribution to the nation's economy.

Figure 1.5 GRDP growth rate in Busan and Korea



Note: Calculated on 2000 constant prices

Source: NSO

4. Governance Structure

The local government in Korea as of 2005 is essentially divided into two-tiers. The upper level of local governments comprises Seoul Special Metropolitan City, six Metropolitan Cities and nine Provinces. The lower level of autonomous districts is composed of 256 *si*, *gun*, *gu*'s, 3,573 *eup*, *myeon*, *dong*'s, 92,624 *tong*, *ri*'s and 471,330 *ban*'s. Busan, which holds a Metropolitan City status in the administrative system, is in turn made up of 16 autonomous districts (15 *gu*'s and one *gun*). The autonomous districts are again composed of 2 *eup*'s, 3 *myeon*'s, 221 *dong*'s, 4,673 *tong*'s, 130 *ri*'s and 27,801 *ban*'s (Appendix Table 1.2). In terms of the city's governance structure, Busan Metropolitan Government oversees the city's administrative affairs, governing 15 *gu* offices and 1 *gun* office. The offices of 15 *gu*'s are in turn supported by 221 *dong* offices, and the *gun* office is composed of 2 *eup* offices and 3 *myeon* offices. The number of workers employed at these offices are total 15,606 (6,024 at the Metropolitan Government and 9,582 at *gu* and *gun* offices) as of 2005. With the current administration stepping up its drive to devolve power to local governments, Regional Innovation Committee of Busan Metropolitan City was established to serve as governance structure (see Chapter 2 and 6 for details).

On the legislative front, Busan Metropolitan Council, *gu* (district) and *gun* (county) councils serve as a check on the city's administration and enact Local Acts. Busan District Court, Busan District Prosecutor's Office and Busan Metropolitan Police Agency are judiciary bodies, although the police system in Korea has yet to be decentralized. Education system, however, has been decentralized, with Busan Metropolitan Office of Education overseeing primary and secondary education in the region. The regional business community is represented by Busan-Ulsan-Gyeongsangnam-do SME Administration, Busan Chamber of Commerce and Industry and Busan Employer's Association, while the labor community is represented by Busan Regional Office of Ministry of Labor, Federation of Korean Trade Unions Busan Office and Korea Confederation of Trade Unions Busan Office. Busan Development Institute dedicated to

research on the development of Busan, Busan Human Resources Development Institute and 24 HEIs are serving as Busan's think tanks.

Tax income structure is extremely centralized in Korea, yet tax expenditure is rather evenly spread across the nation. In addition, with the local autonomy system in place, local governments are primarily responsible for raising funds to operate public services, developing the local economy and implementing policies on primary and secondary education, health and welfare, and culture. Busan Metropolitan City's budget in 2005 stands at KRW 6.4886 trillion (general accounts KRW 4.8254 trillion, special accounts KRW 1.6632 trillion). Still, financial self-support index of local governments in Korea is low (73.4% for Busan in 2005, which is higher than most cities and provinces in Korea other than Seoul), and therefore, local governments rely heavily on national subsidies, general grants and local transfer fund from the central government (Appendix Table 1.3). Notably, HEIs and vocational education are governed centrally by the Ministry of Education and Human Resources Development (MOE) and the Ministry of Labor (MOL), while the local governments play an ancillary role.

Local governments also have a part in economic development. All policies related to acquisition of land and other private property are delegated to the local authorities. However, the role of local governments is limited in providing fiscal incentives for business, which is reflected in the local tax items. Cities and provinces impose Acquisition Tax and Registration Tax on the acquisition of properties, autonomous districts collect Property Tax, Aggregate Land Tax, Business Establishment Tax and License Tax, but Corporate Tax, which is a key item in the incentive package for businesses, is still levied by the central government.

In the field of higher education and R&D, local governments had only marginal influence until recently. With local government's participation in the central government's initiative to develop local universities in 2003, and the NURI (New University for Regional Innovation) Project in 2004, local government's sway over HEIs is increasing dramatically. Basically, NURI Project is run by 4-year universities, local governments, research institutes, corporate research centers and junior colleges. If a NURI project requires large-scale investment (KRW 3-5 billion), regulations stipulate over 10% participation by the local government, which will inevitably end up having more influence. On top of the NURI project, Busan also has its own BB21 (Busan Brain 21) Project to help finance the development of science and technology majors and R&D at local universities with its local budget.

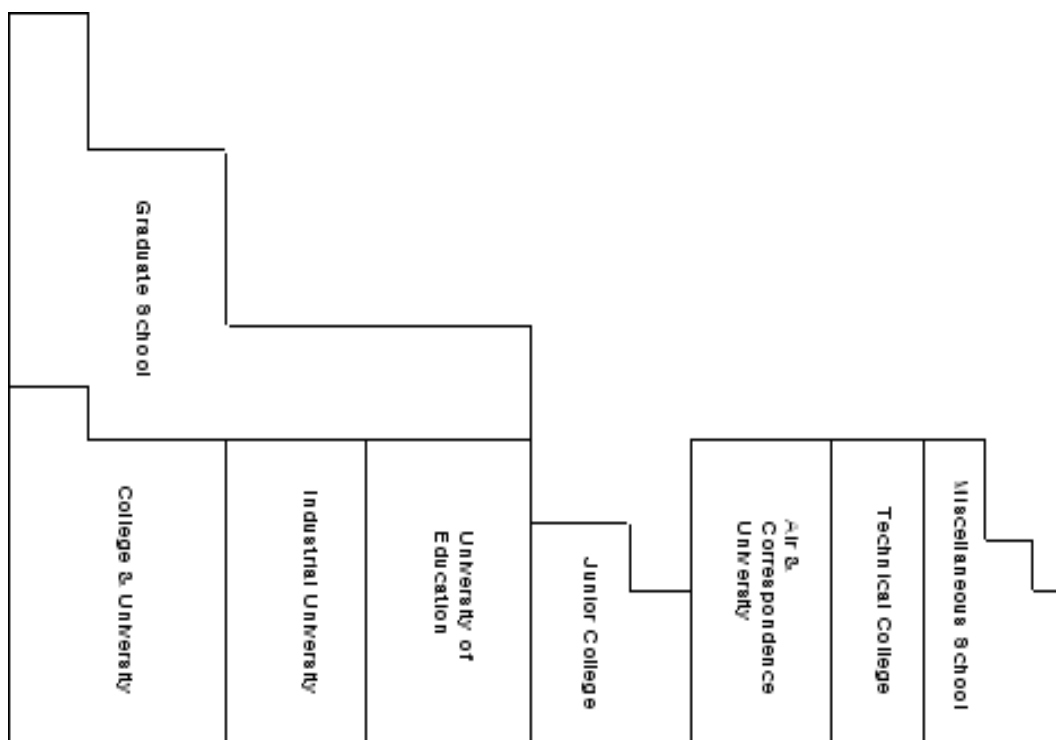
Compared to other countries, Korea is endowed with neither sizable territory nor abundant natural resources, but has an ample quality workforce at its disposal. The Korean government is building on the strength by putting HE on top of its development agenda, which is backed up by zealous interest in HE among the general public. Educating outstanding local talents is essential for regional development, and Busan also enjoys higher proportion of college-educated workers than any other city in Korea with the exception of Seoul (see Chapter 2 for details).

Chapter 2: CHARACTERISTICS OF THE HIGHER EDUCATION SYSTEM

1. Overview of the national system of higher education

The stated purpose of higher education in Korea is to teach and learn special knowledge required for the development of the nation and humankind in order to contribute to the progress of the nation and humankind. Rooted in the traditional Confucius view of universities and influenced by Japan and the US, HE in Korea experienced a rapid growth in terms of the number of institutions to meet the demands of a population extremely passionate about education. Quality-wise, however, it has quite a few problems. HEIs consist of 2 or 3-year junior colleges, 4-year universities and special purpose universities (ie polytechnics, education colleges, technical colleges), and award associate's degrees, bachelor's degrees and other academic degrees (see Figure 2.1).

Figure 2.1 Higher education system in Korea



1.1 Growth of higher education system

Enrollment rate of higher education age cohort(16-30 year olds) is on a steady rise, yet that of 30-39 year olds are relatively low (see Table 2.1). This implies that while HE opportunities have constantly increased with the growing demand for HE among higher education age cohort, adults over the age of 30 have less chance at receiving HE.

Table 2.1 Higher education enrollment rate by age

Classification	Colleges and universities			Graduate schools	
	16 ~ 19 yr	20 ~ 29 yr	30 ~ 39 yr	20 ~ 29 yr	30 ~ 39 yr
1998	22.8	21.8	1.7	1.2	0.7
1999	26.5	22.2	2.0	1.4	0.7
2000	27.4	24.3	2.3	1.5	0.9
2001	30.3	25.3	2.5	1.6	0.9
2002	31.0	26.2	2.8	1.6	1.0
2003	31.2	27.1	2.3	1.7	1.0
2004	32.9	27.0	2.6	1.7	1.1

notes: 1) enrollment rate by age cohort=(number of registered students in higher education institutions by age cohort / number of population of respective age cohort)*100

2) 'colleges and universities' include junior colleges, universities of education, polytechnic universities, polytechnic colleges, air & correspondence university, miscellaneous schools and in-company colleges.

Number of HEIs totaled 411 in 2004 and student numbers reached 3.56 million. Despite the steep rise in the number of HEIs and students over the last decade, the number of professors and faculty members have not grown at such a rapid pace (see Table 2.2). The trend suggests deterioration in the educational conditions and administrative support at universities relative to the growth in student numbers.

Table 2.2 Number of HE institutes, students, professors and staffs

Year	HE Institutes	Students	Professors	Administrative staffs
1992	286	1,982,510	48,265	29,896
1994	310	2,197,842	54,135	28,412
1996	333	2,541,659	63,809	29,227
1998	348	2,950,826	54,185	29,960
2000	353	3,363,549	56,903	29,199
2002	356	3,577,447	59,750	33,432
2004	411	3,555,115	64,019	37,936

Source: MOEHRD • KEDI(each year). Statistical Yearbook of Education.

Table 2.3 Number of institutes by HE institute's type

Year	Junior Col.	Univ.	Univ. of education	Miscellaneous schools	Polytechnic Univ.	Air & Correspondence Univ.
1992	126	121	11	19	8	1
1994	135	131	11	22	14	1
1996	152	134	11	20	18	1
1998	158	156	11	6	18	1
2000	158	161	11	4	19	1
2002	159	163	11	4	19	1
2004	158	171	11	4	18	1

Source: MOEHRD • KEDI(each year). Statistical Yearbook of Education

Number of universities also showed a steady increase over the last decade, but the number of junior colleges has kept steady after growing until mid-1990s. Student numbers followed a similar pattern with the number of schools during the same period (see Table 2.3 and Table 2.4).

Table 2.4 Number of students by HE institute's type

Year	Junior col.	Univ.	Univ. of education	Miscellaneous schools	Polytechnic Univ.	Air & Correspondence Univ.
1992	404,996	1,070,169	16,504	19,759	70,205	303,760
1994	506,806	1,132,437	18,291	17,011	101,412	310,955
1996	642,697	1,266,876	20,439	14,828	141,826	327,185
1998	801,681	1,477,715	20,969	9,687	146,563	314,438
2000	913,273	1,665,398	20,907	3,761	170,622	360,051
2002	963,129	1,771,738	23,259	1,909	187,040	367,305
2004	897,589	1,836,649	23,335	1,153	189,035	290,728

Source: MOEHRD • KEDI(each year). Statistical Yearbook of Education

1.2 National analysis of supply and demand of HE product

At universities in Seoul, Gyeonggi-do and Incheon areas, the number of student places is strictly regulated, while private universities outside these areas has the flexibility to adjust the number of students they admit. National universities are also under the control of MOE. Every year the Ministry collates HEIs' plans on student places to fix the number of student admissions for the following year.

To gauge the business and industry's demand for college graduates, the Korean government has been forecasting human resources supply and demand by industry on a regular basis. The projection was made by economy-related ministries in the process of writing the nation's 5-year economic and social development plans, and was used to set the number of student admissions for each university. More recently, the government provides the information on the projected supply and demand by industry, so that it can be used by universities in determining student places or by students in selecting their majors and departments.

1.3 Governance and regulatory framework for HE system

1.3.1 Governance

In Korea, all national, public and private universities are under the supervision of the Minister of Education and Human Resources Development. National universities are directly controlled by the Ministry, and private universities are indirectly regulated by the same ministry. Under the HE related law, the president of HEI is ultimately responsible for supervision of the faculty, guidance of students and all the affairs of the institution (HE Act, National School Establishment Law, etc), and the council or board of professors, which play an important role in the decision making process are optional under the institution's rules (Article 4, Paragraph 1 of the HE Act Enforcement Ordinance).

For national universities, lack of budgetary flexibility and autonomy (one-size-fits-all budget allocation due to a uniform application of the Budget Accounting Act, constraints in managing the budget flexibly, lack of fiscal accountability and incentive for income-generating business, etc), as well as organizational rigidity (institutions not having enough freedom to operate and restructure their organizations, national university presidents' right to appoint faculty staff being limited, lack of motivation for faculty staff, etc) are frequently pointed out as major problem areas.

For private universities, governance centered around the founder and the Board of Directors' lack of transparency and accountability are the main problems. Excessive intervention in the management of the institution by the board of directors, lack of consensus-building among major stakeholders and not disclosing budgetary, financial and other information about the institution are hindering the development of private universities. To ensure logical process, public interest and accountability in the management of private universities, the structure and operation of the board of directors must change. However, arbitrary interference from the government is a cause for caution.

1.3.2 Funding system

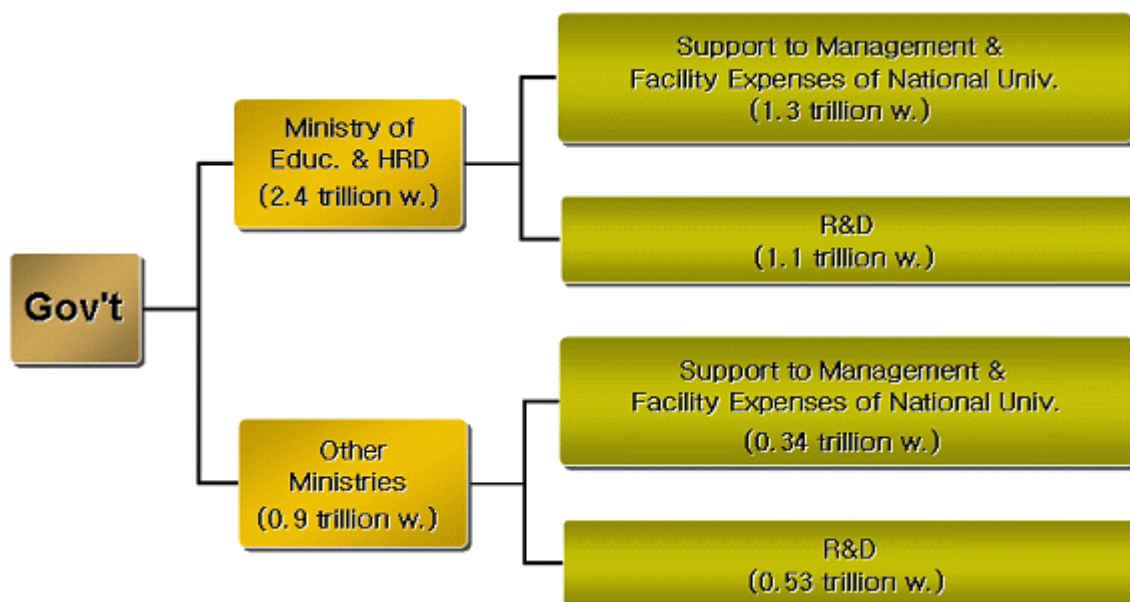
The government's funding for HEIs can be divided into funding by MOE, and funding by other ministries. MOE's subsidies usually finance both education and research, whereas other ministries' support focuses on research activities. Apart from the operating and facilities cost for national universities, the MOE's fund finances two big tasks; General Project that evenly supports signed-up institutions with basic money, and Special Project that concentrates resources on selected institutions based on performance measures for tangible results.

The Korean government supported HE with roughly KRW 3.3 trillion in subsidies in 2000, 70% or KRW 2.4 trillion of which was funded by MOE and the rest of the bill or KRW 0.9 trillion was financed by other government ministries and local governments. By usage, slightly more than half of the subsidies or KRW 1.7 trillion was spent on financing management and facilities cost of national and public universities, while KRW 1.6 trillion was used to support R&D (see Figure 2.2).

Since the mid-1990s, MOE's policy has changed to promote diversity and specialization of HEIs by linking performance reviews with financial support, and thus has focused more on the Special Project. The share of Special Project fund in HEI's research and other expenditures rose sharply from 11% in the early 1990s to 34% in 2000.

The government's fiscal support for universities can be summarized as follows. First, funds are granted at the project level and the majority of recipients are research centers and other institutes rather than individuals or universities. This means that there is a limit in motivating individual professors and students for research and education. Second, there is a variety of usage and support from many government ministries including MOE, but lack of collaboration and coordination among relevant agencies is likely to result in inefficient and duplicated investment. And the funding for university projects are determined by consulting the Ministry of Planning and Budget, which undermines consistency in implementing HE policies. Third, HEI funding is linked to performance review. It was designed to encourage competition among universities, but is often perceived as a means for MOE to control HEIs. When the funding support is not followed up with actual management, the investment fails to produce intended returns, which can breed mistrust against HEIs.

Figure 2.2 Higher education budget flow



1.3.3 Regulatory framework

The Constitution is the highest law governing HE in Korea, with various laws and regulations based on Education Basic Act enacted in 1997 and HE Act that directly addresses higher education. The details of these laws and regulations cover basic education, organization, personnel, curriculum, private funding, science-technology-vocational education, lifelong education, finance-accounting and other matters (see Figure 3.3).

1.3.4 Major agencies responsible for HE

HE policies in Korea are crafted, enforced and assessed by MOE. Financial support for various HE initiatives is determined by MOE after consulting with the Ministry of Planning and Budget or the Ministry of Finance and Economy. For HEIs under the supervision of government agencies other than MOE or local governments, policies and funding are set by the relevant ministries or local governments.

Assessments on HE to ensure the quality of higher education are carried out by Korean Council for University Education, Korean Council for College Education, Accreditation Board for Engineering Education in Korea, Korean Accreditation Board for Medical Education, Korean Accreditation Board for Nursing, Korea Industrial Technology Foundation and MOE. The assessments by these institutions are not linked or organized in a system, which is a cause for low credibility driven by dual assessment or excessive accreditation. The government is trying to address these problems by setting up 'Korea Institute for Higher Education Evaluation'(provisional title).

Figure 2.3 System of Major Laws on Higher Education in Korea



1.3.5 Inter-institutional relationships

Inter-institutional relations in Korea in the form of joint education programs or research collaboration had been uncommon in the past. More recently, however, an increasing number of HEIs are seeking collaboration, as the government strategically puts pressure on HEIs to build competitiveness and the shrinking pool of prospective students requires HEIs to be more proactive in attracting students. Cross-registration systems and sharing libraries and other facilities are some good examples.

HEIs basically need to compete against each other for students and financial resources in the market. The government is also encouraging productive competition among HEIs to make them more competitive by linking financial support with performance reviews. The government expects the establishment of the Korea Institute for Higher Education Evaluation to encourage universities to operate under market mechanism by collecting and disseminating education and research related information of HEIs, as well as delivering information on labor demand changes in the industry to HEIs and HE consumers. This will not only create competition but also prompt stronger collaboration among HEIs for survival.

1.3.6 Dialogue between government ministries concerned with territorial development, science & technology and those sponsoring HE

As already noted the government department concerned with higher education policy is the Ministry of Education and Human Resources Development, yet there has been little coordination or collaboration between MOE and other government ministries on HE. Recently policy coordination among relevant ministries has started to take place on the overall management of HEIs, especially in the area of science and technology research, through Inter ministerial Meeting for Human Resources Development and National Science and Technology

Committee, and of university-industry cooperation projects since 2000. In addition, after the incumbent administration took office, Presidential Committee on Balanced National Development, launched in 2003, takes care of policy coordination through regional HEI and industry development agenda.

Due to the absence of a structured and legally binding policy coordination mechanism between the central government and local governments, all MOE and central government initiatives to support HEIs were planned and executed by the government ministries themselves, bypassing their local counterpart. This suggests that the region-specific needs and demands were not being appropriately reflected in the central government's HEI policies.

As such the management of HEI policies has been highly centralized in Korea and the role of local governments has been negligible other than in some local governments which set up and operated public universities. More recently, the government has established Regional Innovation Committee in each metropolitan city and province to encourage dialogue among local governments, businesses, HEIs and civic groups on regional development and policy coordination between central and local governments. This is expected to boost regional interest in the operation of HEIs and regional demands in local universities or colleges.

2. Regional dimension 'inside' the national higher education policy

Although MOE, the Ministry of Science and Technology, the Ministry of Commerce, Industry and Energy and other government ministries have implemented HEI support policies in relation to regional development, regional demands were seldom reflected in planning and executing HE policies (including the creation of HEIs) by the central government. There was no system between the central and local governments to collaborate on HE policies.

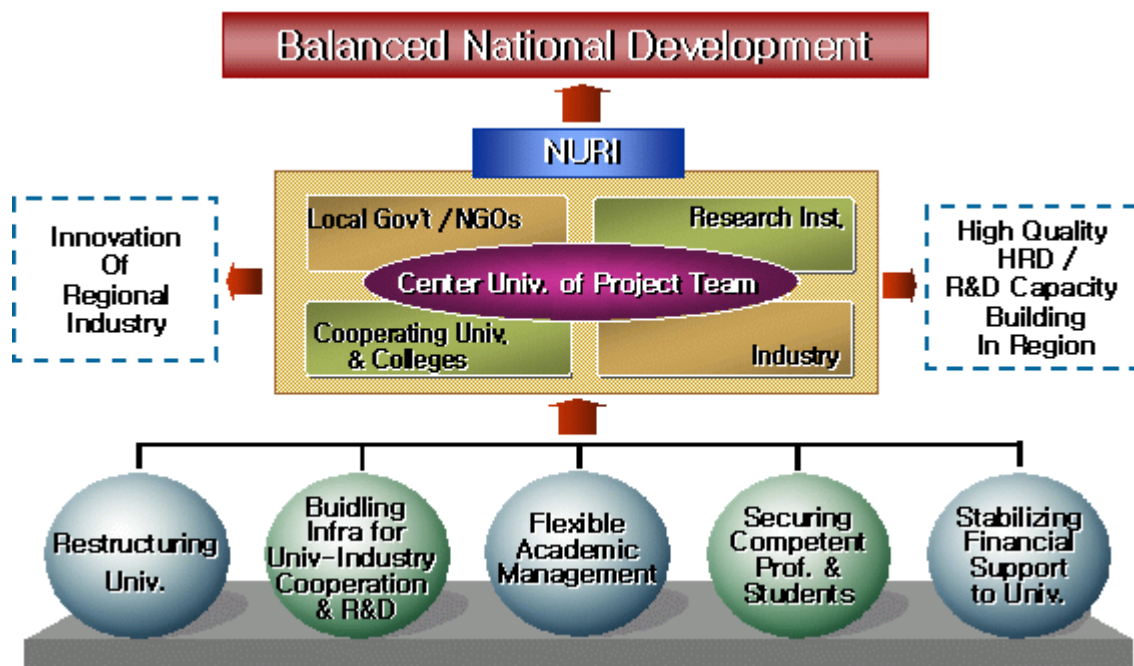
National universities are established and operated strategically across the nation to ensure balanced development across different regions. For private universities, however, issues ranging from the location of the establishment to departments and courses are decided by the private foundation, which leaves little room for full consideration of the region's economic (industry's demand for human resources), social (demographic demand for HE) and cultural (demand for music, arts, sports, libraries, theaters and other cultural services) development needs in the HEI screening and approval process.

In a bid to come up with HEI support policies that can practically contribute to regional development, and to encourage HEIs to participate in regional development discussions and regional communities to contribute to HEI development, the government has recently introduced the regional innovation strategy.

2.1 NURI(new university for regional innovation) project

As a key task in the government's plan to ensure balanced development across the nation, the Ministry of Education and Human Resources Development has been working on a project to develop innovation capabilities at local HEIs called the New University for Regional Innovation (NURI) project. Based on the recognition that economic development and national innovation in the 21st century knowledge society originates from local HEIs and the surrounding regional clusters, the project aims to concentrate investment in selected fields linked to regional development so that the HEI and regional industries can make a joint progress (see Figure 2.4).

Figure 2.4 Conceptual framework of NURI project



The objective of the NURI project can be summarized as follows: 1) to strengthen specialization and competitiveness of local HEIs – by dramatically improving educational conditions with a target of 100% of the student places filled and 80% of the faculty positions filled in the specialized field during the project period; 2) to promote regional development by nurturing talented resources – by instituting a variety of practical HR development programs to enable graduates to acquire employability skills with a target of raising the employment rate of local college graduates by over 10% during the project period; 3) to lay the groundwork for the Regional Innovation System (RIS) – by setting up numerous networks for HEIs to collaborate with local governments, industries, research institutes, the press and NGOs.

To achieve the above goals, the government plans to invest KRW 1.4 trillion in total by 2008, starting with KRW 220 billion in 2004. A total of 112 projects including 25 large, 25 medium and 62 small-scale projects have been selected in 2004 to receive KRW 213.5 billion. A total of 113 HEIs and more than 1,300 relevant institutions are engaged in the projects.

Local HEIs, governments, industries, think-tanks, NGOs and other members of the NURI project can determine the scope, scale and other details of the project in line with the regional and HEI development strategies, and then receive the required funding (payroll, operation, research, maintenance cost, etc) according to the project plan over five years on a stable basis, which sets the project apart from other government projects (see Figure 2.4). Every year performance is measured against the key performance targets set by project team, and the results will determine whether the subsidies will keep coming, be reduced or suspended.

The success of NURI project depends on the establishment of HEI-centered RIS and its smooth operation. Put it differently, formation of an effective academic-industrial collaboration system and how efficiently it is operated will make or break the project. The system will be a strategic tool for businesses, HEIs, think-tanks and governments to work with one another on

R&D, technology transfer or human resources development.

The NURI project is only in its second year, so it is premature to evaluate its performance. The policy has been well received by HEI departments selected to carry out the project, as a way to sharpen the competitive edge of relevant departments, nurture and supply human resources required for regional development and ultimately serve as the center for regional development. On the contrary, departments that have been left out of the project are feeling a sense of deprivation and urgency.

Although junior colleges are involved as collaborative institutions, the NURI projects are mainly awarded to four-year universities, which is another reason why it is considered to have less implications for local junior colleges.

2.2 Policy to stimulate regional collaboration among stakeholders

As part of its drive to stimulate regional development based on and led by regional needs, the Presidential Committee on Balanced National Development is trying to set up a consultative body (RIS Committee) in each city and province, which can raise and discuss regional development agenda, draw realistic plans and help implement those plans. The committee is composed of local governments, businesses, think-tanks, HEIs, education and training institutes, municipal and provincial education offices, offices for small businesses, labor offices, civic groups and other stakeholders in regional development. The committee is dealing with ways to develop regional industries, science and technology and human resources, and HEIs can play a pivotal role here as an institution capable of providing human resources for industries and developing new technology through research. HEIs will be able to elicit support and cooperation from various stakeholders in developing talents and conducting research essential to implementing new regional development initiatives.

This policy is also in its incipient stage, and has yet to produce tangible results. In view of the lack of experience in decentralization and a culture of collaboration among stakeholders at the regional level, consistent efforts by the committee members are required to bring about the intended results.

3. Regional higher education system and governance

3.1 The basic profile and character of HEIs in Busan

Busan has 23 HEIs whose main campus is based in Busan. They consist of 11 universities, one education college, one polytechnic and 10 junior colleges. There is also one distance learning Institute and one university with satellite campus in Busan, but these HEIs will not be included in this research. The 11 universities comprise 3 national universities and 8 private universities. Education college is national, and all polytechnic and junior colleges are privately funded. In total, 23 HEIs in Busan are composed of 4 national and 19 private universities or colleges.

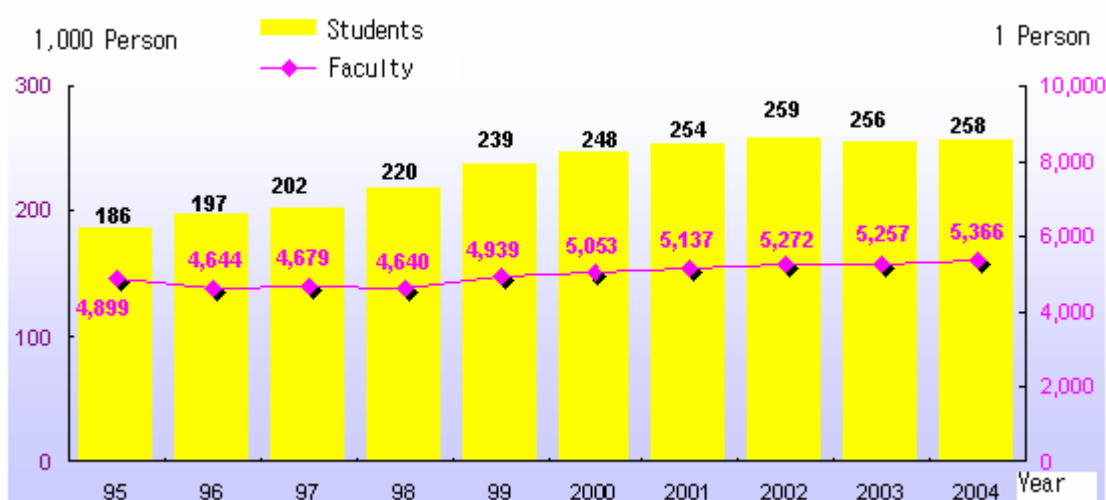
This research has looked into 12 HEIs including ten universities, one education college and one polytechnic. Of these, Busan National University, Pukyong National University, Korea Maritime University and Busan National University of Education are national institutions, while Kyungsung University, Catholic University of Busan, Pusan University of Foreign Studies, Tongmyong University, Dongseo University, Dong-A University, Dong-eui University and

Silla University are private institutions.

The number of faculty members and students at HEIs in Busan registered 5,366 and 259,000 respectively in 2004. Noteworthy is the dramatic increase in student numbers in the last decade. As such the faculty and students represent 7% of Busan's 3.6 million population, with the percentage rising higher if supporting staff are included, suggesting the importance of HEI presence in the region. The absolute number of HEIs and employees in this sector suggests that Busan plays a big role in the nation's HE system.

Figure 2.5 The Number of Faculty Members and Students at HEIs in Busan

Unit: Person



The 12 HEIs were surveyed on their emphasis on teaching and research. Some HEIs responded that they have always placed more value on teaching and will continue to do so. Others said they have focused more on teaching in the past, but plans to raise the profile of research so that it is on a par with teaching or even becomes more important.

3.2 The financing and management of HEIs at a regional level

In Korea, the central government has traditionally been responsible for HE policies with HEIs under the supervision of MOE, which prevented local governments, businesses and residents from playing an active role. Accordingly, it was difficult for HEIs in Busan to form close relations with the local government and other regional stakeholders. Compared to regions in other OECD countries where HEIs are deeply involved in regional development, HEIs in Busan had marginal link with regional development.

HEIs in Busan have relied on the central government for funding and supervision, which is also true of HEIs in other regions of Korea. As a result, Busan's HEIs had little interest in regional development relative to other regions in industrialized nations, and Busan Metropolitan Government could not provide governance and regulatory framework for local HEIs. However, that does not mean the contribution of Busan's HEIs to regional development was insignificant. Despite difficult conditions, each university has made efforts to contribute to regional development in its strength areas. Detail examples will be introduced from Chapter 3.

With the new government in 2003 emphasizing the importance of balanced development

across the nation and greater devolution, regional development was put high on the agenda. This raised awareness among the general public that development of local universities was crucial to develop the regions. Consequently, numerous policies have been put in place to encourage local HEIs to play a central role in regional development. This trend will continue to strengthen ties between HEIs and the region, and result in regional stakeholders increasing support for local universities, which will in turn step up efforts to contribute to regional development.

Chapter 3: CONTRIBUTION OF RESEARCH TO REGIONAL INNOVATION

1. Framework conditions for promoting research and innovation

1.1 Overview of policies for research in HEIs

1.1.1 History

The grant for HEIs research was initially introduced by National Science Foundation to support general research in 1978. In 1986, Korea Research Foundation started receiving applications from researchers to raise and allocate fund for academic research. Until then, science and technology research activities and development of applied technologies to be used in industries were mainly conducted by national think-tanks and corporations. In light of the industrial technology standards in the past, demand for basic research at HEIs was faint.

Funding for HEI research started to take off in the 1980s, as Korea experienced rapid growth and industrial progress, and saw growing need to develop source technology and advanced production technology. In the 1990s, importance of HEI research and university-business interaction was emphasized in order to promote technology innovation at SMEs and spread scientific and technological development throughout the nation. To achieve these goals, funding for basic science was introduced along with projects to build research hubs and specialized research programs that can promote university-business collaboration. The purpose of research financing up to the 1980s was to promote research at universities, and thus did not carry strategic deliverables. In the 1990s, however, Ministry of Science and Technology, MOE and other ministries started to link research funding with various economic and social objectives such as strengthening the research infrastructure at HEIs, nurturing outstanding research hubs, supporting SMEs and developing the regional economy etc. Since 2000, the government has placed particular emphasis on development of industries, university-business interactions, creation and distribution of knowledge *at a regional level* when financing HEI research, and has started to integrate overlapping projects among different ministries. Efforts are also made to ensure a more efficient distribution and management of research funds.

A matrix of the current government policies to support research at HEIs by type and by ministry is shown in Table 3.1 in the Appendix. Divided into fields of academic research, formation of research centers, facility & research infrastructure, manpower and industry cooperation, each ministry has a wide range of programs to support specific objectives.

1.1.2 Funding for research in HEIs

Table 3.1 shows research expenditure by HEIs totaled KRW 1.6768 trillion (10.4%) in 2001, considerably lower than KRW 12.2736 trillion (76.2%) by corporations and KRW 2.1602 trillion (13.4%) by public think-tanks. Total funding for research and development is constantly increasing, with the fastest growth rate registered in the corporate sector at 19.7%, followed by universities and public think-tanks at 7.4% and 6.3% respectively.

In view of the research potential at HEIs, which house over 70% of doctoral researchers, research funding for HEIs needs to go up. Comparison with other developed countries also confirms the need for higher levels of funding (see Table 3.2 in appendix).

Table 3.1 Trend of R&D expenditure by user group (unit: billion, %)

Classification	1996	1997	1998	1999	2000	2001
Total R&D expenditure (Increasing rate /previous year)	10,887.8 (15.2)	12,185.8 (12)	11,336.7 (7)	11,921.8 (5.2)	13,848.5 (16.2)	16,110.2 (16.3)
Public research institution	1,895.6	2,068.9	2,099.5	1,979.20	2,032.0	2,160.2(13.4 %)
University	1,018.8	1,271.6	1,265.1	1,431.40	1,561.9	1,676.8(10.4 %)
Corporation	7,963.6	8,845.3	7,972.1	8,511.20	10,254.7	12,273.6(76.2%)

Source: Ministry of Science and Technology(MOST)

Moreover, 57.6% of the research fund for HEIs are raised by the government, 17.6% by other public sources outside government and 24.8% are provided by private sources, demonstrating a low participation of private funding from businesses. This illustrates the weak academic-industrial research collaboration at HEIs in Korea (see Table 3.2).

Table 3.2 Sources of R&D expenditure by user group (2001)

(unit: hundred million, %)

Classification	Total	Public research institution	University	Corporation
Total expenditure	16,110.5 (100%)	2,160.2 (100%)	1,676.8 (100%)	12,273.6 (100%)
Government	3,556.1(22.1%)	1,810.6 (83.8%)	965.5 (57.6%)	780.1 (6.4%)
Non-government public	631.3 (3.9%)	108.8 (5.0%)	295.1 (17.6%)	227.3 (1.9%)
Private	11,923.1 (74.0%)	240.7 (15.3%)	416.2 (24.8%)	11,266.2 (91.7%)

Source : MOST, *Survey on science & Technology activity (2002)*

The regional distribution of total R&D fund in Korea also shows weak performance by Busan using only 1.7% of total R&D fund. This stands out against the participation of the capital and Daejeon region which adds up to 72.9% (Gyeonggi-do Province 43.4%, Seoul 18.0% and Daejeon 11.5%). See Table 3.3 in appendix for detail. In the distribution of government's budget for R&D, Busan represents 2.8%, lagging far behind Daejeon, which is home to many government-invested think-tanks (32.2%), Seoul (23.9%) and Gyeonggi-do (17.9%). Government funding relative to population is also very thin for Busan. However, if we consider only university side, Busan's share of government R&D budget will be much more greater than that of total R&D budget. Also, more recently Busan's R&D activity shows a trend to increase rapidly.

Table 3.3 Government R&D budget by region

(unit: %)

Classifica tion	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan	Gyeonggi -do
2000	27.2	2.5	2.1	2.8	1.8	32	0.3	17.5
2001	33.3	2.6	2.2	2.4	2.7	28.3	0.3	15.3
2002	26.5	2.3	1.8	2.5	3	31.3	0.6	17.9
2003	23.9	2.8	2.4	2.8	2.9	32.2	0.3	17.9

Source: MOST

1.2 National policies for collaboration with business

1.2.1 Current status of policies to promote university-business collaboration

- Evolution of the collaboration policy

Policies to promote research-business collaboration in Korea concentrated around government-invested think-tanks from 1960s to 1980s. The government established national research institutes to lead the development in industrial technology rather than relying on weak research capabilities at HEIs. Universities only started to play a key role in academics-industry collaboration in the 1990s. When the economic meltdown in 1997 revealed the limits of factor input-driven economic growth, renewed focus was placed on the importance of university-business collaboration for quality growth and technology innovation. In response, the incoming government in 2003 adopted new demand-led, open, integrated and innovation-driven university-business collaboration as its strategic policy to be implemented by the Balanced National Development Committee.

- Current status of collaboration projects

The government enacted the Technology Transfer Promotion Act in 2000 and amended the Industrial Education and Academic-Industrial Collaboration Promotion Law in 2003, laying the institutional framework for effective university-business collaboration activities, such as application of university-owned technologies in industries, establishment of DIUC (Division of Industry-University Cooperation) and introduction of independent accounting system at universities, and establishment of school corporations. The government-led collaboration project is divided into four areas; human resources development, technology development, technology transfer and business start-up support, with ten government ministries taking part (see Table 3.7 in appendix). Projected investment by the government into these collaboration projects amounts to KRW 2 trillion in 2003.

1.2.2 Direction of the new university-business collaboration promoted by the government

The concept of ‘new university-business collaboration’ is based on the shift of focus from supply side to demand side. And it is characterized by its orientation towards openness, integrativeness and innovativeness (see Table 3.8 in appendix).

To realize these characteristics, the policy is directed at four areas; putting in place a demand-led human resources development system, stimulating R&D for technology innovation, linking R&D with business and commercialization, and encouraging innovative start-up companies. To achieve these goals, the government is working on the three core projects as follows.

- Foster a ‘regional - center university’ for collaboration

For this purpose, government launched a ‘HE-industry collaboration-centered university program’. HE-industry collaboration-centered universities are selected through a public contest, which will determine universities most suitable to support technology innovation in nearby industrial clusters. Universities designated as ‘hubs’ will receive subsidies over five years, and local governments and businesses are each required to make over 5% cash contribution to the total fund.

For starters, the hub universities supported by the government must serve as an R&D center for tenant businesses in the industrial park. Second, they must lay the groundwork for

technology transfer and guidance to provide technology and management consultancy to the firms. Third, they must build and operate an equipment support center to be shared by tenant companies. Fourth, they must build the infrastructure to facilitate university-business and business-business networking. Fifth, they must nurture and provide human resources that meet the demands of businesses in the region. See Table 3.9 in appendix for details of supporting programs.

- Improve the university structure and assessment system for collaboration

To stimulate the role of hub universities, the government will introduce ‘dedicated professorship for university-business collaboration’ and encourage universities to participate in the collaboration by incorporating strong incentives into the university evaluation system. Performance reviews of professors will also include participation in collaboration activities, as well as teaching and research. Collaboration performance will be recognized as research experience similar to writing a research paper and will be scored as volunteer activities in recruitment and performance assessments. The universities will also be encouraged to restructure their school calendar and curriculum to effectively support the collaboration.

- Establish corporations within schools and operate a dedicated Division

Marking a departure from the existing approach of funding project units, the government plans to introduce school corporation system to universities to make best use of university research. For national and public HEIs to benefit from this project, they must install DIUC. DIUC can also be installed at private universities. The Division must internally setup a technology transfer center, an SME collaboration center, a business start-up center and a business support center to effectively facilitate the collaboration project.

2. Responding to regional needs and dimensions

2.1 Emergence of regional innovation strategy in Busan

2.1.1 Regional policy of central government

The swift economic growth Korea experienced in a compact timeframe of 40 years has resulted in an unprecedented concentration in and around the capital. In a bid to resolve such an extreme disparity between the capital region and the rest areas and to facilitate regional development based on endogenous innovation capabilities of its own, the government enacted Balanced National Development Act in 2003. Past regional policies were mainly focused on imposing strict regulations on Seoul area and expanding social infrastructures for the non-capital region, which were fragmented and not based on any legal framework.

The Balanced National Development Act made it mandatory for regions to take the lead in regional innovation and development by establishing a five-year plan, set up Regional Innovation Systems, develop regional HEIs and strategic industries for region, promote science and technology at the regional level, relocate public institutions out of Seoul, develop backward regions, develop a institutional framework for national balanced development and set up special accounts for balanced development.

Regional industrial policies, science and technology projects and university development projects that had been carried out by different government ministries were fiscally integrated into Balanced National Development Special Account, with the Balanced National Development Committee to be in charge of budgeting and closing of the account. This is in line

with the principle behind FNADT of France, Single Port budget and budget execution through RDAs in the UK and the Structural Fund of EU. However, the existing ministries still own the projects, integration has started partially around similar projects and depending on their nature of projects, continuous readjustment among ministries are being executed.

2.1.2 Regional innovation policies in Busan

In accordance with the Balanced National Development Act, Busan Development Institute under the Busan Metropolitan Government and regional scholars came together in 2004 to establish Five-Year Plan on Innovation and Development of Busan. By means of innovation, the plan outlines 1) vision and objectives of Busan development and analysis of conditions, 2) establishment of Regional Innovation Committee, 3) development of strategic industries in the region, 4) development of regional HEIs and human resources, and 5) regional capacity building in science and technology.

To drive regional innovation and development in Busan, the law also put in place the Busan Regional Innovation Committee (BRIC) and five non-standing subcommittees. The BRIC is ultimately responsible for deliberating on regional innovation projects, and will serve as a planning and coordinating body for RIS of Busan.

Busan also has Strategic Industry Planning Team in place. Following the steer of the government (MOCIE) to make regional technology park as a network –hub of RIS, the Planning Team is under the supervision of Busan Techno Park. The team is responsible for promoting regional industries and serves as a secretariat for BRIC. The team was launched in June 2004 with the recruitment of eight experts with master's and doctorate degrees working on three departments (Regional Innovation, Planning and Evaluation).

In a bid to develop strategic industries in the region, Busan enacted 'Regional Strategic Industry Development' as a municipal ordinance in 1999, and started projects to fund ten strategic industries. In 2004 Busan streamlined the initial ten strategic industries into four core strategic industries (port logistics, mechanical parts and materials, tourism and convention, film and IT) and six regionally embedded strategic industries (finance and futures, bio-marine, industry for the elderly, footwear, processed marine products, textile and fashion). As part of its drive to foster specialized regional industries, MOCIE had concentrated its R&D and funding support on the footwear industry from 1999 to 2003, and since 2004 with the start of the second phase, has supported mechanical parts and bio-marine industries. The fundamental goal of the Busan government is to develop clusters in these core strategic industries.

2.2 Regional dimension of HEIs research policy

HEIs in Busan recognize that research support and stimulation plans largely incorporate the region's economic and industrial traits. In a survey of people concerned with research policies in 12 Busan HEIs, seven HEIs including three national universities answered that there is considerable regional dimension (58.3%) in the policies, and one university said the policies fully reflect regional aspects, showing a strong commitment to specialize in regional research. Overall, two-thirds of HEIs thought the level of regional dimension was substantial, while one-third considered it to be average or below average.

Table 3.4 Degree of regional engagement in research

None	Some	Average	Large	Full	Total
2(16.7%)	1(8.3%)	1(8.3%)	7(58.3%)	1(8.3%)	12(100.0%)

Source: Survey questionnaire by universities in Busan

HEIs were reflecting the importance of partnership with other regional stakeholders into regional research. In the survey of 12 HEIs in Busan, local governments (48 points) were considered as most important partners, followed by local businesses (47 points), other HEIs and think-tanks in the region (both 43 points), local media and civic groups (both 40 points) (see Table 3.5).

Table 3.5 Relative importance of regional partners in research

	None	Some	Average	Large	Full	Total
Local firms		2	1	5	4	47
Local government		2		6	4	48
Research institution		3	2	4	3	43
Media and Civic group	1	2	3	4	2	40
Other university		2	3	5	2	43
Region educational institution				1		

Source: Survey questionnaire by universities in Busan

As is shown, local governments are considered as the most important partner in Busan. This is because most of firms in the region are small or medium in scale, and few of them are R&D-oriented, generating little demand for research activities. On the contrary, local government plays a significant role of allocating the national R&D fund on behalf of the central government as well as allocate its own R&D budget.

HEIs in Busan have formulated an active relationship with the local government by participating in various government funding programs. Researchers in universities have also established a close network with local government officials through the HE-Industry-Government Cluster Committees in the top ten strategic industries and the subcommittee activities under Busan Regional Innovation Committee.

Beneficiary HEIs of the central government's R&D project could form links with local businesses. This is because the central government often requires local business to participate as a joint partner, or local governments to provide matching funds. These individual links, however, are being brought and managed together through DIUC at each university since 2004.

Family Firm

Dongseo University has enjoyed huge success with its Family Firm System launched in 2004. Under the Family Firm System, five companies are assigned for each professor to manage, offering students with more job opportunities and graduates with a link to recall

system. The system is not only popular among students, but has also attracted 468 companies (as of 31 December 2004). The system has enabled the university to develop courses reflecting corporate needs, effectively utilize internship programs, share equipment and conduct joint projects with businesses, increase job opportunities for students, improve the school's reputation and contribute to regional community.

At Pukyong National University, Daewoo Club is a gathering of professors. The Club fine-tunes the University's undergraduate program to meet the needs of businesses by preparing thoroughly for corporate demand (specifically Daewoo shipbuilding Co.) in advance. An example is the Club's publication of a book containing the profiles of research professors in the field of shipbuilding at Pukyong University. Its member professors are also working on a project with Daewoo Shipbuilding & Marine Engineering Co., Ltd. to hold seminars to have in-depth discussions on themes most relevant to the corporate demand and situations.

More recently, DIUC was given more freedom to install departments at universities on a contract basis, thus starting to build relations with corporations by reflecting a specific or a group of companies' concrete training and education needs into the curriculum. Pusan National University is operating a graduate program in Air Cooling, Heating and Energy major based on its contract with LG Electronics Home Appliance Division.

2.2.1 Range of HEIs technology transfer

Most HEIs, which are technology providers in the Busan region, have installed departments responsible for technology transfers with the launching of DIUC in 2004. Busan Technology Transfer Center within Busan Techno Park has also been in service since 2002. Performance of technology transfers at Busan HEIs (see Table 3.10 in appendix) shows that some institutions are going beyond their region and expanding the scope overseas.

2.3 Provisions for regional technology & innovation needs

2.3.1 Innovation capacity and research hubs of Busan

Major indicators of research capacity of HEIs in Busan are as follows. Busan has the largest number of HEIs (23 including junior colleges) after the greater Seoul area, maintaining one of the highest levels outside Seoul in faculty, student, equipment, research papers and other quantitative indicators.

In sharp contrast, only one out of 42 government-funded think-tanks are located in Busan (Busan Office of Basic Science Research Institute) and regional companies are mostly small or medium in size, revealing the city's weak R&D capacity. As a consequence, participation of research expenditure, the number of researchers and patent applications all lag behind, and Busan seldom benefits from the central government's R&D fund. R&D capacity in the private sector is also fragile, since most regional firms are small. Therefore, Busan faces a burning challenge to enhance regional R&D capacity to realize regional innovation (see Table 3.4 in appendix).

Based on 2002 figures, 76% of the nation's R&D budget (KRW 4.5569 trillion) was invested in Seoul, Gyeonggi-do and Daejeon, while only 2.3% or KRW 104.6 billion was invested in Busan (see Table 3.11 and Table 3.12 in appendix for the list of all R&D projects in Busan).

Busan universities that have participated in the Regional Research Hub projects of the Ministry of Science and Technology (MOST) and MOCIE (Ministry of Commerce, Industry and Energy) have been acting as the core university-business collaboration research centers in Busan. MOST has supported local universities to install ERCs (Engineering Research Centers), SRCs (Science Research Centers) and RRCs (Regional Research Centers), while MOCIE supported establishing TICs (Technology Innovation Centers)

2.3.2 Activity of SMEA (Small and Medium Enterprise Administration)

In regions like Busan, where 99.4% of local companies are small or medium in size, HEIs also collaborate with businesses through SME Administration's projects to support SMEs. SME Administration in Busan-Ulsan is conducting four types of such collaboration projects; HE-industry-research R&D consortium (for joint development of technology), HEIs providing consultancy on technology, supporting HEI technology transfer centers, and setting up regional HE-industry information network (see Table 3.13 in appendix).

First, the HE-industry-research R&D consortium project is aimed at taking advantage of technology development resources at HEIs and think-tanks to support SMEs and resolve their on-site technical difficulties. To receive support, the central and local government's share of the R&D cost must be no higher than 50% and 25% respectively, with the rest of the investment made by the company concerned. For five years, the company has the exclusive right to use the results from the R&D projects. The number of businesses involved in the HE-industry consortium in the Busan-Ulsan region and the number of projects represented 10.1% and 10.7% of the national total number respectively in 2002, similar to the region's GDP (10%) (see Table 3.5 in appendix).

Second, Triangle of Technology Assistance for SMEs (TRITAS) is a project that provides consultancy for SMEs to address on-site technical problems (product development, process automation, molding, heat treatment process, process improvement, etc), as well as advice on overall design, digitalization, automation and management. To qualify for support, the company must fund 25% of the consultancy cost, and the remaining 75% is paid by the government. In Busan, Tongmyong University and seven other junior colleges are participating in this project.

Third, HEI technology transfer center project is designed to set up the infrastructure for technology transfers at HEIs. The project requires HEIs to install a team dedicated to technology transfers, so that SMEs can readily access technology owned by HEIs.

Fourth, regional HE-industry information network project is about enabling SMEs to tap into experts, equipment and other appropriate resources at HEIs and think-tanks in the process of developing technologies by making a database of all available resources and setting up an information network. Up to 70% of the network set-up cost within KRW 25 million is funded by the project.

To ensure a more efficient and comprehensive management of these projects, some HEIs, with some support from local governments, have invested in building a one-stop service center for SMEs on campus.

University's Technology Development Center for SMEs

Kyungsoong University's Technology Development Center for SMEs was installed in 1994 with the help of Busan-Ulsan SME Administration and Busan Metropolitan Government, to facilitate SME's R&D, education, testing, application and commercialization of production technology in Busan by utilizing HEI's resources. The Center has conducted over 200 regional consortium projects with SMEs over the last 11 years, which has resulted in 23 patent applications, six utility patent rights, 14 registered programs, four registered design right among other intellectual property registrations. The Center also takes part in many expositions and technology innovation fairs, making way for more exchanges and dialogue on HE-industry collaboration.

2.3.3 Collaboration with public technology institution other than HEIs in the region

With so few national think-tanks in Busan, connecting and allocating regional businesses' demand for technology innovation to HEIs was mainly done by Busan Techno Park and particularly Busan IT Development Agency in the IT industry.

Busan Techno Park was jointly financed by Busan Metropolitan government, five local HEIs and the central government (MOCIE), with the objective to serve as the regional hub for technology innovation systems in Busan. In order to develop regional strategic industries, Techno Park encourages inter-university collaboration by giving research projects to a group of experts from many HEIs across the region, which is a departure from the central government allocating projects to specific HEIs in the past. Large-scale projects always involve business and university researchers together, and small projects will be first allocated to businesses.

For specialized industries, centers dedicated to each of the six areas are used by companies to share equipment and resolve technical difficulties. List of centers are as follows: Mechanical parts and material technology support center, Auto parts technology support center, MEMS/NANO production technology center, Digital production technology support center and High-tech parts technology support center.

Corporations and HEIs sit on the steering committee together and make decisions.

2.4 Reward mechanism for regionally-based research

As introduced earlier in the government's policies to encourage HE-industry interactions, national universities have introduced a system, in which some professors are dedicated to HE-industry collaboration and will be relieved of teaching and research paper burdens. For other professors, especially relating to science and technology, participation in HE-industry research or projects and resulting patent acquisitions are being included in the faculty performance reviews.

In the latest survey, seven HEIs said they did not provide special incentives for regionally-based research, while the other five HEIs are encouraging regional research in various ways. Pukyong National University stands out with its plans to favor regionally-based researchers in supporting academic research, and the other universities were either reflecting it in faculty performance reviews or funding some of the research overhead cost as monetary incentives. However, most universities show interest to consider more strong incentive

mechanism for regionally-based research.

In this perspective, the heads of DIUC at 23 HEIs in Busan form a committee, which will in the long term expand into a national association and become an academic society to issue newsletters and publish journals as a window of collaborative research results into a academic papers.

3. Interfaces facilitating knowledge exploitation and transfer

3.1 Mechanisms commercializing the research base of the HE sector

Here, we consider following four major channels as a mechanism for commercializing the research base of the HE sector.

3.1.1 Establishment of DIUC(Division of Industry-University Cooperation)

DIUC is a special entity within HEIs that can acquire and manage IP (Intellectual Property), become a party to industry-university collaboration contracts and account for collaboration-related finance separately. DIUC provides all HE-industry related services under one roof. It promotes technology transfers and projects, commercializes university research by installing school corporations, provides demand-led education and training by instituting courses and departments based on contracts, and extensively manages all research centers.

Here we provide an example of organizational structure of Pusan National University, which integrates new emphasis on the cooperation with industry with existing pure research supporting structures(see Figure 3.1 in appendix).

3.1.2 Technology Transfer Centers

Busan Technology Transfer Center was installed in 2002 under the supervision of Busan Techno Park, and Dong-eui University Technology Transfer Center was launched with the aid of Busan-Ulsan SME Administration. Most of the other HEIs put in place technology transfer centers along with DIUC in 2004. Most HEIs are currently laying the groundwork by transferring patents registered by the name of individual professors to the centers. However, technology transfer and infrastructure for technology start-ups are likely to experience steep growth, and HEIs in Busan are already reviewing plans to establish a joint technology holding company.

Technology Transfer Centers of HEIs

Dong-eui University's Technology Transfer Center was the first of its kind in Busan, established on 10 October 2001 with the support of Busan-Ulsan SME Administration. As an independent annex to the university, the Center transfers university's IP to businesses, assesses the value of patents and related technology, holds seminars on developing regional economy through technology transfers, and provides expertise and support for commercialization. Every month, on designated Technology Transfer Consulting Days, the Center provides consulting in collaboration with Korea Invention Promotion Agency's Busan Office. One example of a successful technology transfer by the Center is the creation of the liquor named "Millennium Promise". The liquor was made from fermented fungi of

mushrooms by a bio-science professor at Dong-eui University. The technology was transferred to Millennium Promise Co. in March 2004 and was successfully commercialized. The liquor's success story became widely known, when it was selected as the official toasting drink at the 2005 APEC.

3.1.3 BI: Business Incubator

In Busan, 19 Business Incubators are in operation at universities, and other independent BIs are run by Footwear Research Institution, Inno-Biz Center, and Techno Park among others. Most university BIs are based in buildings invested by universities and run on operation funds aided by the SME Administration and Busan Metropolitan Government, while some BIs finance part of the cost from tenant or spin-off firms. There were 325 tenant companies in 355 BI room(91.5% occupancy rate) and 272 spin-offs up to 2004. To date, they have created 1,714 jobs and generated KRW 78 billion in revenues, KRW 6.8 billion of which was through exports.

3.1.4 TP: Techno-Park

As was already mentioned, Busan TP(www.btp.or.kr) was established in 1999 as an incorporated foundation. It was a mixture of small-scale Research Park and HEI's joint Science Park. Busan Strategic Industry Planning Team was added and six specialized technology centers were launched under the organization in 2004. With Busan Mayor as its President and six local universities, local chamber of commerce and MOCIE on its board of directors, TP is designed to serve as the RIS hub in Busan, enhance innovation capacity of local businesses and promote business start-ups based on latest technology. In the IT industry, Busan IT Industry Promotion Agency(www.busanit.or.kr) has played a similar role since 1997. What started as Busan S/W Support Center in 1997, became a Multimedia Support Center in 2001 and finally opened as it is today in 2002. Established by the Ministry of Information and Communication (MOIC), and operation funds financed by the Busan Metropolitan Government, the Agency supports IT start-ups with technology development, funding, human resources and marketing, and offers various services to lay the foundation for the regional IT industry. It is also a network hub for IT venture firms and an Inno-Café that provides IT-related information.

3.2 Promoting role of other regional stakeholders

The role of the central government is to identify the shift in competition paradigm towards an innovation-led economic development model, and to prepare regulatory framework for regional innovation and clustering based on the importance of spatial adjacency. To carry out this mission, the central government enacts laws and provides administrative and financial support through government ministries to encourage commercialization of research and transfer of technology.

Local governments are responsible for implementing the administrative and financial support on behalf of central government, and at the same time integrate and coordinate at the regional level the different kind of support and policies delivered by various ministries.

HEIs have improved their institutional framework in favor of research commercialization and technology transfer by installing DIUC. They have been providing a wide range of incentives for HE-industry research, which is also reflected in faculty performance reviews. The traditional research and education paradigm is giving way to school corporations, contract departments and basically a more (regional) demand-led paradigm.

Businesses have recognized that innovation is key to staying competitive in the long term, and thus have been actively involved in HE-industry R&D activities. Notably, businesses are trying to collaborate with one another on research through regional associations or chambers of commerce, instead of individually trying to engage with universities. They are also taking full advantage of the information on technology through the Internet, as well as exchanging human resources with universities.

Recently, Central government(particularly MOE) launched a new program accelerating knowledge exploitation and transfer, named “**HE-industry collaboration-centered university program**”, which is comprehensively reflecting recent structural changes for successful cooperation among regional stakeholders. These roles are well reflected in a special type of institution that is being tested recently. The HEIs focus on university-industry collaboration and thus operate customized R&D centers designed to meet the regional corporations’ demands for technology development, consultancy and transfer. They supply regional businesses with key common equipment essential to R&D, and serve as both official and unofficial network hubs for regional businesses. Finally, they fulfill the regional businesses’ demand for education and training.

These programs enable successful industry-university collaboration, commercialization of technology and create technology start-ups.

HE-industry collaboration-centered university program

Pusan National University’s Industrial Liaison Innovation Cluster (ILIC) was launched in 2004 as PNU’s College of Engineering was selected as lead university for the 2005 project to develop Collaboration-centered University. In order to convert Noksan, Changwon, Yangsan, Onsan National Industrial Parks and other industrial areas in the region into innovation clusters, ILIC is conducting projects to support these industrial complexes with technology development, human resources development, common equipment and other means of technology innovation. In the first-year performance review, ILIC was selected as an exemplary project from 13 projects nationwide. Its contract-based major system (PNU-LG Track), TMK R/C(Tailor-Maid Key Research Center) and other demand-led education systems combined with customized R&D for businesses are serving as a role model for other HEIs. Furthermore, it is producing tangible results in attracting overseas research institutes (Fraunhofer Institute of Germany).

Tongmyong University’s Noksan Industry-Academy Collaboration Center is a good example of launching the system right in the middle of where day-to-day industrial activities take place to provide businesses with just what they need from R&D to equipment lease to HR development. The Center is also part of the Project to Develop Collaboration-centered Universities. The Center operates an Engineering House, which provides on-the-job training for students as they participate in the product development process along with professors and corporate engineers, Common Equipment Center and Technology Transfer Centers to provide technology transfer and consultancy to companies. The Center also houses a Social Education Institute and opened a venue for all staff and management working within the industrial park to facilitate mutual exchanges.

3.3 Dissemination mechanism for HEIs' R&D and innovation initiatives

Busan Metropolitan Government, local media and Korea Science and Culture Foundation co-host Busan Science Festival every year. This festival showcases the progress of industry-university collaboration and exhibits relevant technology by regional strategic industry, which serves as a good opportunity to promote the developments to businesses and the general public.

SME Technology Innovation Exposition also plays crucial role in spreading the spirit of technology innovation and motivating entrepreneurs by supporting SMEs to gain distribution channels for excellent technology (products), facilitating technology exchanges, and rewarding innovative SMEs and entrepreneurs.

Individual universities also host technology exchange sessions, new technology launching sessions, demonstrations, technology transfer exhibitions and other contests for businesses, students and the general public.

3.4 Collaboration between regional stakeholders and HEIs

According to self-evaluation by regional universities as shown in Table 3.6, inter-HEI collaboration in the region is found to be weaker than HEI's collaboration with business, local government, local think-tank or other regional stakeholders. However, there appear some moves of cooperation among regional universities. One is that "Association of university(college)-industry cooperation foundation in Busan area". This is mainly a regular meetings of head of each HEI's DIUC. Currently, HEIs in Busan region are joined to get more supports from Busan City and Korean government as well as to jointly conduct many programs and projects.

Table 3.6 Collaboration between regional stakeholders and HEIs

Classification	Degree of cooperation					Total *
	Weak	Moderately weak	Average	Moderately strong	Strong	
Among universities	2	2	4	3		30
University and businesses			3	7	1	42
University and local government		1	1	8	1	42
University and research institutions		1	7	3		35
University and colleges	3	2	4	1	1	28

Note: *This number comes from multiplication of scale point and the number of response for each scale

4. Conclusion

National universities in Busan have traditionally focused on different research areas from one another. Korea Maritime University specialized in maritime research, while Pukyong National

University, which originated from Fisheries and Engineering Colleges, has made developments in fisheries and bio-marine research. Dong-A university used to be the region's representative private university and is strong in bio-agriculture. Pusan National University had a research base across-the-board apart from the above mentioned fields, and especially owns the technology base for mainstay industries in the Southeast, namely automobile, shipbuilding, related parts and materials, and heavy chemical manufacturing(See Table 3.6 for PNU's research capacity).

Industry-university collaboration at the regional level was not common in the past, and most collaboration efforts with businesses were driven by individual institutions or researchers. The recent shift towards innovation-led economic growth paradigm and the knowledge economy is inevitable for the world economy. Notably, region has emerged as an important unit in innovation, and the discussions around endogenous regional growth have triggered universities to participate in regional development. Compared to European countries, regional engagement by HEIs in Busan is a recent phenomenon, but has quickly dominated the agenda of both central and local governments. HEIs in Busan must undergo restructuring to secure economy of scale in research, but at the same time upgrade the quality of research in specialized areas.

SWOT Analysis

Strengths	Weakness
<ul style="list-style-type: none"> - Diversity of research in universities ranging from maritime and fisheries to mechanical parts and materials - Home to many HEIs as a second largest city, which holds diverse industrial technology, information and rich researcher pool - Excellent production and processing, assembly technology - Logistics hub in Northeast Asia with world-class ports - Emphasis on building a scientifically and culturally rich city 	<ul style="list-style-type: none"> - Administrative mismatch between regional universities and local industry - Regional industries giving way to service industries or collapsing manufacturing base - Dominance of SMEs without clear leadership of large companies create little demand for R&D - Absence of key national think-tanks - Poor infrastructure for start-ups and technology transfer - Lack of trust or experience in inter-university or HE-business collaboration - University-industry collaboration infrastructure has been installed only recently
Opportunities	Threats
<ul style="list-style-type: none"> - Government's commitment to balanced development across the nation - Adoption of regional innovation strategies and the resulting increase in regional R&D budget - If innovation is stimulated in Busan and the surrounding area (Usan and Kyungnam province) as a production cluster, demand for research will increase - Implementation of HE-industry collaboration and cluster policies linked with regionally specialized industries - Laying the groundwork for regional growth by hosting APEC and enhancing the city's brand - Creation of DIUC at regional HEIs improving the system for collaboration - Relocation of maritime and financial organizations from Seoul forming a cluster with regional industries 	<ul style="list-style-type: none"> - Excessive inter-university competition widening the gap - Insufficient specialization by regional HEIs fails to create economy of scale - Regional businesses moving offshore, core parts industry relocating to China - Possible reduction of R&D market driven by FTA between Korean and Japan - Local universities and science/engineering departments losing popularity among students can destabilize supply and demand for research and technology labor. - Increasing brain drain out of the region.

Chapter 4: CONTRIBUTION OF TEACHING & LEARNING TO LABOR MARKET AND SKILLS

1. Localizing the learning process

The traditional emphasis placed on education by Koreans is known to have played a pivotal role in Korea's economic growth. Researches have also proved that the quantity and quality of skilled labor is an important component influencing economic performance and productivity growth. Highly skilled workers adapt more quickly to new tasks and are generally more productive. Highly educated or skilled workers also receive higher wage. The strong relationship between educational attainment and productivity is evident not only at the national level but also at the regional level. The increase in the number of graduates employed in the region also raised its overall productivity and growth.

The number of students and faculty members at HEIs in Busan amounts to 260,000, representing a sizable share of the region's population. With the number of high school graduates in the region declining in recent years and brightest students entering universities in Seoul, HEIs in Busan are competing for students as fiercely as HEIs in other provinces. Busan HEIs are working especially hard to raise employment rates among their graduates, as the employment factor directly relates to the evaluation of the institution and influences student recruitment. HEIs in the region are also stepping up efforts to incorporate specific characteristics of the region into learning and teaching courses.

1.1 Regional dimension in the curriculum

HEIs in Busan are realigning their specialty around ten strategic industries selected by the Busan Metropolitan Government (four core strategic industries: port logistics, mechanical parts and materials, tourism and convention, film and IT; six endogenous industries: finance and futures, bio-marine, industry for the elderly, footwear, processed marine products, textile and fashion). With the incumbent government implementing a range of policies to boost regional innovation and decentralization, HEIs in Busan have been quick to raise the profile of the strategic industries in their curriculum. More specifically, government-funded RIS pilot project and NURI project are trying harder to incorporate the region's traditional and industrial dimension as regional universities support learning and teaching.

Korea Maritime University (KMU) is further specializing in logistics and marine areas, adding more relevant courses to the curriculum. Tongmyong University and Dongseo University installed logistics and distribution majors and departments in relation to the region's core port logistics industry. KMU has a more engineering focus, while Tongmyong University and Dongseo University specialize in IT and international logistics respectively. Kyungsoo University, Dongseo University, Dong-A University, Dong-eui University, Pukyong National University and Silla University have all set up majors relating to tourism and included relevant classes in the curriculum. Moreover, Pusan National University, Pusan University of Foreign Studies and Pukyong National University have included courses on Busan's history, economy and society in the curriculum.

HEIs in Busan are also operating specialized individual learning programs in the regular curriculum as a means to contribute to regional development. Implementation of various programs and reflection of practical businesses in the regular curriculum have taken place to

reflect the demands of the regional society.

Education Program for Regional Development

Dongseo University has developed an education link system which offers career track, subject link and project programs. The education link system is designed to develop students in response to the needs of the regional community and maximize the effect of education by linking related majors in the university. Career track program provides traditional career guidance based on majors and studies. Career tracks by future occupation, tracks within and across majors and departments are available. Subject link program is arranged by subjects across different majors. Project program offers year 2 to 4 students of three specialized departments, namely Digital Design, Internet Engineering and Digital Visual and Mass Media, with opportunities to plan, practice and create real projects.

Dong-eui University offers academic-industrial collaboration courses covering both theories and practical fieldwork. Lecturers are from local corporations, who will conduct at least six classes on-site out of the 15 week course. To expose students to diverse on-site situations and learnings, some courses are run on a team-teaching system with two or more teachers in a semester.

Pukyong National University has put in place cross-registration programs for high school students and offers classes for high school seniors with KSAT results to acquire up to 2 credits before starting their first year in college. Pusan National University has set up vocational skills development courses and allow students to acquire up to 9 credits in 7 classes on aptitude, career search and others.

Many HEIs in Busan are also operating special departments or programs to develop the students' capacity in response to the region's growth. Trade Incubator at Kyungsoo University provides education on identifying trade items and partners so students can immediately use outside and improve their chances at landing jobs. Dong-eui University has established a branch office of Busan Techno Park on campus to step up collaboration activities with businesses.

Dongseo University has launched Footwear Project and RIS Pilot Project to raise experts linked to the region's specialized industries. The Footwear Project offers a range of courses designed in partnership with footwear companies to meet regional priorities. It provides on-site training to raise top quality people for the footwear industry, as well as give re-training for the workers. RIS Pilot Project targets innovation of the strategic film and AV industry, focusing on developing pre-production experts and supporting production of feasible films. Pukyong National University offers specialized majors linked to development of marine food resources, marine environment and social infrastructure engineering and other state-of-the-art maritime industries. Korea Maritime University has also installed customized courses instructed by local businessmen in partnership with Hanjin Heavy Industries and other regional businesses.

Many HEIs in Busan are beneficiaries of MOE-led NURI project. NURI project is aimed at developing human resources in relation to regional industries, and thus the participation of Busan's universities will significantly contribute to the development of industries and human resources in response to regional priorities. NURI project is basically run on a partnership among regional stakeholders. All NURI projects have separate Project Committees, which are represented by Busan Metropolitan Government, Education Office, public institutions, the media, private companies and other regional stakeholders, who participate in major decision making process.

Busan's HEIs also have teams responsible for localizing the learning contents to meet specific needs of Busan region. Dong-eui University incorporates demands by regional communities into the curriculum through Curriculum Operation Board, Distance Learning Operation Board and Teaching and Learning Development Center. Its Human Resources Development Institute operates online and offline employment programs and a career information system (Dong-eui Career Net) to reflect regional corporations' needs. Pukyong National University's Career Service Magic School also provides region-based customized job consulting for unemployed seniors. Other universities in Busan all have similar departments to localize the learning process.

Busan is concentrating on strategic businesses to nurture them, and universities in the region are trying to reflect contents related to those strategic businesses into their curriculum. But it is difficult to say that the universities of the region are fully accommodating the demands of small to medium sized companies that make up most of regional businesses. For a continued regional development, a system has to be put in place that will timely reflect the demands of small to medium sized businesses in the region to university curriculums.

2. Student integration into the region

2.1 Placements

Placements are an important mechanism through which students can acquire employability skills and build links with regional employers. Most HEIs in Busan have introduced compulsory placements in the regular curriculum. Pukyong National University offers four types of placements depending on timing (during semester or vacation) and duration and give credits ranging from 3 to 15. Dong-eui University also has short-term internship (4 to 8 weeks) and long-term internship (over 16 weeks) and offers credits ranging from 3 to 16. Other HEIs in Busan are going outside the region in Korea for placements, and are expanding overseas internships in China, Japan and the US.

Location of students' residence is also an important component influencing student recruitment, learning and employment. Around 80% of the students at HEIs in Busan was living in the region. Recently, HEIs in Busan are attracting less students from high schools in Busan, while drawing more from Ulsan, Gyeongsangnam-do and other areas, and thus many universities are extending on-campus housing facilities to have an edge in the competition to win students.

The competition among universities to expand student living quarters within universities are fiercer in between private universities and is a factor that financially burdens private universities. A way should be sought to utilize dormitories in universities in the region, since they will be empty during breaks.

2.2 Volunteering activities

HEIs are increasingly reaching out to regional community through social volunteering. HEIs in Busan were conducting 70 to 80% of their community activities in the region and 20 to 30 % outside the region or in foreign countries. Silla University classifies volunteering into two areas and designated them as special courses. Students earn 2 credits for over 64 hours of community activities. Catholic University of Pusan makes it mandatory for students to serve six hours per

semester in community activities and get a PASS for the course. Dongseo University and Pusan National University have expanded the scope of volunteering to outside the region and overseas.

2.3 Postgraduate activity meeting regional needs

Across universities there is an evidence of postgraduate activity geared towards meeting regional needs. Regional companies want to see practical problems being solved in the course of postgraduate activity through teaching and communication. Placements and practical fieldwork are also considered as important in postgraduate courses.

Pusan National University and many other HEIs in Busan offer courses for CEOs. They teach latest knowledge in a variety of areas to CEOs of regional companies and serve as a forum for communication and exchange of information. Pukyong National University's Techno CEO Course transfers advanced management techniques and latest knowledge in science and technology to students, and Tongmyong University's IT CEO Course re-trains executives in the IT sector. Korea Maritime University also delivers latest knowledge to executives in the maritime sector through its Executive MBA Program. Dongseo University and Kyungsoo University offer specialized postgraduate programs in software and design to develop industry professionals.

Catholic University of Pusan has Church Nursing Program within its Nursing Graduate School to effectively link regional community and hospitals. Busan National University of Education is developing professionals in education. Graduate School of Interpretation and Translation at Pusan University of Foreign Studies is the only institution in the region offering postgraduate programs in the relevant field. Silla University has plans to launch an international executive MBA program to develop experts on Northeast Asian affairs and meet future demand in the region.

Universities in the region are trying to establish graduate courses that fulfill the requirements of regional businesses. However, a question mark is thrown on their efficiency due to many universities repeating each other in setting up popular subjects. Universities should also reflect the demands of regional businesses and become specialized. Local governments should play an active mediator role as well.

3. Student Recruitment and Regional Employment

3.1 Student recruitment

For many years, student places at local HEIs have increased substantially, while the number of high school graduates and applicants to HEIs has been on a steady decline. In recent years, the majority of graduates from vocational high schools aspire to advance into higher education, and are actually going on to local HEIs. This is attributable to the increasing challenge of landing jobs after high school and widening opportunity for admission at HEIs. HEIs are increasingly competing with each other in attracting high school graduates. The number of students from China and other foreign countries coming to study at local universities are partially on the rise.

HEIs in Busan each have separate strategies to attract students, but also work together on some fronts. HEIs each send promotional materials to high schools or visit schools to hold information sessions. HEIs in the region also invite regional high school graduates to campus

and have on-campus tour and information sessions. In order to recruit students from Ulsan, Gyeongsangnam-do and other regions, they build more student dormitories and sometimes run long distance shuttle buses. Pukyong National University is even holding information sessions overseas.

Regional HEIs have formed partnerships to attract students. Committees of Admissions Officers have been set up to discuss issues, exchange information on student recruitment and hold joint information sessions and exhibitions. Some regional HEIs have partnerships with local HEIs outside Busan and the nearby Ulsan and Gyeongsangnam-do area, to conduct joint PR activities, information sessions and exhibitions. Some universities even have partnerships with 2-year junior colleges to attract transfer students. However, student places at HEIs are not on their joint agenda, and each HEI decides on its own based on MOE's guidelines.

3.2 The Busan Region Graduate Labor Market

Graduate labor market information has been compiled by each HEI to be reported to MOE and tallied in the Korean Education Development Institute's statistics on education. Statistics on employment tallied by the Ministry of Labor and the National Statistical Office also offers graduate labor market intelligence by region. HEIs in Busan have set up a Regional Employment Committee to collate and share graduate labor market information and hold job fairs together. Universities in Busan, Ulsan, Gyeongsangnam-do and Jeju-do have formed a Committee of Career and Employment Officers to expand the scope of partnership on finding jobs for graduates.

Busan's unemployment rate, along with Seoul and Incheon, was one of the highest in the nation at 4.5% in June 2005. Youth unemployment rate was 8.1%, also higher than national average of 7.8%. The implication is that the regional labor market for Busan's HEI graduates is rather depressed compared to other regions.

Table 4.1 Employed Regions of Graduates from Busan's Undergraduate Courses

(unit: person, %)

Year	Employed Regions						Employment Rate
	Busan	Ulsan/Gyeongsangnam-do	Capital Region	Misc.	Overseas	Total	
2004	9,457(67.8)	1,645(11.8)	1,912(13.7)	689(4.9)	252(1.8)	13,955(100.0)	59.3
2005	10,201(65.0)	2,015(12.8)	2,142(13.6)	878(5.6)	463(2.9)	15,699(100.0)	65.1

Source: Korean Education Development Institute(KEDI)

The employment rate of graduates from Busan's undergraduate courses are lower than the national average, but has improved from 59.3% in 2004 to 65.1% in 2005. 2/3 of them are being employed in the Busan area. In the nearby Ulsan·Gyeongsangnam-do area, 12%, and around 13.6% in the capital region.

In 2005, there was about a 3% decrease in employment in the Busan region. But employments in Ulsan·Gyeongsangnam-do, overseas and other regions increased about 1% each. This shows that the undergraduate course graduates from Busan region are lessening their reliance on the regional labor market, and are looking at diverse regions for employment. Looked from another angle, one could say that some high quality talent from the region is being

leaked outside. To maintain regional economic growth, businesses and public services must be induced in the region to continuously create good jobs.

3.3 Pathways between regional universities and regional firms

The proportion of SMEs in Busan is over 99% and the share of service industries with little job creation and added-value is relatively high in the industrial mix. Moreover, the labor market in Busan is not sufficiently developed to accommodate all HEI graduates in the region. With the increasing relocation of companies out of Busan to nearby Gyeongsangnam-do, China and overseas is leaving less room for regional graduates to get jobs.

HEIs in Busan each have set up Employment Support Centers and HR Development Institutes to gather intelligence and come up with plans to help their graduates enter employment. Recently, universities have started to make joint efforts with not only regional public services, but with businesses as well to nurture human resources and expand job opportunities.

Cooperation between Regional Universities and Businesses

Kyungsung University, Tongmyong University and Dong-eui University have signed an agreement with Ministry of Labor Busan Office to exchange information related employment. The Busan Metropolitan Government, SME Administration, Busan HR Development Institute and other public agencies are also in collaboration with regional universities to increase graduate employment and develop human resources

Dongseo University and Silla University have set up Industry-University Committee and Employment External Policy Committee in partnership with regional companies to exchange graduate labor market information and gather regional corporations' views. Dong-A University has set up an Alumni Advisory Board on Employment by region. Alumni provide job seeking workplace experiences, and job information to graduates. A total of 150 including 58 people in Busan are on the Board.

Kyungsung University and Dongseo University have installed Overseas Employment Support Centers which are operating programs promoting graduates find jobs in China and other foreign countries with the aid of Busan Metropolitan Government

4. Employment promotion activities

To help graduates find jobs and remain employed within the region, HEIs in Busan have Employment Management Offices and Employment Programs in place. Kyungsung University and Tongmyong University have installed Start-up Incubators under the supervision of DIUC to support business start-ups by graduates. Dongseo University operates the Start-up Incubator concept as a business, helping new companies with establishing an entity, managing people and money, conducting product and market research and securing distribution networks, and supports start-ups by graduates first. Catholic University of Pusan supports DIUC tenant companies in starting a business. Apart from these programs, many HEIs in Busan support business start-up clubs with special lectures on starting a business and participation in business start-up contests to provide education for students before their graduation.

Pusan National University has established a department based on the contract with LG Electronics. Under this system, resources are concentrated on the development of a few outstanding students, who will first receive basic education under the Expert Course developed by LG Electronics and then go overseas to receive further education and training. LG Electronics finances all tuition, living costs and overseas training costs, and will recruit all graduates to be assigned to regional positions in the company. The university benefits from graduates entering the regional workforce. The company gets excellent students with programs tailored to their needs and secure them early on.

To further promote employment of regional university graduates, an accurate status research has to be made on the basis of qualitative and quantitative employment statistics for undergraduate course graduates. Various job competency development and counselling should take place based on this information.

5. Promoting lifelong learning, continuing professional development and training

5.1 Lifelong learning

Lifelong learning ensures everyone with an equal and open access to high quality learning opportunities. Lifelong learning can be undertaken for many reasons including development of professional skills, preparation for certification or education of the under-represented groups. Centers for Lifelong Learning at regional universities are independently run from the rest of the university. HEIs in Busan have also set up Lifelong Learning Centers or Social Education Centers to provide a wide range of lifelong learning courses. The courses are largely divided into General Courses and Professional Development Courses.

Lifelong Education Program: Introductory Courses and Expert Courses

Silla University offers around 40 classes on languages, culture, music, fine arts, cooking, children supervision, certifications and others for lifelong learning. Pusan National University and other major 4-year universities also offer classes on language, culture, hobbies, music, fine arts, sports, certifications and education for both employed and unemployed.

Kyungsoo University has courses in professional areas like jewelry design and party planning. Tongmyong University also has lifelong learning programs specializing in IT, and Pusan University of Foreign Studies specializes in language education. Pukyong National University specializes in hospital service coordination and Catholic University of Pusan focuses on developing professional skills such as arts therapy. Korea Maritime University specializes in maritime sector, offering courses on skin scuba, diving and other water sports.

Some lifelong learning centers are located off campus. Tongmyong University's Information Technology Institute offers continuing education for 3D game engineers, Java engineers, Net engineers, system engineers, biometrics engineers and other IT professionals. Pusan National University's Ewha Traditional Entertainment Center leads research on Traditional Crane Dance, and Doam Natural Pigmentation Research Center leads research into natural pigmentation. Modern Dance Research Center provides professional yoga training and Ejiyang Food Research Center provides education on preparing traditional wedding food.

Lifelong education in universities in the Busan region are run by market principles and operated under the principle of beneficiaries taking on the burden. Courses at university affiliated lifelong education institutes are setup and closed according to the demands for lifelong education. Courses on regional strategic business and traditional culture should receive institutional and financial support so it could be setup for a small number of students as well.

5.2 Partnership with regional stakeholders

HEIs in Busan are collaborating with various regional partners to meet the demand of residents for lifelong education. Kyungsook University has set up Gold Age Course to offer free education for senior citizens in partnership with Samsung Electro-Mechanics and Busan Dong-gu's Welfare Center for the Elderly.

Lifelong learning for professional development is provided by lifelong learning centers at universities in cooperation with other regional agencies. Pusan National University's Center for Lifelong Learning is running a Silver Academy (college for senior citizens) in partnership with Busan Metropolitan Government. With the aid of Busan Government, it is also operating Busan Metropolitan Library and Busan Regional Lifelong Learning Information Center. It is also collaborating with Busan City's Geumjeong Culture Center to promote and pass on the region's traditional culture. It has also signed a pact with Hukuoka Social Education Institute in Japan to conduct joint research and hold seminars from 2004 to 2007 and facilitate human and information exchanges.

Dong-eui University has a course on female e-business education in partnership with MOIC's Korea Information and Culture Promotion Agency. The university is also working with Busan Information Industry Promotion Agency on IT Upgrade Education Project and next-generation design education. It also offers vocational training courses for both employed and unemployed in collaboration with MOL's Busan Office. It offers education courses outsourced by the Busan City Environment Facilities Corp. and lifelong educator development course in partnership with Busan-Ulsan-Gyeongsangnam-do Lifelong Educator Development Agency.

Pukyong National University is in a cooperative relation with Samsung SDI and has opened undergraduate education courses for employees of Samsung SDI and collaboration enterprises. There is also a course on labor-management relation for executive of Samsung SDI. Pukyong National University is also offering a program for restaurant CEOs in partnership with Sejong Dining Research Center, and a power speech program for CEOs in collaboration with KMSTV. It also has a course for sushi experts in partnership with Korean Raw Fish Association.

Silla University is jointly running Native English Camps with the Northern District Education Office, and also has a course for child education instructors with the aid of MOL. Catholic University of Pusan is offering re-training for health and medical workers and helping develop specialized curriculum contents in health and medical areas in collaboration with four medical institutions in Busan and Busan Health Environment Research Center. Korea Maritime University is running an English Camp with Western District Education Office. It offers ocean life experience and learning program in partnership with Korea Youth Association, and courses on wind surfing, yachting and scuba diving with the aid of Busan Metropolitan Education Office.

In order to increase the qualitative and quantitative level of regional lifelong education, regional partners should actively participate, and close cooperation between regional

universities are essential.

5.3 Access to learning from under-represented groups

HEIs are moving away from traditional forms of course delivery and the standard degree in order to provide flexible higher education provision to a variety of audiences. Access to learning for under-represented groups can be increased either by giving more admission opportunities within the official education system or by offering more opportunities outside the official system like lifelong learning. HEIs in Busan provide admission opportunities to disadvantaged groups outside the designated student capacity. Dong-eui University and Silla University opens this admission opportunity for the disabled, adult learners seeking re-entry and old students. Dong-eui University also provides this opportunity to housewives and self-employed people, while Silla University offers the learning opportunity to war veterans and those who passed government high-school equivalency examination. Pukyong National University extends the opportunity to welfare recipients, self-employed people and students from remote rural areas. Korea Maritime University also offers the chance to minor-aged heads of household.

Kyungsoo University allows students at Busan HR Development Institute under Korean Chamber of Commerce and Industry to be enrolled as part-time students. Part-time students can acquire up to 15 credits through the Credit Bank System and earn Associate's degrees equivalent to junior college graduates. Pusan National University also applies Credit Bank System to adult learners who re-entered university. The university also provides opportunities for the disabled with the support from MOE. Dong-eui University gives opportunities for ethnic minorities as well.

The under-represented groups enjoy ample access to learning outside the official education system. Regional universities are running education programs outside the official system for the region's under-represented group and the ethnic minority.

Education Programs Outside the Official System for the Under-Represented Group

Kyungsoo University offers courses for jobless residents, elementary and junior high students and senior citizens. Tongmyong University, Pusan National University, Pusan University of Foreign Studies provides IT education for senior citizens over the age of 60. Catholic University of Pusan is developing a repair education program for adult workers at the Lifelong Learning Center and Music Education Center.

Pusan National University's Language Institute offers Korean language courses for ethnic minorities. Dongseo University also provides access to learning to ethnic Koreans living in underdeveloped countries through Sahalin HR Development Campaign

Busan region is comparatively high in under-represented groups, so universities must develop various programs and open its facilities for them to contribute to the development of the regional society. The central government and the regional government should also prepare measures to support the regional universities institutionally and financially, so they would be active in educating the under-represented group.

6. Changing forms of educational provision

Developments in telecommunications networks are challenging the role of the place-based institution in the production, preservation and transmission of knowledge. HEIs are introducing flexible systems and organizations to deliver better education services based on information and communications technology. Most HEIs in Busan offer online classes on campus to complement the offline class. Students can take some online courses at home. Video lecture system enables students in different classrooms, regions and countries to receive the same lecture at the same time. Students at some universities take summer school courses online.

HEIs are supplying contents for online education by setting up Teaching and Learning Centers or Media Production Centers. Kyungsung University has set up an online campus in partnership with ten universities, offering online courses and exchanging academic credits. Pusan University of Foreign Studies has formed a consortium with 15 universities and two organizations, offering a total of 200 online courses. Students can earn six credits per semester through these online courses. HEIs in Busan have also worked in collaboration with HEIs in Ulsan and Gyeongsangnam-do to set up e-learning support centers to offer online courses and cross register academic credits. Dong-eui University and Catholic University of Pusan have signed an agreement with Seoul Digital University (SDU) to allow credit exchanges in some courses. Dongseo University is exchanging online courses with Busan Digital University.

Regional HEIs are also providing ICT-based education service to offer more people with access to learning. Classes for the unemployed, disabled, aged and adult students who re-entered universities are provided online. Part-time student registration system, which was introduced as part of lifelong learning for high school graduates, also recognizes credit acquisition through online courses. Pusan National University offers online courses for re-entered adult learners as part of the credit accumulation and transfer scheme. Silla University and Dong-eui University encourages disabled students to take classes online. Dongseo University offers some online classes of re-employment programs like the character design course and training course for IT workers seeking employment in Japan.

Online lecture removes time and spatial constraints, and thus can be enjoyed by many students simultaneously. However, online courses have limitations in student management and quality of the lecture and incur large investment in facilities up-front. That is why most HEIs are striving to maximize the effect of the course by providing both online and offline classes.

7. Enhancing the regional learning system

Regional HE in Korea is tightly managed at the national level by MOE. With the start of the current administration, however, innovation and stronger competitiveness of regional HEIs have emerged as important challenges for the nation's educational policy. The vision of the Regional Innovation Committee under the local government is to involve regional HEIs and other regional stakeholders to set up a consistent HE system at the regional level. Despite the declining number of college applications, regional HEIs are working hard to overcome the current crisis by restructuring themselves to sharpen the competitive edge. There is also a consensus that regional HEIs must specialize in response to regional priorities and strategic industries. Regional HEIs are looking into a wide range of data to identify the regions' demand and supply of diverse HE "products." The changes in demand are analyzed by each HEI on an annual basis, and surveys are being conducted frequently to incorporate the demands of the regional business and community into the curriculum.

Inter-HEI collaboration within the region is becoming much more structured. Regional HEIs are operating various cross registration systems with other HEIs in the region. Cross registration and credit exchanges are not only available during the semester, but also applicable for summer courses. Some HEIs are even partnering with HEIs in Ulsan and Gyeongsangnam-do to expand the scope of cross registration. Cross-registration between high-schools and HEIs are being introduced, where high school graduates can take courses at universities before the semester officially starts to acquire credits in advance. These credits are transferred and acknowledged across HEIs.

Regional HEIs are in stiff competition with one another, yet expanding partnership on teaching, learning, student recruitment and graduate employment. Regional 4-year universities are even collaborating with 2-year junior colleges on student recruitment and transfers, and sharing academic information through online libraries. Particularly in the area of online education, strong partnership is building not only among 4-year universities, but also between universities and junior colleges. RIS Pilot project, NURI project and other projects to enhance HEI competitiveness to seek regional development is being implemented, and the collaboration between universities and junior colleges is growing in a range of areas. ICT developments and HEI restructuring are driving inter-HEI partnership to not only stay in the region but also gradually expand beyond the region.

8. Conclusion

HEIs in Busan are contributing to the local labor market and skills development through teaching and learning. In the process, partnership among regional stakeholders is making steady progress. With the government implementing various policies to achieve regional development by making regional universities more competitive, HEIs are gaining greater significance in the region.

As the restructuring of regional HEIs gets underway, collaboration among regional HEIs is expected to become more visible in teaching, learning, student recruitment, employment and virtually all areas. Partnership between 4-year universities and 2-year junior colleges are limited to student recruitment and online education, but will become varied through RIS Pilot project and NURI project.

The central government and the regional government should strengthen their role as mediators and supplement the system so that regional universities should not indulge too much in wasteful competition for students recruitment and jobs. Regional universities should also strengthen their cooperative relation through meetings between presidents and working level committees.

Regional Innovation Committees represented by various regional stakeholders are being launched for each local government, and opportunities for local REIs, businesses and public organizations to take part are growing. Dialogue and cooperation for HE among regional stakeholders will get stronger. Meanwhile, the region's traditional industrial mix that cannot absorb all the talented workers in the region, combined with the excessive supply of regional HEIs will require measures to resolve the imbalances in the labor market. Large businesses and businesses based on new technologies and public organizations must be attracted. And ways for regional small to medium sized businesses to turn into a high value added production structure must be sought. Support to improve the core and job competencies of regional university graduates must be provided as well.

SWOT Analysis

Strengths	Weakness
<ul style="list-style-type: none"> - Regional HR development strategy and fund in place - Restructuring making universities more competitive - RIS, NURI projects increasing funding for regional HEIs - Curriculum overhaul linked to regional strategic industries - Outstanding secondary educational institutions. E.g. Science High School and International High School - Growing online education based on ICT - Increasing on-site education and research opportunities - Increasing inter-university collaboration in the region 	<ul style="list-style-type: none"> - Marginal industry-university collaboration system - Extreme student concentration in popular majors - Lower academic capabilities of freshmen in science and engineering departments due to those majors losing popularity - Fierce inter-HEI competition leading to establishment of similar majors and departments - Discrimination against local graduates in the labor market - Undergraduates trying to transfer to HEIs in Seoul - Increasing share of female students who face greater challenges entering the workforce - Weak employment support infrastructure - Supply of educated workforce by regional universities exceeding regional demand for industrial labor - Top-class high school graduates leaving for Seoul
Opportunities	Threats
<ul style="list-style-type: none"> - Government policy to promote science and technology - Government policy to develop the city into a maritime hub - Opening of New Busan Port and development of logistics center requiring more experts in that area - Government's commitment to regional innovation and decentralization - Relocation of public institutions out of Seoul - HEIs investing more into development of teaching methods - Securing infrastructure and human resources to produce means of teaching - Increasing need for lifelong learning - Emphasis on practical fieldwork training 	<ul style="list-style-type: none"> - Dominance of SMEs in the regional economy - High proportion of low value-adding service industry - Weak cultural, educational infrastructure - Widening gap between HEIs in Seoul and other areas - Rapid emergence of Chinese economy undermining competitiveness of regional companies - Liberalization of the education market - Private universities in Seoul actively recruiting professors making it difficult to find good professors - Decline in the number of HEI applicants and intensifying inter-HEI competition for students - Extreme concentration of research environment in Seoul - Privatization and resulting job insecurity making it difficult for national universities to secure good professors - Regional economic slowdown reducing employment opportunities in the region

Chapter 5: CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT

1. Overview

In the days gone by Busan was home to the fabulous Kaya culture. During the Japan's failed attempt to conquer Korea between 1592 and 1598, Busan protected the fate of the nation. The city is home to outstanding natural scenery and beautiful cultural heritage. Socially, due to it being a marine city, it has developed into an open city that naturally receives outside culture and institutions of Japan and Western nations, and its proportion of foreigners is high to make it a free city with a diverse makeup of citizens.

During the Korean War (1950-1953), Busan was the temporary capital of Korea for three years. And from the student movement in the 1910s under Japanese occupation, the revolutionary movement on April 19th, 1961, democratic movement in 1979 to the student movement in 1980s, Busan has been the foundation for Korea's democracy. In particular, in the 1979 democratic movement, a democratic declaration was distributed at Busan University on October 15th, 1979, while under the Yusin order, and on the 16th, 5,000 or more students led the protest in which citizens joined to stage a large scale anti-government protest. Such anti-government protest spread to Masan and Changwon regions on the 18th and the 19th. Though the government's strong actions caused the protests to calm down, a few days later, then President Park died on October 26th, 1979, which was a historic turning point in ending the Yusin order. In order to commemorate the democratic movements that have been continued in Busan, including the April 19th, 1960 revolution, 1979 democratic movement, June 1987 democratic movement and etc., a democratic park with a total size of 20,337km² was created in on October 16th, 1999, the 20th anniversary of the 1979 democratic movement (located in Yeongjudong, Junggu, Busan). In the park, there is a commemorative art piece named the 'Name of Democracy' and a round shaped lamp symbolizing the torch of democracy. In the democratic movement commemoration hall, exhibition and performance halls related to democratic movements are setup to be utilized widely as a live educational venue for students on democracy (cf. Figure 5.1 & Figure 5.2).

Figure 5.1 Name of Democracy



Figure 5.2 Torch of Democracy



Except for some universities, most university campuses in the Busan region were located in the outskirts of the city in the 1970s and until the 1980s. However, with the expansion of the city center, most universities have come to be located in the city center since the end of the

1980s. Of the twelve universities in the Busan region, most campuses are located in the city center region, apart from some universities moving a part (Dong-A University), or the whole (Silla University) of their campuses to the outskirts. Naturally, university campuses have become a resting place for the region's citizens as urban parks. But until the early 1990s, facilities and campuses of universities in the Busan region could not play a bigger role than being a simple resting area for the regional society. The reason was that until the early 1990s, the concept of members of the university contributing to the development of the regional society was a very vague one.

Until now, Busan's environmental development has been in inverse proportion to its urban development. Fabric, shoes, wood industry developments in the 60s and the 70s have worsened Busan's water and atmosphere pollution. And reckless fishing has devastated nearby seas. From the early 90s, the city became metropolitan and with it came the drastic increase in transportation volume. In Busan's city center region where there is a lack of flat land, the damage to urban fine view and environment destruction due to construction of overhead roads and tunnels have started to become social issues. From the mid 90s the importance of sustainable environment friendly urban development has been stressed from regional environment organizations and environment experts in universities, and various environment movements have been made such as the Save Nakdong River Movement and the Eulsukdo Migratory Bird Reservation Ecology Preservation Movement, etc.

Table 5.1 7 Major Strategic Business Plans and Development Area of Busan

Strategic Business	Core Tasks	Key Development Areas
Busan U-city Project	U-Port, U-Convention, U-Traffic, U-Vally, U-Healthcare etc.	Social Development
Culture City (ACE) Project	Construct Busan hall of the Guggenheim Museum, Busan Arts Center, Busan National Library, BEXCO II, Busan International Visual Center, etc.	Cultural Development
City Recreation Project	Create Busan Urban Park, construct National Marine Museum, restore key urban rivers, etc.	Environmental Development
Asian Gateway Project	Construct Busan port harborland, create Sea Food Theme Park, create a Cruise Exclusive Terminal in North Port.	Economic Development Cultural Development
East Busan Project	East Busan tourist complex, Marine R&D complex, National Long-Life Life Science Research Institute, etc.	Cultural Development Economic Development
West Busan Project	Create a ecology tourism belt at the mouth of Nakdong river, secure metropolitan water source, develop Gangseo New Town, construct Sasang High Tech Industrial City, etc.	Environmental Development Economic Development
Promote International Free City	Setup financial two-winging cluster, construct foreigner business center, etc.	Economic Development

Recently in May 2005, Busan Metropolitan City, has proposed an ambitious report, 'Busan Development 2020 Vision and Strategic Business Plans' with the catchphrase of "Change Busan" to promote a systematic social, cultural, and environmental development of Busan.

According to the report, the vision of the city inherits the previous vision of 'Marine Capital of Northeast Asia in the 21st Century'. But the goal of the city in year 2020 has changed and expanded from 1) hub management city of southeast metropolitan economic zone, 2) marine culture tourism base of Northeast Asia, 3) hub city of Northeast Asia logistics business to 1) hub city of national southern economic zone, 2) center city of Northeast Asia's culture and science, 3) base of international free trade. And the 7 major strategic business plans to reach such goals of the city are as follows.

As stated, the future direction of urban development in Busan is focused on social, cultural and sustainable environmental development together with economic development. In implementing such plans, universities and regional businesses are trying to form active partnerships.

2. Social Development

Most HEIs in Busan had not played an active role in the region's social development as recently as 15 years ago. Student competition for admission to most universities was high, so HEIs had little interest in areas outside teaching and research. However, with the decline in student-age population becoming more visible since 1995, many HEIs have participated in regional social development as part of their PR strategy. The method of participation is varied and depends on the characteristics of each HEI, but its contribution to the region's social development is still in its infancy.

2.1 Health and Medical

Busan is home to four university hospitals; Pusan National University Hospital (PNUH), Dong-A University Medical Center (DUMC), Kosin University Gospel Hospital (KUGH) and Dong-eui Medical Center. These hospitals play a crucial part in providing health and medical service to residents of Busan and the nearby Gyeongsangnam-do area. In particular, PNUH is the largest general hospital in the Busan area, with 1,720-strong staff (540 doctors, 1,180 others), 1,070 beds in 267 patient wards, gross floor area of 64,369.76m² and over 700,000 outpatients per year. DUMC and KUGH have 850 and 912 beds respectively, and Dong-eui Medical Center has 461 beds in the Western Medicine Division, 180 beds in the Oriental Medicine Division and gross floor area of 31,000m².

All of these hospitals are also actively engaged in the volunteer activities in the community's health and medical field. Most significant examples are PNUH's Ami Service, a voluntary community service group made up of the university's medical students and staff (medical & dental students and faculty members), and Dong-A University's operation of a separate Medical Books Library. Dong-eui Medical Center also offers free Oriental medical services in collaboration with 35 local organizations including Busan Jin-gu Community Clinic. KUGH was also designated by Busan Northern Regional Labor Office to operate the Industrial Health Care Center, which serves 800 or so establishments in the industrial district of Sasang-gu and Gangseo-gu with special/general medical examination for workers, workplace evaluation, health care consulting and education.

Furthermore, Busan is promoting U-Health as a core task of building Busan's U-City by 2010. The basic goal of U-Health is to create a consolidated health promotion network by increasing the timeliness, convenience, access for citizens' health. When U-Health is setup, remote diagnosis of medical institutes including university hospitals will become an everyday service,

and it is hoped that medical service to socially weak will be greatly improved through U-Welfare Center Monitoring Service, Homecare Service for Chronically Ill, Emergency Rescue Service for Solitary Elderly.

Examples of community activities in health care

PNUH's Ami Service is a voluntary community service group made up of the hospital's physicians and the staff (by faculty members and students). The group works with community clinics (for supply of pharmaceuticals) and community welfare centers in the region, and is the only continuing volunteer group in the medical sector. The name *Ami* hails from the name of the district that houses PNUH, *Ami-dong* in Seo-gu, Busan. Ami Services founding mission is to provide consistent medical and health care service in under-served neighborhoods, identify the medical needs of the urban poor, and thus establish the framework for community health and medical care. Since 27 December 1993, it has provided free medical service every Saturday afternoon at the Unbong Community Center in Bansong2-dong, Haeundae-gu, as well as offering free health care community forums, medical check-ups and financial aid for limited income patients.

Dong-A University Medical Library has developed outreach programs to support and cooperate with regional health and medical professionals for the community. Health and medical information service has been provided for research as well as evidence-based clinical practice in these activities. The Library is planning to extend the outreach to the public based on medical information network as industry-academy partnership in health care. It also makes it possible to establish a liaison program with medical librarians and professionals on and off the campus so that information service, especially using e-resources, helps them create value added knowledge. Health care professionals use clinical knowledge offered by the library for better patient health.

2.2 Social Welfare Advisory and Partnership

As of 2005, there are 380 Social Welfare Centers in Korea, 48 of which are based in Busan. Social Welfare Centers are community centers that provide comprehensive social and welfare service to meet the welfare needs of the community. Most HEIs in Busan either participate on the advisory board or are commissioned to operate the Centers themselves. Professors in relevant departments often serve as Advisors to the local government's social and welfare policy. HEIs also open their campus and facilities to local residents, contributing to better quality of life in their community.

Kyungsoo University and Silla University are operating government-commissioned Nam-gu Social Welfare Center (<http://www.namguwelfare.or.kr>) and Sajik Social Welfare Center (<http://www.sjwc.org>) respectively. Good examples of Kyungsoo University working in partnership with Nam-gu Social Welfare Center are as follows.

- Monthly donation of "rounded-off" money (last three digits of the staff members' monthly salary (less than KRW1,000) donated to Nam-gu Social Welfare Center to provide meals for undernourished children and teenagers)
- Students of Social Welfare Studies department at Kyungsoo University set up a volunteer group called *Nuribodeum* and work at the rehabilitation facility for mentally challenged adults at Nam-gu Social Welfare Center

Silla University's Sajik Social Welfare Center has provided a range of services from family welfare (family, child and youth welfare) to community welfare (elderly, disabled and local welfare) to care welfare (home care, dementia care, assisted living). The Center was selected by the Ministry of Health and Welfare as the Best Social Welfare Center in Korea in 2000 and 2004.

Dongseo University has an aid program for unattached elderlies and minor-aged heads of household, while Dong-eui University provides support and consulting to 12 social welfare groups including Busan Disabled Persons Sports Council. Korea Maritime University offers its training vessels for wedding ceremony venues to limited income couples in Yeongdo-gu. Catholic University of Pusan is an active participant in Busan City's Social Welfare Fund-raiser's activities and operation of Danggam Social Welfare Center.

2.3 Cultural Exchange and Indigenous Support

Most HEIs in Busan have libraries, museums and lifelong learning centers, and open these facilities to the general public for free. They also provide cultural entertainment to Busan citizens by hosting or sponsoring music concerts and events often in partnership with national or cable TV companies. They also host game contests popular among teenagers, offering fun and entertainment to teenagers and contributing to the dissemination of a wholesome game culture.

Korea is home to around 400 species of wild birds. Kyungsoong University's Birds Institute and Museum's collections and exhibitions contain about 1,000 specimens of 270 species of birds, 70 specimens of bird eggs and specimens of bird nests. The Museum is open to primary and secondary school students, helping their biology and history studies. A special tour program is available for kindergarten students. The program includes animation film viewing (using the university's auditorium) and Bird Division and Museum tours, all guided by student helpers from Kyungsoong University. In 2004, 21,946 students from 270 kindergartens participated in the program, and as of June 2005, 13,554 students from 186 kindergartens have already paid a visit.

Pukyong National University provides its staff and community residents with quality cultural events by hosting classical music concerts with Busan Orchestra and Busan Metropolitan Symphony Orchestra. Silla University runs Youth Protection and Support Center (<http://www.bs1388.or.kr>) and Sasang-gu Volunteer Center (<http://vt.sasang.busan.kr>) commissioned by Busan Metropolitan City. Korea Maritime University runs Oceanic Life Learning and Experience Center for elementary school students in Yeongdo-gu. The Center exploits the geographic traits of Yeongdo island surrounded by sea and enables students to gather, observe, record and experience oceanic creatures, providing opportunities to understand oceanic life and learn about the impact of pollution on the ecosystem.

3. Cultural Development

3.1 Cultural Space

Busan has various cultural spaces scattered around the city center. Cultural centers can be divided into exhibition centers, performance facilities, museums, art centers and etc. Busan's universities are contributing to the regional society through performance facilities and museums.

Figure 5.3 BEXCO



Figure 5.4 Busan Museum of Modern Art



BEXCO(Busan Exhibition & Convention Center) and (Busan Museum of Modern Art) represent Busan's exhibition center. BEXCO was complete in May 2001 with 1 storey under ground and 7 stories above. It is an exhibition convention hall of international standards where the draw for the 2002 Korea-Japan World Cup Finals took place. It also received attention from the world by holding the APEC meetings in November 2005. It is the size of three football fields and has dedicated exhibition center, small and medium sized exhibition center, outside exhibition center, conventional hall, glass hall and etc., and holds international events throughout the year.

Figure 5.5 Performance Facility in Busan



Busan has various indoor performance facilities for the regional people, and most universities in Busan have small to medium sized performance facilities. The most representative of those facilities are eleven performance facilities around Busan, Kyungsung university's concert hall, and Donga university's Seokdang hall (cf. Figure 5.5). Nine of eleven key museums in the Busan area are located in universities within the region. This is a good example of how big universities are contributing socially and culturally through museums amongst other cultural spaces. Museums in the Busan region collect and exhibit materials that fit their specialized field to improve the cultural knowledge of citizens in the region and provide precious samples to experts in the field (cf. Figure 5.6).

Figure 5.6 Museums in Busan



3.2 Support for Cultural Groups

As we have seen so far, The Busan Metropolitan Government has adopted a platform to develop Busan into a “city of culture” and is eagerly offering a variety of cultural and recreational activities to ensure better quality of life for Busan citizens. Landmark cultural facilities include Busan Citizen's Hall, Busan Cultural Center, Busan Museum of Modern Art and Busan Museum. The city government also endorses Busan City Art Group, Busan Philharmonic Orchestra, Busan Metropolitan Traditional Orchestra, Busan City Chorus, Busan Metropolitan Dance Company, Busan Metropolitan Theatre Company, Busan Philharmonic Youth Orchestra and Busan Metropolitan Boys & Girls Chorus. These groups hold regular performances every year and enrich the lives of Busan citizens.

Apart from these government-sponsored groups, there are numerous cultural groups in Busan that offer diverse cultural performances all year round, taking much advantage of university campuses, concert halls, theaters and other school facilities. Most HEIs allow local groups to use their facilities for cultural events, and offers a range of cultural learning programs through their lifelong learning centers or social education centers.

For instance, Pusan National University’s Education Research Center has developed ten programs to train docents in partnership with Bokcheon Museum and is financing the docent training course as part of the 2005 Culture and Arts School Education Pilot Project. The training program carries significance in that it will produce professional educators in culture, and the ten programs effectively help students to understand the museum exhibitions more easily through experience learning. Korea Maritime University is running Marine Culture Experience Program in cooperation with Busan Young Korean Academy to introduce the type of jobs and the spirit in the marine sector to teenagers.

3.3 Encouragement of Sporting Development

Professional sports teams based in Busan include Lotte Giants baseball team, Busan Icons football team and Busan KTF Maxten basketball team. Most HEIs in Busan have department of physical education and gyms. Physical education graduates contribute to the development of

professional sports and the sports facilities at HEIs contribute to the development of community sports.

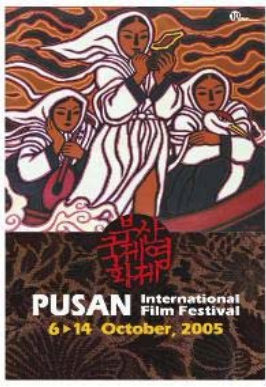
Pusan National University's Athletic Team is composed of seven divisions of track and field, gymnastics, volleyball, basketball, handball, tennis and rugby. The team enters the Korean Athletic Games representing Busan every year and score 1,000 to 3,000 points on average, contributing to the development of the city's sports. Kyungsung University Baseball Team is one of the strongest teams in the nation with an outstanding track record of reaching the finals of National College Baseball Competition five times recently. In order to raise talented young baseball players, ensure more access to organized sport and encourage all-rounded education, Kyungsung University sponsors Elementary School Baseball Competition, which has been held every November since 2000.

Korea Maritime University's Lifelong Learning Center offers Water Sports Experience Learning Course to promote water sports and educate the general public on water sports. The Course offers canoeing, rafting, snorkeling and banana boat water sled experiences to students and community residents. Silla University has a variety of student sport clubs including football, basketball, in-line skating, swimming, taekwondo, hang-gliding, paragliding, tennis and bowling. Pusan University of Foreign Studies strategically fosters badminton and middle and long distance running in tracks, as well as fencing and softball tennis, which are endorsed by the city government. The university also trains athletes in bowling, weightlifting, golf, water skiing, body building and taekwondo.

3.4 Support the Arts

Pusan International Film Festival (PIFF) celebrates its tenth anniversary this year. Despite the short history, it has grown into Asia's largest film festival with growing international recognition, and has been a leading enabler of Busan's emergence as a city of film and video arts.

Table 5.2 Evolution of Pusan International Film Festival

	Period	Film entries	Invited Guests	Audience	
	1st	1996.9.13-9.21	170 from 27 countries	224 from 27 countries	184,071
	2nd	1997.10.10-10.17	163 from 30	450 from 30	170,206
	3rd	1998.9.24-10.01	211 from 41	659 from 25	192,547
	4th	1999.10.14-10.23	207 from 53	555 from 36	180,914
	5th	2000.10.06-10.14	207 from 55	3,019 from 39	181,708
	6th	2001.11.09-11.18	201 from 60	3,761 from 30	143,103
	7th	2002.11.14-11.23	226 from 55	5,318 from 35	167,349
	8th	2003.10.01-10.10	243 from 61	5,329 from 50	165,103
	9th	2004.10.07-10.15	264 from 63	5,638 from 50	166,164
	10th	2005.10.06-10.14	307 from 73	6,088 from 55	192,970

Scores of movies have been produced in Busan every year for several years now, and following the current administration's plans to relocate public organizations out of Seoul for a more balanced development of areas outside Seoul, Korea Film Commission and Korea Media Rating Board will move to Busan. Already, Busan Cinema Studio at Haeundae has been run by Busan Film Commission since 2001 and provides one-stop support for film production ranging from location shooting and renting indoor studio and 35mm camera. Under Busan City's plans to develop East Busan area, a site of around 330,000m² in Yongcheon-ri, Ilgwang-myeon,

Gijang-gun is to be developed into a large-scale film shooting location. This will further develop Busan into a world-renowned center for film and video arts. In response to the city's plan, HEIs in Busan are actively taking part in developing human resources in this area and supporting film festivals

Examples of supporting arts

- Kyungsung University, which has an active Arts College, is aggressively supporting Busan Asian Short Film Festival and Busan Digital Contents Universiad. Busan Asian Short Film Festival has gained recognition as a success story that overcame woeful cultural environment in a provincial city and took great advantage of the unique regional aspects of Busan. The 2005 Busan Digital Contents Universiad (BuDi2005) that took place from 16 to 18 May this year showcased the freedom of the digital media and the creativity of student directors under the slogan "Imagination Explosion." The event introduced 100 films from six countries, namely Korea, US, Malaysia, Thailand, Germany and Canada. The Busan International Summer Dance Festival, also hosted by Kyungsung University and marked the 18th anniversary this year, is the only university-sponsored dance festival in Korea and provides a space for citizens to escape from the routine and the heat and enjoy culture and the nature.

- Dongseo University's Digital Image Design Innovation Center (DIDIC) is the product of a KRW 3 billion joint investment by the central government, Busan Metropolitan Government and the University, established to support SMEs in the digital, video and character industries and the development of digital design in the region. Dongseo University's RIS-PPS (Regional Innovation System - Pre-Production System) Project is aimed at building a pre-production system in the film and video industry in Busan, and organized the 2002,2003 East-West Film Festival and International Student Film Festival It is currently working on RIS-PPS Character Contest and RIS-PPS Story Contest in collaboration with the local business and arts community.

- Dong-eui University leases its Seokdang Art Hall and Hyomin Gallery for Busan Short Film Festival, and other concerts and exhibitions. Pusan National University supports Geumjeong Fine Arts Festival, Busan Fine Arts Festival, Geumjeong Arts Festival, University Dance Festival, Busan Dance Festival and other activities in fine arts and dance.

4. Environmental Sustainability

Busan confronts Nakdong estuary and the ocean. This geographical location makes Busan susceptible to changes in water quality of Nakdong River and the marine ecosystem. In particular, HEIs located close to Nakdong River and those specializing in maritime and fisheries fields are making efforts on various fronts to resolve environmental issues in the region. Good examples include Silla University's Nakdong River Research Institute, Dongseo University's Volunteers for Nakdong River Environment, Kyungsung University's Wildlife Hospital, Pukyong National University's Busan Environmental Technology Development Center and Korea Maritime University's Green Technology (alternative energy) Research Center.

Examples of environmental sustainability activities

- Silla University's Nakdong River Research Institute established in 1997 has built an integrated database on rivers in Korea based on inter-disciplinary research on major rivers nationwide focusing on Nakdong River. It has also conducted research on rivers taking environmental, economic, socio-cultural and tourism approaches, and studied the effect of streams on the community and residents. It also continues to educate the general public on the value of rivers and the environment.

- Dongseo University's Volunteers for Nakdong River Environment was set up in 1966 to improve and preserve the water quality of Nakdong River Based the volunteer spirit of university students, it conducts various campaigns to raise awareness to revitalize and preserve Nakdong River and the waterfront.

- Kyungsung University's Bird Museum established Wildlife Hospital in 1999 (accredited by MOE, Cultural Heritage Administration and Busan Metropolitan Government), which is leading the campaign to preserve wildlife by providing sick or injured wild animals and releasing them back to wildlife once they are cured (250 cases per year). It also has close links with Wildlife Preservation Association, Korea Wildlife Monitor and other wildlife related groups.

Examples of environmental technology development

- Pukyong National University has set up Busan Environmental Technology Development Center to tackle a wide range of environmental issues in Busan. The Center forms research hubs dedicated to resolving environmental by bringing together research capabilities in the region, works with businesses to build voluntary pollution prevention systems and contributes to the development of specialized environmental industries by building environmental technology innovation network.

- Korea Maritime University founded Green Technology Research Center in March 2004 to help develop environment-friendly alternative technologies that can create pleasant living environment. It also attracted Ministry of Science and Technology's Nuclear Energy Basic Research Center in July 2005, and is currently working on the development of a reactor required to generate hydrogen, which can be used as alternative energy.

To come up with a joint plan to tackle environmental problems in Busan, Pukyong National University is planning to hold two symposiums this year. Busan Environmental Issue Symposium, co-sponsored by the university's Environment Research Institute, Busan Environmental Technology Development Center, Busan Metropolitan Government and Korea Environment Society, will be held in October 2005. Symposium on Recovering Nakdong Estuary Ecosystem, co-sponsored by Busan Development Institute, Pukyong National University's Environment Research Institute and Busan Environmental Technology Development Center, is scheduled to be held in November 2005.

On the other hand, Dong-A University will be promoting a large scale art space creation project to place galleries, sculpture parks, art museums in three campuses, including the Gudeok campus, to fit the characteristics of each campus. According to Donga University, a large scale gallery at the main building of the Seunghak campus that has the university center, a sculpture park at Gudeok campus shall be established respectively, and at Bumin campus an art museum will be newly built. The change of campuses to large art spaces is at the same time work to

create an environmentally friendly campus and contributing to the development of the regional society's culture. It will also be a good example to lead other university campuses in the Busan region to change into a green campus.

5. Conclusion

As noted above, Busan HEI's contribution to the region's social, cultural and environmental development is dwarfed by the long-standing relationship between HEIs and the community in historic cities in the West. However, the local government and HEIs in Busan are exploring win-win strategies that can boost mutual interest, as local autonomous government was put in place in the 1980s and student-age population shrinks dramatically since the late 1990s. The local government is in desperate need of regional HEIs' participation in social, cultural, environmental development to reinvent the city of Busan. HEIs also recognize the importance of strengthening the regional dimension and ties to stay in the game. This suggests that regional stakeholders in Busan will inevitably reinforce their partnership on the social, cultural and environmental front. HEI's collaboration with the regional business community is also growing precipitously (see Chapter 3).

HEIs in Busan have already formed partnerships with each other since the mid 1990s on professor and student exchanges, cross-registration of credits, joint research and seminars, academic information and publication exchanges and sharing research facilities and equipment. Recent years have witnessed increasing number of partnerships between universities and junior colleges. In reality, however, these partnerships are not producing tangible results as HEIs compete fiercely on student recruitment. It is time to build inter-HEI networks and set up forums to facilitate collaborative participation in the social, cultural and environmental development of the region.

SWOT Analysis

Strengths	Weakness
<ul style="list-style-type: none"> - Large city - Geopolitical location (marine port city, gateway in international transactions) - Good location to develop into an international tourist destination - Beautiful ecosystem, historical and cultural resources, marine resources and other natural resources - International recognition as a city of film and video arts by hosting PIFF - Many HEIs (13 universities, 10 junior colleges) and HEIs working on specialization - Local government's commitment to develop Busan into a city of culture 	<ul style="list-style-type: none"> -Poor conditions for education and fiscal constraints of local HEIs -Weak relationship with the community - Stagnation of the regional economy - Lack of human network in each regional sector -HEIs' lack of awareness of the importance of community activities -Marginal experience of participating in the region's social, cultural and environmental development -Insufficient cultural and arts facilities relative to the size of the city
Opportunities	Threats
<ul style="list-style-type: none"> -Current government's commitment to balanced development across the nation -Growing awareness of regional dimension and its significance for HEIs - APEC drawing global attention - Mature civic society and growing interest in volunteer activities - Central and local government's increasing support for non-profit and regional organizations 	<ul style="list-style-type: none"> -Intensifying competition among HEIs in similar disciplines - Decline in student numbers in Busan - Slowdown of the regional economy and out-migration of people - Brain drain - Liberalization of the education market - Weakening community spirit among Busan citizens - Increasing pollution as the city experiences development

Chapter 6: CAPACITY BUILDING FOR REGIONAL COOPERATION

1. Mechanisms to promote HEI-regional involvement

1.1 Existing mechanisms for HEI-regional involvement in Busan

The government's shift in policies is bringing huge changes to existing mechanisms for HEI-regional involvement in Busan. In a society like Korea with long-standing traditions of a strong central government and marginal experience in local autonomy and decentralization, the central government has a big influence. At the national level, mechanisms promoting HEI-regional involvement that are currently in place are the incumbent administration's policy to ensure balanced development across the nation and MOE's NURI(New University for Regional Innovation) project.

The current government put balanced regional development high on the agenda, and since it took office in 2003, a series of institutional frameworks were put in place. Balanced National Development Act was set up in December 2003, followed by The First Five-Year Plan on Balanced National Development in June 2004. These measures demonstrate the government's commitment to take the national development to the next level by shifting the drivers of growth from input to innovation, redressing the regional imbalances and seek balanced regional development of innovation capacity. Their aim is to "ensure innovation-driven regional development based on Regional Innovation System." The RIS is about networking among innovators, sharing learning, creating and disseminating innovation and improving performance. The government's policy to ensure balanced development outlines 20 tasks in five areas. The five areas are Seeking Balance, Building New Capital, Promoting Innovation, Installing System and Managing Innovation. Of these areas, promoting HEI-regional involvement relates to Promoting Innovation and Managing Innovation. Major tasks in the area of Promoting Innovation are as follows: strengthen local governance by linking HEI-industry-research-local government and establishing a Regional Innovation Committee; develop local talents at HEIs; build universities focused on collaboration with the industry or R&D in the region; set up regional innovation clusters that link production with research functions. Major tasks in the area of Managing Innovation are: select leading groups tailored to regional priorities from each of the six components in RIS (local government, HEIs, SMEs, think-tanks, public organizations and industrial parks); disseminate the leading groups' success story in regional development and innovation; create learning regions; develop and train leaders and experts who can lead regional innovation and decentralization; host Regional Innovation Exhibitions, in which all six leading groups (roughly 1,000 organizations in total) can take part.

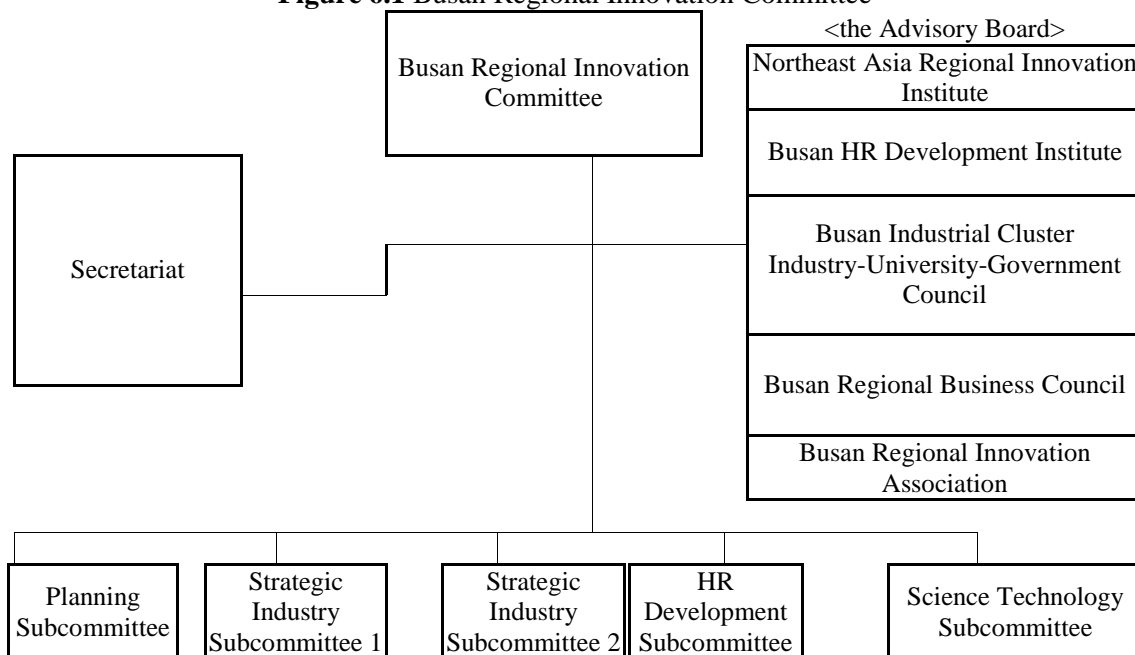
NURI project, which laid down the framework for HEIs to participate in the region and develop their talented resources, is MOE's crucial project to link HEIs with the community and was already introduced in Chapter 2. NURI selected participant universities through a stringent screening process in 2004. NURI is designed to help regions overcome stagnation and develop their education, economy and culture by tackling regional HEIs as they face the challenge of worsening competitiveness and lack of employment opportunities. The stated objective of NURI project is to strengthen specialization and competitiveness of local HEIs, to promote regional development by nurturing talented resources, and to lay the groundwork for the Regional Innovation System. To achieve these goals, the project focuses on educating and training human resources in specialized industries linked to regional development and employs

a bottom-up approach to develop experts. To ensure success, following strategies were adopted. Its implementation will be led by the region in a decentralized, bottom-up context, and balanced regional development will be considered in parallel with the principle of “selection and concentration.” Funding method has been improved from categorical grant to block grant and performance will be measured against key performance targets.

NURI project in Busan started in 2004 with the selection of 12 projects: two large-scale projects (operation cost KRW 3 to 5 billion), three mid-scale projects (operation cost KRW 1 to 3 billion) and seven small-scale projects (operation cost under KRW 1 billion). Large-scale projects were selected from Busan’s core strategic industries (port logistics, mechanical parts and materials, tourism and convention, film and IT), while mid- and small-scale projects were selected from a longer list of industries including six endogenous strategic industries (finance and futures, bio-marine, industry for the elderly, footwear, processed marine products, textile and fashion). Large-scale projects are: developing experts in digital film and video contents industry led by Dongseo University; and developing experts in knowledge-based port logistics led by Korea Maritime University. Mid-scale projects are: developing experts in finance, futures and insurance by Pusan National University; developing experts in film and CT by Kyungsoo University; and developing experts in ubiquitous IT industry by Dongseo University, Pukyong National University’s Marine Bio Food and Medicine Expert Human Resources Nurturing Team (newly decided in June 2005). Small-scale projects are: developing experts in marine industry by Pukyong National University; developing experts in health and medical care and laying the groundwork for innovative industry-university collaboration in education by Catholic University of Pusan; developing experts in marine industry by integrating educational infrastructure and building environment-friendly waterfront infrastructure and developing experts who can preserve and manage this by Korea Maritime University; developing international experts in knowledge, service and management, and developing Inno Value designers and ERP experts by Dongseo University. The central and local government has invested KRW 25,213 million and KRW 1,760 million respectively into the NURI project with matching funds by participating universities. With universities at the center, local government, businesses, think-tanks, NGOs and other stakeholders in regional innovation have come together to draw up the business plan, which is currently in the process of implementation.

The most prominent mechanism promoting HEI-regional involvement in Busan is Busan Regional Innovation Committee (BRIC). The Regional Innovation Committee has been installed in each of the 14 upper-level autonomous cities and provinces in the nation, with various stakeholders in regional innovation including regional businesses, universities, think-tanks, NGOs and civil servants on the Committees. BRIC has a secretariat and five subcommittees including Planning Subcommittee, Strategic Industry Subcommittee 1 (machinery, automobile, shipbuilding, bio-marine and footwear), Strategic Industry Subcommittee 2 (port, tourism and convention, film and IT, finance, industry for the elderly, processed marine food, textile and fashion), HR Development Subcommittee and Science Technology Subcommittee (Figure 6.1). Northeast Asia Regional Innovation Institute, Busan HR Development Institute, Busan Industrial Cluster Industry-University-Government Council, Busan Regional Business Council and Busan Regional Innovation Association make up the Advisory Board, forming an organization that involve and encourage collaboration among universities, government, businesses, professionals and NGOs. Administrative support to BRIC is operated by Busan government-invested organization called Busan Techno Park Planning Team. BRIC members total 189, with 65 coming from universities, 26 from government, 19 from businesses, 21 from economic and financial organizations, 16 from think-tanks, 16 from NGOs, 7 from local legislature, 10 from the press and nine others, demonstrating the strongest participation by university professors as the leader and expert on regional innovation (Table 6.1).

Figure 6.1 Busan Regional Innovation Committee



Note: Strategic Industry Subcommittee 1 : machinery, automobile, shipbuilding, bio-marine and footwear

Strategic Industry Subcommittee 2 : port, tourism and convention, film and IT, finance, industry for the elderly, processed marine food, textile and fashion

Table 6.1 Busan Regional Innovation Committee Members

parts	numbers	Members									
		businesses	HEI	think-tanks	economic and financial organization	local governments	local legislature	NGOs	Press	etc.	
totals	189(18)	19	65(4)	16(5)	21	26(4)	7	16	10	9(5)	
Busan Regional Innovation Committee	59(1)	4	19	4(1)	9	7	1	8	5	2	
Subcommittee	Total	130(17)	15	46(4)	12(4)	12	19(4)	6	8	5	7(5)
	Planning	26(6)	1	5(1)	3	3	5(1)	2	2	1	4(4)
	Strategic Industry 1	24(3)	6	4(1)	3(1)	4	3(1)	1	1	1	1
	Strategic Industry 2	30(3)	6	12(1)	2(1)	3	4(1)	1	1	1	
	HR Development	27(2)		14(1)	1(1)	1	5	1	4	1	
	Science Technology	23(3)	2	11	3(1)	1	2(1)	1		1	2(1)

Note: (): members counted double

BRIC HR Development Subcommittee and Busan HR Development Institute are ultimately responsible for planning, evaluating and supporting all HR related matters in Busan including

HR matters at universities. The Subcommittee deliberated and confirmed Busan's Regional HR Development Basic Plan and Action Plan after it was launched, and now plays a pivotal role in various areas of HEI-regional involvement.

For the integration and organizational improvement of region's national and public universities, a 'Busan Region National University Restructuring Committee' was formed in 2005 among national universities in the Busan region. Meetings were held between concerned persons, however no real results have been reaped so far.

1.2 Catalyst for HEI-regional involvement

Catalyst for HEI involvement in Busan's regional development was the government's policy to ensure balanced development across the nation and the NURI project, but even before these measures, HEIs in Busan had been involved in tackling regional issues in industry, economy, environment, urban development, social welfare, culture and other areas.

The general university evaluation authorization policy conducts a general evaluation of universities on a national level. Undergraduate schools are evaluated on six areas of 1. Management and Financial Status, 2. Development Strategy and Vision, 3. Education and Social Service, 4. Research and Business-Academia-Research Cooperation, 5. Student, Professor and Faculty, 6. Educational Environment and Support System. A total of 55 items are evaluated with an overall score of 500 points. On item 3. Education and Social Service, many of its contents are linked to the regional society, and on item 4. Research and Business-Academia-Research Cooperation, the cooperation links businesses in the regional society, so the relation between the university and the regional society is a very important in the general evaluation of universities. At the same time, most universities put importance on service to the regional society and business-academia cooperation results in evaluating promotions for university professors, hence promoting participation of HEIs in the regional society. Plus, active participation of universities in the regional society are publicized in the region's media resulting in induction of new students. So Busan's universities compete in this aspect to attract new students of outstanding qualities.

These HEI-regional involvements are strictly managed based on plans and documents. While progress management was based on looking at whether the project was executed as planned, performance-oriented management of the project is more common nowadays. Central and local governments' selection and evaluation of HEI-involved projects are often based on performance indicators, and sometimes whether to continue to the project is decided depending on compliance with the contract signed.

Dongseo University drew much attention by being selected more frequently than any other HEI on the NURI projects. The university was actively involved in 170 regional economic and industrial projects in 2004 alone other than the NURI project, receiving KRW 1.6 billion in total from outside.

1.3 Official and unofficial mechanisms to identify regional needs

It can be evaluated that Busan region's HEIs somewhat lack official mechanism and results in identifying the needs of the region.

HEIs in Busan can identify regional needs through official mechanisms like BRIC and the Subcommittees, and can identify regional needs for HR through Busan Development Institute

and other's research and projects.

Regional needs were identified for the establishment of Five-Year Plan on Innovation and Development of Busan and Busan Regional HR Development Basic Plan and Action Plan. For the former plan, quantitative and qualitative evaluation had been conducted on Busan's innovation capacity, potential and constraints and professors at most universities in Busan participated directly and indirectly in the planning process. According to the analysis of the regional needs, ten strategic industries were confirmed.

For the latter plans, HR needs in various areas were analyzed, and as a result, plans were drawn up in four areas of improving regional competitiveness, educating the link with regional community, adult continuing education, job creation and efficient HR management.

1.4 Examination of underlying knowledge resources

Underlying knowledge resources of Busan region was examined in the process of setting up Busan Regional HR Development Basic Plan and Action Plan. Busan HR Development Institute is responsible for basic research, database building and operation, planning, management and evaluation, and thus established database on Busan's regional human resource in 2004 and 2005. It also conducted a detailed examination into current status of industrial workforce supply and HR development in core strategic industries, developed HRD index and measures in Busan, and set up network among employment organizations. The researches gave an insight into the characteristics of regional HR by industry, the characteristics of HR supply and current status of innovative HR.

1.5 HEIs included in regional development plans as major components

Of the four areas in the Busan Regional HR Development Basic Plan and Action Plan, education to meet regional priorities not only covers industrial and technology education and talent spotting in primary and secondary education, but also covers latest technology education, outstanding graduate schools and HEI development. In detail, the Action Plan includes tasks like strengthening inter-HEI collaboration, supporting HEI specialized programs, increasing aid for female development programs in science and technology, training professionals through inter-HEI consortium, funding research of outstanding industry-university technology development and providing scholarship to science and engineering graduate school students.

Of the seven areas in the Five-Year Plan on Innovation and Development of Busan, HEI related projects are included in detail in development of regional HEIs and human resources, regional capacity building in science and technology, innovation capacity and network building.

1.6 Funding to promote HEI-regional involvement

Major support to promote HEI involvement in regional development is government funding. Examples of government-funded projects that have direct links with HEI are: MOE's NURI and Research-oriented University Development projects; MOCIE's Industry-University Collaboration project and RIS Pilot project; and other projects to specialize junior colleges, create regional R&D clusters, lay the industrial framework and develop regional science research parks.

MOE is providing specific help for regional human resources development. As of 2005, a total of 490 million KRW has been provided for 13 businesses to the Busan Metropolitan City.

Key businesses that have been conducted through the financial support of MOE were operation of Regional Human Resourced Development (RHRD) Consultative Body and Support Center, RHRD DB setup and operation, RHRD promotion, RHRD related various research forum operation support, RHRD index development, research on the status of human resources supply to Busan region's businesses, Academia-Business network reform for 100 businesses, High School-University Connected Credit Program Operation, employment support institution network setup and operation within the region, citizen academy education demand research, Busan region's strategic industry businesses' job offer status survey, RHRD public officials' workshop, OECD international cooperation project, etc.

Busan Metropolitan Government raises Busan Regional HRD Fund, and is also financing various HEI-regional involvement projects. 'BB21'(Brain Busan 21), a project networking Busan and successful ethnic Korean businessmen overseas, Regional Core Strategy Industry's HRD project, a project supporting science and technology department students, are some examples. Busan has spent a total of 1.223 billion KRW on seven businesses in 2005 from the human resources development fund.

1.7 Bilateral collaboration to promote HEI-regional involvement

There is no mechanism to legally enforce bilateral collaboration to promote HEI-regional involvement. Particularly in Korea, HEI has no legal responsibility towards the regional community and development of institutional framework was marginal. This is because the majority of HEIs in most regions are privately-funded, and most public HEIs are financed centrally rather than locally. That is why local governments are not legally responsible for supervising and funding HEIs. In Busan, however, HEI-regional involvement occurs through BRIC. Regional development plans also serve as a guideline and incentive for HEIs.

Relating to MOE's NURI and Research-oriented University Development projects, MOCIE's Industry-University Collaboration project and RIS Pilot project, RIC examines and evaluates the performance at the regional level. Therefore, local governments and think-tanks will support regional HEIs and projects so that they can receive good scores in the central government's examination and evaluation.

1.8 Official/unofficial mechanism to promote HEI-regional involvement

As noted earlier, the best example of official/unofficial mechanism to promote HEI-regional involvement is BRIC. Since August 2004, 4 General Committee meetings, 18 Subcommittee meetings, 5 professional lecture sessions, 4 seminars and workshops and 23 Regional Innovation Academy were held by BRIC, through which agenda items are set, modified and evaluated.

1.9 HEI access to regional infrastructure and vice versa

In government-funded projects, HEIs carry out various tasks in partnership with regional stakeholders and encourages them to participate. HEIs can use existing regional infrastructure, but usually it is the other way around, with HEIs providing businesses and NGOs with access to their infrastructure.

Pusan National University, Pukyong National University, Korea Maritime University, Dong-A University, Dongseo University, Silla University all provide access to Business Incubators and various R&D facilities for private companies or venture start-ups. Kyungsoo

University runs a company called CT Productions, through which outside parties can use CT related visual equipment and human resources.

2. Promoting regional dialogue & Joint marketing initiatives

2.1 Mechanisms for communications between HEI and regional stakeholders

There is no mechanism between HEIs and regional stakeholders to discuss HE itself, but presidents of HEIs participate in official meetings in Busan. BRIC is a case in point. On BRIC, President of Pusan National University serves as Chairman and President of Busan Employers' Federation and Busan's only local bank group serves as Vice-Chairman. Mayor of Busan and Chairman of Busan Metropolitan Council are all members of BRIC. Presidents of 10 out of the 13 universities in Busan are all on BRIC. HEI-regional involvement is therefore frequently on the agenda of BRIC.

An important institute for human resources development in the Busan region is the Busan Human Resources Development Institute (BHRDI), which was inaugurated in 2004 and designated and operated as the regional human resources development support center. BHRDI conducts researches, policy developments related to human resources development, but at the same time, it supports the human resources development department council within the regional reform council to indirectly oversee the communication mechanism between various bodies including HEIs.

As a council between HEIs, there exists a council of presidents of universities in Busan/Ulsan/Gyeongsangnam-do/ Jeju-do region. However, its operation is very loose and information exchange, discussions for matters on hand and exchange of views have been conducted in limited fields. But such council of university presidents are likely to develop into an active organization that will conduct active discussions, decision on subjects and its enactment for key issues.

2.2 Stakeholders taking part in regional dialogues

In Busan, there are many committees set up to work on regional development, in which experts and stakeholders jointly take part. In 2001, Innovation Research Committee was established to bring together all areas related to the city's development, which changed its name to Reinvent Busan Committee in 2005 that has forums and working groups. The Reinvent Busan Committee is served by representatives from the local government, NGOs, business and experts. Reinvent Busan Forum invites experts to regular seminars and events, and Reinvent Busan Working Group sets concrete agenda for Busan's regional development and focuses on research, analysis, program development by area.

BRIC is served by representatives from commerce, industry, business, think-tanks, the press and NGOs. Experts and working level representatives and of the local government, local agency of the central government, think-tanks, the press, business, commerce, industry and NGOs participate in relevant Subcommittees. Key issues on regional innovation and development are also discussed here, and different opinions can be reconciled.

BRIC Planning Subcommittee oversees overall planning and reconciliation; Strategic Industry Subcommittee 1 gathers opinions of stakeholders in machinery, automobile,

shipbuilding, bio-marine and footwear industries; Strategic Industry Subcommittee 2 collates views on port, tourism and convention, film and IT, finance, industry for the elderly, processed marine food, textile and fashion. HR Development Subcommittee and Science Technology Subcommittee discuss HRD and science technology issues respectively.

Busan Techno Park Planning Team works on industry and economy in partnership with researchers in areas of industry, universities, think-tanks and the government.

2.3 HEI representative's role in public/private organizations

Professors of HEIs take part in various meetings and organizations for regional development as experts, taking on a range of tasks from conducting R&D to setting policy directions to evaluating and monitoring projects to projecting results.

2.4 Regional stakeholders' role in the decision making process at HEIs

Regional stakeholders take part in the decision-making process at HEIs, usually as directors on the Board of Directors that discuss important policy and business decisions. However, decisions of outside stakeholders are have little force. Outside participation in various committees and boards at HEIs is not yet strong.

2.5 HEI-regional joint marketing initiatives

HEIs seldom engage actively with local government and businesses in PR campaigns relating to regional issues. However, HEIs participated in Korea Regional Innovation Exposition held in Busan and other government-led exhibitions in 2004 to promote regional innovation case studies and successful products.

Pusan National University won kudos for showcasing industry-university collaboration results jointly with Busan Metropolitan Government at the Korea Regional Innovation Exposition. It also successfully developed Busan International Machine Fair into a large-scale Exposition representing Busan.

3. Evaluating and mapping the impact of the regional HE system

3.1 Evaluating and using the impact of HEIs on regional development

Evaluation of the regional impact of HEIs is usually limited to short summary by the press. Some HEIs do go further, introducing and promoting success stories in the media.

Korea Regional Innovation Exposition, which serves as a forum for promoting regional innovation case studies, was held for the first time in Busan in 2004. The expo is scheduled to be held in a relatively close city of Daegu in 2005. HEI's successful innovation stories are often introduced in these types of exhibitions.

With the number of high school graduates becoming similar to the number of student places at HEIs, HEIs are increasingly competing with one another on student recruitment and focusing their efforts on promoting themselves as proactive and aggressive in drawing students. This sometimes leads to efforts to raise awareness of their role in regional development.

Catholic University of Pusan developed online and offline re-training programs for medical workers in the region in conjunction with Busan Metropolitan Government, Busan Health Environment Research Institute and four other medical institutions in the region. The university not only offered the education but also assessed its performance, which is a good example of HEIs evaluating their impact on professional areas and further contribute to regional development.

4. Institutional capacity building for regional involvement

4.1 HEI's leadership to meet regional needs

Many HEIs have set up strategies to specialize in 3 to 5 areas that best meet regional needs. This is in effect a steer by the central government to restructure quality workforce, but is an accurate and strategic response to the reality that diversification often hurts competitiveness. Centering around Busan's strategic industries, HEIs sometimes join hands but also fight hard for leadership.

Pusan National University, as one of the largest HEIs in Busan, has selected ten sectors including port logistics, mechanic parts and materials, finance, industry for the elderly and life industry, ethnic culture and anthropology, nano-electronic element, and construction-environment-urban studies to specialize in and respond efficiently to regional needs and take the lead in regional development.

Academic response to regional needs and leadership is also found in Silla University's operation of Busan Studies Research Center. By introducing regional studies on Busan, the university is conducting basic research in the region's history, culture, industry, economy, social structure and urban development and continues to accumulate in-depth academic results on the region. The university also successfully attracted RIS Pilot projects in developing human resources for bio-marine industry and the Northeast Asian business center, showcasing leadership as an HEI in the region.

Dong-eui University supports SMEs with technology through its Technology Transfer Center, and provides technology consulting through Industry-University-Research Joint Technology Development Consortium Center. Korea Maritime University is also exercising leadership through its Business Incubator and Consortium Group by developing and providing technology to relevant companies and helping resolve difficulties.

Bukyong National University has established a specialized strategy to fit the marine city characteristics of Busan. It is leading the marine bio field technology through the Nuri project in the field and the marine bio process research group.

4.2 Regional dimension in HEI's strategy to become more competitive

HEIs are adopting a platform to meet regional priorities and contribute to regional development. Even at the department level, HEIs are working hard to improve their curriculum to better meet regional demand for human resources.

4.3 Major communication channels between HEI and regional stakeholders

HEIs and regional stakeholders in Busan usually communicate through many regional

committees, but at times, albeit rarely, HEIs formulate consultative bodies with some companies.

They hold special lectures and seminars to deliver stakeholders' fieldwork experience and expertise more directly to their students.

Contact with regional stakeholders and collaboration efforts are often led by professors in relevant departments, but many HEIs are also using their DIUC to plan and organize those efforts. Dong-eui University is receiving valuable help by putting outside stakeholders in its Electronic Ceramic Center, University Fund-raising Committee, Employment Committee, BK21 Industry-University Collaboration Committee and the Board of Directors. Pukyong National University has set up Marine and Fisheries Innovation Cluster Committee to network all bio-marine related stakeholders dispersed around the region to actively exchange information for technology development.

4.4 HEI's internal mechanism to coordinate regional involvement

DIUCs in HEIs are designed to coordinate activities to better respond to regional priorities. The Division is a legal entity in accordance with Industrial Education and Academic-Industrial Collaboration Promotion Law to conduct education and research in partnerships with think-tanks, businesses and government organizations. Academic-Industrial collaboration stated in the above law is an activity in which the industrial education institute, the government, the regional government, government funded research institutes and businesses collaborate. It looks to nurture human resources that fit future industry developments, research and development to create and spread new knowledge & technology, technology transfer and business advice to businesses. The division manages research contracts, funding and intellectual property, raises awareness of governmental and regional research projects and provides overall administrative support on industry-university collaboration. It also manages income coming through government funding for national projects, commissioned researches, school enterprises, Business Incubators and Technology Support Centers.

4.5 Recruitment of more professional researchers

For expertise of regional involvement, professional researchers are recruited instead of general administrators. Universities selected in 2004 to lead or participate in NURI project have recruited many dedicated professors, research professors and professional researchers to focus on research. HEIs that participate in RIS Pilot project and other government-sponsored projects are also hiring dedicated professors.

4.6 HEI's reaction to regional ICT infrastructure

Rapid digitalization and IT development have made HEIs keener on adopting new IT from one another. Most HEIs cite new ICT infrastructure as the most important criteria in gauging competitiveness. To stay ahead of competition, many HEIs are taking full advantage of IT and other new technology in managing school affairs, R&D and PR, and networking with regional stakeholders.

In a bid to run Ubiquitous Campus, Tongmyong University has set up 54Mbps wireless internet network and RFID sensor network, and pilot tested IPv6 in 2005. Pusan National University has adopted new management technique to make administration more efficient by operating performance management consulting and building knowledge-based administration

system. Dong-A University has adopted new electronic payment system and eagerly pursuing to launch Ubiquitous Campus.

5. Human & Financial resources management

5.1 Regional dimension in HEI's HR management

All HEIs in Busan are working hard to meet the changing regional needs on HRD, specialization, R&D and many other fronts. However, few HEIs designate staff dedicated to regional involvement and offer professional training. Their activities are limited to dispatching a staff member to outside education of information sessions to acquire information.

Many HEIs reward faculty and staff for outstanding achievements in industry-university cooperation or R&D. Silla University provides incentives based on performance reviews to encourage competition among faculty members.

5.2 Central and local government funding management

In all HEIs in Busan, DIUC manages all funding from central and local governments, separately from the university's accounts in accordance with the Industrial Education and Academic-Industrial Collaboration Promotion Law. The key funds managed by the DIUC are contributions and subsidies from regional governments, revenue from academic-industrial collaboration contracts, profit from results of academic-industrial collaboration, money and article donations accepted by the DIUC, revenue from school business operation (national & public universities), other interest income and revenues.

Few DIUC are capable of running solely on their income generation business or collaboration with business, and most rely heavily on government subsidies.

5.3 New source of funding for HEI-regional involvement

Most funding for regional development is financed by the government, while university companies are showing improvements in financial autonomy and witnessing increasing support from the corporate sector. There is a clear shift in source of funding for HEI's regional involvement from the government to external and internal companies and various private funds.

5.4 HEI's access to new type of regional fund

Busan Metropolitan Government is the first government outside Seoul to operate HRD Fund, which is supporting various HRD projects. And since the new government came to office, MOE or MOCIE-funded regional innovation projects are on the rise.

6. Creating a new organization culture

6.1 Cultural obstacles to HEI-regional involvement

Busan is the second most populated city in Korea after Seoul, yet discrepancies in key resources are quite significant. Key resource distribution between Seoul and Busan stands at 8:2,

suggesting a heavy concentration of resources into Seoul and creating a “black hole” for Busan, which is losing both outstanding corporations and human resources to Seoul. It is difficult to find high-quality workers both from regional HEIs and labor market.

Inter-HEI governance for regional development and social capital are both weak, leading to insufficient incentive for collaboration.

To ride over these problems, central government is required to intentionally reduce concentration into Seoul, and Busan itself must strive to maintain competitiveness as a region. To this end, it is important for HEIs, local government, companies and NGOs to work together to put a governance in place, ensure all members benefit from the collaboration, and thus gradually expand the experience of social capital.

6.2 HEI-regional involvement in the mission of HEI

As recently as 20 years ago, HEI in Korea was an ‘ivory tower’ detached from but respected by society as a center for academic studies. However, it now has to be the society itself, and participate in the society’s development.

Conditions have changed dramatically to the extent that HEIs in Busan themselves recognize the need to respond to regional needs and take the lead in regional development. HEIs’ regional involvement carries significant to the point that their competitiveness depends on whether they are specialized enough to lead regional development and whether they have developed key human resources. These changes are raising the profile of HEI-regional involvement in performance review of professors and evaluation of departments.

7. Conclusion

The following can be suggested as key tasks in forming competencies for cooperation between HEI and regional bodies:

First, a council in which HEI, Busan Metropolitan City and regional stakeholders participate must be setup and operated for the cooperation of HEIs and regional bodies. The regional reform council is a council in which HEIs and regional stakeholders participate. However, it does not limit its focus on HEIs and handle general aspects of human resources development. Currently there is no body in Korea in which HEIs are officially linked to regional governments and regional bodies, and regional HEIs are not restricted by the operation of regional governments at all. This results in a very low policy responsibility towards the regional society by the regional HEIs. Given these limits, there needs to be a separate department for Busan university development within the regional reform council to focus on the development, utilization, increase in employment and active participation in the regional society of high quality human resources. At the same time, on top of a university presidents’ council of Busan/Ulsan/Gyeongsangnam-do/Jeju-do regions, a presidential council for Busan need to be operated to promote an active operation of regional HEIs.

Second, to promote participation of regional HEIs the regional government’s initiative and role must be strengthened in the evaluation and decision making process of various government run businesses within the region. The evaluation of various government run businesses in the region are currently to go through preliminary evaluations, but it is just a formality and has little bearing on the decision, hence does not provide real help. More real decision making authority

should be given to the council of regional government concerned parties within the region. Hence, the socio-economic effects of various government run businesses on the region should be evaluated and promoted by regional bodies who have, at the same time, authority and responsibility.

Third, there must be an active search and promotion for mutual subject for the regional society development between HEIs and Busan Metropolitan City. The aforementioned department for Busan university development within the regional reform council must be setup to actively seek and run projects linked to HEIs for the development of the region through the development of universities in the region. Also, key issues of the regional society must be relayed to university members through the council to expand the venue for mutual action. With such venues, a nurturing and operation plan for outstanding human resources must be setup through a review of industrial demand in the Busan region and relayed to universities. Effective human resources operation shall be accomplished through competition, cooperation, role division between universities.

Fourth, items to increase HEI competitiveness must be included in various plans in the region. The role of HEIs are reflected in various plans and human resources development plans by Busan, but it does not handle general issue of universities. Hence Busan needs to mention real and specific matters related to universities in all public sector plans, so to lead the promotion of the plan to be linked with university development.

Fifth, manpower to handle matters for the regional society within HEIs must be expanded for a detailed cooperation with the regional society. So far most universities have their constituents individually participating in regional issues and not acquiring information within the universities in a systematic manner. A department dedicated to collaboration between the regional society and the university should be setup and manpower allocated to play a more active role.

Sixth, a continuous effort by the central government must be made for an active participation of HEI in the regional society. The current administration has set the balanced development as a core national policy task and is promoting it, so it is very active in regional development than the former administration. But core functions are concentrated in the capital region as well as decent jobs, and the concentration of high quality human resources in the capital region is not improving very much. Such structural barriers cannot be overcome just by the efforts of regional government alone. A continued expansion of government's active efforts in foundation setting projects to nurture and utilize outstanding human resources is necessary.

Chapter 7: CONCLUSIONS: MOVING BEYOND THE SELF-EVALUATION

A structured research or evaluation on the “role of HEIs in regional development” in Korea has been scarce. In fact, this type of discussion singularly devoted to Busan has been practically nonexistent. In that regard, this self-evaluation report on the input of Busan HEIs in education, research, community service and other activities for regional development to date has huge significance in itself. Moreover, the peer review by international experts in this field and comparative study with other regions will be highly valuable.

This self-evaluation process confirmed that the incumbent administration’s strong drive to ensure balanced development across the nation and encourage greater devolution is having considerable influence on HE. Increasingly, the centrally-driven policy agenda is giving way to a system that involves more regional actors.

The government has enacted a law to install a Regional Innovation Committee in each region, and accordingly, the Busan Metropolitan Government has set up and is running a Regional Innovation Committee in Busan. Through this Committee, a range of regional innovation initiatives are already taking place. And with many HEI representatives serving on the Committee, it has been an opportunity for HEIs to take a greater interest in regional development and innovation than they did in the past.

What draws particular attention in the area related to HEI policy is the variety of measures encouraging HEIs to collaborate with regional businesses, government agencies and research institutes. The MOE’s New University for Regional Innovation (NURI) project is a case in point. This project paved the way for industries, universities, think-tanks and the government in a region to launch cooperative tasks.

Many HEIs in Busan are also taking part in the NURI project. It is true that the project has been in operation for just over an year now, and it is yet too early to discuss its performance. However, it is clear that the project allowed regional HEIs to engage far more actively with regional governments, businesses and other stakeholders. Apart from the MOE’s NURI project, Busan has recently seen a dramatic rise in the number of projects supported by other government ministries and the Busan Metropolitan Government. This is further raising Busan HEIs’ interest in regional development and innovation.

Like other regions in Korea, however, the regional contribution of HEIs is still small relative to other advanced regions in OECD countries. The increasing effort by HEIs in Busan to engage in regional development is still largely driven by the central government’s policy to redress regional disparities and promote decentralization, rather than by their own determination. Whether or not the HEIs actively work for regional development at their own will is bound to become a critical issue down the road.

At present Busan has numerous organizations that bring together the city’s government, companies, HEIs and other regional actors to share views on regional development. However, they are not as active as to discuss regional issues in depth and come up with a joint proposal. The challenge for regional actors in Busan is to build true partnerships not only on the outside but also in substance.

Representatives of HEIs in Busan also has a forum where they come together to exchange

opinions. However, their bond is fairly weak and thus, it is difficult to elicit joint efforts for regional development. Working closely with local governments and businesses is important, but further efforts must be made to build close links among HEIs for regional development.

The central government's policy on regional development clearly served as a trigger for Busan's HEIs to start engaging regionally. An increasing number of HEIs are developing human resources related to regional core strategic industries and conduct researches required by regional industries. These are positive developments not only for Busan but also for HEIs in Busan. Competition among HEIs in Busan on student recruitment and research funding do exist. HEIs must seek ways to enhance collaboration, while recognizing these competitive aspects.

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Appendix I

<Chapter 1>

Table 1.1 The Location of Universities at Busan

	Name of University	Location		Homepage
		Gu	Dong	
National Uni.	Busan National University of Education	Yeonje-gu	Geoje-dong	http://www.bnue.ac.kr
	Korea Maritime University	Youngdo-gu	Dongsam-dong	http://www.hhu.ac.kr
	Pukyong National University	Nam-gu	Daeyeon-dong	http://www.pknu.ac.kr
	Pusan National university	Geumjeong-gu	Jangjeon-dong	http://www.pusan.ac.kr
Private Uni.	Catholic University of Pusan	Geumjeong-gu	Pugok3-dong	http://www.cup.ac.kr
	Dong-A University	Saha-gu	Hadan2-dong	http://www.donga.ac.kr
	Dong-eui University	Busanjin-gu	Gaya-dong	http://www.deu.ac.kr
	Dongseo University	Sasang-gu	Churue2-dong	http://www.dongseo.ac.kr
	Kosin University	Youngdo-gu	Dongsam-dong	http://www.kosin.ac.kr
	Kyungsoo University	Nam-gu	Daeyeon-dong	http://ks.ac.kr
	Pusan University of Foreign Studies	Nam-gu	Uam-dong	http://www.pufs.ac.kr
	Silla University	Sasang-gu	Gwaebop-dong	http://www.silla.ac.kr
Tongmyong University	Nam-gu	Youngdang-dong	http://www.tit.ac.kr	

Table 1.2 Administrative District of Local Governments

(As of January, 2005)

Cassification Si · Do	Si-Gun-Gu					Eup-Myeon-Dong				Tong · Ri			Ban
	Total	Si	Gun	Gu		Total	Eup	Myeon	Dong	Total	Tong	Ri	
				Auto-no-mous	Non-Auto-nome								
Total	256	77	88	69	22	3,573	211	1,209	2,153	92,624	56,615	36,009	471,330
Seoul	25	-	-	25	-	522	-	-	522	13,759	13,759	-	103,192
Busan	16	-	1	15	-	226	2	3	221	4,803	4,673	130	27,801
Daegu	8	-	1	7	-	143	3	6	134	3,361	3,132	229	21,374
Incheon	10	-	2	8	-	139	1	19	119	3,832	3,576	256	20,834
Gwangju	5	-	-	5	-	90	-	-	90	2,282	2,282	-	10,715
Daejeon	5	-	-	5	-	79	-	-	79	2,722	2,722	-	13,204
Ulsan	5	-	1	4	-	58	4	8	46	1,388	1,068	320	9,071
Gyeonggi-do	47	27	4	-	16	516	31	114	371	15,061	10,983	4,078	83,890
Gangwon-do	18	7	11	-	-	193	24	95	74	4,007	1,833	2,174	20,485
Chungcheongbu	14	3	9	-	2	153	13	90	50	4,373	1,562	2,811	17,206
Chungcheongna	16	7	9	-	-	209	24	146	39	5,310	880	4,430	23,360
Jeollabuk-	16	6	8	-	2	251	14	145	92	7,831	2,790	5,041	23,846
Jeollanam-do	22	5	17	-	-	299	31	198	70	8,038	1,486	6,552	22,588
Gyeongsangbuk	25	10	13	-	2	338	35	203	100	7,729	2,620	5,109	38,408
Gyeongsangna	20	10	10	-	-	314	22	177	115	7,484	2,777	4,707	30,207
Jeju-do	4	2	2	-	-	43	7	5	31	644	472	172	5,149

Source : Statistical Yearbook (2005), MOGAHA

Table 1.3 Financial Self-support Index of Local Government by Si & Do

(Unit: %)

By Si & Do	Average by Si & Do(Net Budget Scale)	Special Metropolitan & Metropolitan City(Total Budget Scale)	Do(Total Budget Scale)	Si(Total Budget Scale)	Gu(Total Budget Scale)	Autonomous Gu(Total Budget Scale)
Average	56.20	80.30	36.60	40.60	16.50	44.30
Seoul	96.10	95	0	0	0	54.70
Busan	73.40	70.60	0	0	39.20	33.70
Daegu	73.90	72.60	0	0	31.20	32.50
Incheon	70	66.30	0	0	16.80	40.40
Gwangju	60.60	54.60	0	0	0	27.70
Daejeon	75	71	0	0	0	32
Ulsan	69.90	63.70	0	0	51.90	38.20
Gyeonggi-do	76.20	0	70.30	55.60	24.80	0
Gangwon-do	27.50	0	22.40	26.70	17.90	0
Chungcheongbuk-do	31.70	0	25.20	35.70	18.70	0
Chungcheongnam-do	32.70	0	29	30.90	17.90	0
Jeollabuk-do	25.10	0	17.90	26.50	12.90	0
Jeollanam-do	19.90	0	11.90	30.20	10.80	0
Gyeongsangbuk-do	29.60	0	22.40	30.80	15.10	0
Gyeongsangnam-do	37.50	0	29.80	39.80	14.70	0
Jeju-do	39.30	0	30.30	30	16.10	0

Source : Statistical Yearbook (2005), MOGAHA

Table 1.4 Internal Migration trends in Busan

(Unit: Person)

	In-migrants	Out-migrants	Net migrants	Net migration rate
1995	130,050	184,959	-54,909	-1.4
1996	134,682	181,927	-47,245	-1.2
1997	131,106	175,543	-44,437	-1.2
1998	131,217	172,138	-40,921	-1.1
1999	145,216	178,573	-33,357	-0.8
2000	129,904	173,598	-43,694	-1.1
2001	129,669	170,857	-41,188	-1.1
2002	136,814	186,256	-49,442	-1.3
2003	144,123	186,386	-42,263	-1.1

Source: National Statistical Office

Table 1.5 Health and Social Security in Busan

(Unit: Establishment, Person)

	Hospital	Medical Personnels	Beneficiaries of Health Insurance	National Pension Insurants
1995	2,756	19,420	3,407,949	427,742
1996	2,837	19,714	3,366,394	425,420
1997	2,956	20,234	3,330,130	412,178
1998	3,077	20,434	3,295,319	355,184
1999	3,258	22,136	3,243,565	1,319,296
2000	3,392	22,986	3,226,226	1,219,219
2001	3,591	24,162	4,158,743	1,215,431
2002	3,766	24,343	3,183,158	1,245,896
2003	3,834	25,559	3,202,870	1,280,459

Source: Busan Statistical Yearbook

Table 1.6 Distribution of The Employed by Occupation

(Unit: thousand, %)

		Total	Professions, Technicians & Managers	Clerks	Service Workers and Sales Workers	Skilled Agricultural and Fishery Workers	Craft, Machine Operators, Assemblers, and Elementary Occupations
1996	Busan	1,716 (100.0)	281 (16.4)	225 (13.1)	427 (24.9)	41 (2.4)	742 (43.2)
	Korea	20,853 (100.0)	3,544 (17.0)	2,630 (12.6)	4,713 (22.6)	2,218 (10.6)	7,748 (37.2)
1998	Busan	1,584 (100.0)	264 (16.7)	206 (13.0)	437 (27.6)	29 (1.8)	649 (41.0)
	Korea	19,938 (100.0)	3,748 (18.8)	2,481 (12.4)	4,712 (23.6)	2,284 (11.5)	6,712 (33.7)
2000	Busan	1,632 (100.0)	265 (16.2)	185 (11.3)	492 (30.1)	28 (1.7)	662 (40.6)
	Korea	21,156 (100.0)	3,942 (18.6)	2,512 (11.9)	5,500 (26.0)	2,115 (10.0)	7,087 (33.5)
2002	Busan	1,704 (100.0)	280 (16.4)	200 (11.7)	532 (31.2)	20 (1.2)	672 (39.4)
	Korea	22,169 (100.0)	4,262 (19.2)	2,822 (12.7)	5,796 (26.1)	1,964 (8.9)	7,325 (33.0)
2004	Busan	1,612 (100.0)	284 (17.6)	237 (14.7)	472 (29.3)	27 (1.7)	593 (36.8)
	Korea	22,557 (100.0)	4,631 (20.5)	3,188 (14.1)	5,643 (25.0)	1,700 (7.5)	7,395 (32.8)

Source: National Statistical Office.

Table 1.7 Employed Person by Educational Attainment(2004)

(Unit: %)

	Total		Male		Female	
	Busan	Korea	Busan	Korea	Busan	Korea
Primary School Graduates & Under	10.0	13.7	6.4	9.5	15.0	19.5
Middle School Graduates	14.2	11.9	12.8	10.9	16.2	13.3
High School Graduates	45.1	43.2	46.6	44.7	42.9	41.1
College, University Graduates & Over	30.8	31.2	34.2	34.9	25.9	26.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 1.8 Gross Regional Domestic Product and Per Capita GRDP

	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
GRDP (Billion KRW)	14,431	23,236	32,501	34,108	34,023	29,717	32,100	33,840	36,091	37,885	39,638
Increase or Decrease rate	-	10.1	12.1	4.9	-0.2	-12.7	8.0	5.4	6.7	5.0	4.6
Composition to whole country (%)	7.2	7.0	6.7	6.6	6.3	6.1	6.0	5.9	6.0	5.9	5.9
Per Capita GRDP (Thousand KRW)	4,106	6,118	8,349	8,793	8,803	7,733	8,378	8,876	9,533	10,110	10,680

Note: calculated on 2000 constant prices

Source: National Statistical Office KOSIS

<Chapter 3>

Table 3.1 Status of university research support policy per ministry and type

Support type	Ministry	Project
R&D	Ministry of Education & Human Resources Development	-Creation of academic research
	Ministry of Science and Technology	-Objective based research
	Ministry of Commerce, Industry and Energy	-Mutual core technology development project within the industry foundation technology creation project -Industry foundation technology creation project
Research base	Ministry of Education & Human Resources Development	-Priority support to engineering colleges -Graduate school priority fostering support -Financial support to outstanding industrial universities -Research oriented university -BK21
	Ministry of Science and Technology	-Space research center (SRC, RRC, MRC) -Regional research center (RRC) -National research center (NRC)
Facility, equipment	Ministry of Education & Human Resources Development	-Expand state university's facilities and equipments -Expand public and private university's facilities and equipments -Develop engineering university research center's equipments
	Ministry of Science and Technology	-Promote specialization
Personnel	Ministry of Education & Human Resources Development	-NURI -Support post doctoral course -Specialization of international experts -Specialization of regional universities
	Ministry of Science and Technology	-Support post doctoral research study
Industry-academia cooperation	Ministry of Science and Technology	-Engineering professors working at industry sites
	Ministry of Commerce, Industry and Energy	-Industry-academia-research mutual research consortium -Technology business incubator (TBI) -Technology innovation center (TIC)
	Ministry of Education & Human Resources Development	-Industry-academia cooperation focused university

Table 3.2 International comparison of R&D expenditure by user group

(unit: %)

classification	Korea ('01)	USA ('00)	Japan ('99)	Germany ('00)	France ('00)	U K ('99)
Public research institution	13.4	11.1	14.5	14.6	19.3	12.1
- National	2.2	7.5	9.9	13.4	17.8	10.7
- Nonprofit	11.2	3.6	4.6	-	1.5	1.4
University	10.4	13.6	14.8	16.1	16.7	20
Corporation	76.2	75.3	70.7	70.5	64	67.8

Source: OECD, Main Science and Technology Indicators, 2001/2

Table 3.3 R&D expenditure by region

(unit: %)

Year	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan	Gyeonggi-do
1999	19.12	1.57	2.47	4.09	1.23	14.61	1.89	36.12
2000	32.74	1.73	1.38	3.65	1.45	14.29	2.13	24.57
2001	22.27	1.34	1.48	2.68	1.1	12.36	1.68	37.73
2002	22.51	1.46	1.56	2.49	1.35	12.8	2	36.47
2003	19.29	1.74	1.21	3.05	1.33	12.57	1.67	42.78
2004	17.95	1.68	1.16	3.97	1.16	11.47	1.68	43.39

Source: MOST

Table 3.4 Main innovation capability index by major cities

Classification	Korea	Seoul	Incheon	Daejeon	Busan	Daegu	Gwangju	Ulsan
Per capita GDP(thousand)	11,073	11,070	9,975	9,051	8,651	7,235	8,849	25,534
R&D expenditure(million)	3,336	3,472	1,670	14,129	572	940	1,281	2,556
Number of researcher	37.1	51.1	20.7	127.9	17.0	16.2	20.6	27.2
Equipment (2003.8)	391.2	356.0	35.1	3,989.8	398.0	208.3	356.9	78.9
Patent	4.5	8.0	3.6	7.4	0.9	1.3	1.9	0.9
SCI	2.6	4.8	1.3	14.5	1.7	1.4	4.0	0.5
Teaching staff	24.0	24.7	14.8	38.3	27.3	19.9	38.2	22.1
University graduate (2002)	56.8	49.8	37.5	93.7	62.5	54.9	102.9	33.0
Venture business	1.8	3.5	1.6	2.8	0.9	1.4	0.8	0.6
Government R&D(million)	854	1,132	390	7,752	243	397	833	117

Source : Park Dong Bae(2003), STEPI

Table 3.5 Busan · Ulsan business-university R&D consortium

(unit : a case , %)

Year	Korea		Busan		Ulsan	
	Number of Firms	project	Number of Firms	project	Number of Firms	project
1993	328	264	43(13.1)	45(17.0)	18(5.5)	18(6.8)
1994	767	568	89(11.6)	90(15.8)	18(2.3)	18(3.2)
1995	969	716	91(9.4)	91(12.7)	15(1.5)	15(2.1)
1996	1,012	960	138(13.6)	138(14.4)	17(1.7)	19(2.0)
1997	1,161	1,117	148(12.7)	148(13.2)	24(2.1)	24(2.1)
1998	1,286	1,241	105(8.2)	105(8.5)	17(1.3)	17(1.4)
1999	1,474	1,420	154(10.4)	153(10.8)	17(1.2)	17(1.2)
2000	1,870	1,795	172(9.2)	171(9.5)	19(1.0)	19(1.1)
2001	2,554	2,327	208(8.1)	208(8.9)	29(1.1)	29(1.2)
2002	2,787	2,611	242(8.7)	240(9.2)	39(1.4)	39(1.5)

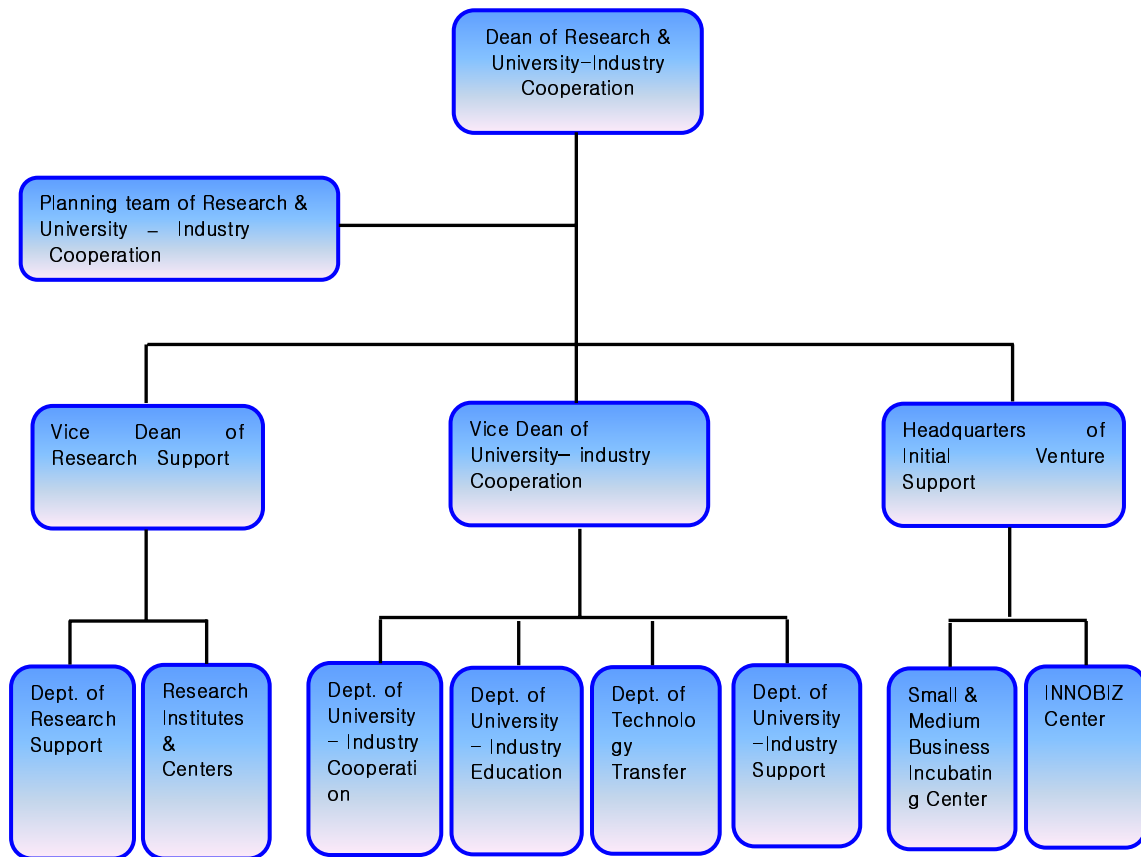
Source: Busan·Ulsan Small and Medium Business Administration(Busan·Ulsan SMBA)

Table 3.6 Research Capacity of Pusan National University

R&D Budget [F.Y2005]	
• US\$ 66 Million	
Research Institutes	
• Engineering	20
• Natural Science	17
• Business & Economics	8
• Humanity/ Social Science	17
National Projects in PNU [2004-2005]	
• Number of National Projects: 12	
• Budget: US\$ 16 Million(2004), US\$ 20 Million (2005)	
• New University for Regional Innovation [NURI, 5 Years]	• Bio-IT Foundry Center [5 Years]
• Industrial-Academic Cooperation Centered University Project[5 Years]	• Research Center of Logistics Information Technology [10 Years]
• School Base Enterprise [3 Years]	• Earthquake & Vibration Research Center[5 Years]
• Grant for Priority Research Institutes [5 Year]	• Medical Research Center [MRC, 9 Years]
• Regional Innovation System [3 Years] -MEMS	• Radiation Technology Project [3 Years]

Source: DIUC, Pusan National University

Figure 3.1 Organizational Structure of DIUC, Pusan National University



Source: DIUC, Pusan National University

Table 3.7 Status of government industry-academia cooperative projects (2003)

(unit: 100M KRW)

Min.	Personnel	Technology development	Technology transfer/training	Business start up support	Total
MOE	Foster graduate school research centered universities (1,400) Diversification, specialization of technical colleges (1,646) Foster regional universities (600) Promote industry-academia cooperation (20) University faculty training at industries (6)				3,672
MOCIE	Foster industry technicians (551) Foster regional R&D personnel (201)	Develop industry reform technology (2,599) Develop specific field technology (2,847)	Industry-academia mutual research (926) Techno park (400) Regional technology innovation center (300) Practical use of new technologies (150) Technology transfer and commercialization (81) University industry technology support team (20)	Technical business incubator (200)	8,275
MOST	New researcher study aid (100)	Regional cooperation research center (291) Develop specific researches (868) Outstanding research center (652)	Support practical use of research results (80)	Support new technology business start up (6)	1,997
MCT	Public academy (152) University specialization department support (40)	Cultural industry cluster (150) Cultural contents technology development (80) Cultural prototype digitalization (70) Game technology research development (18)		Venture business management support (6) Star project support (35) Pilot program production support (18)	569
MIC	Curriculum reform support (120) Secure IT professors (49) Support expansion of IT internship (11) SCM model implementation and operation (17)	University IT research center (315) Promote soft town (139)	Promote technology transfer and business (16)	Regional S/W support center (66) IT start up support center (13)	746
SMBA	Remote technology training (10) SME site experience (40)	SME technology reform development (1,101) Industry-academia-research consortium (341)	Technology instruction university (30) University technology transfer center (5)	Business incubator center (216) Start up clubs, lectures (45)	1,788
ME		Develop next generation core environment technology (750)			750

MOHW		R&D health and welfare technology (430)			430
MAF		Develop agricultural technology (420) Mutual research of agricultural technology (259)			679
MOCT		Industry-academia-research mutual research of core construction technology (300)			300
Total	4,963	11,630	2,008	605	19,206

Source: Presidential Committee on Balanced National Development (2003)

Table 3.8 Comparison of difference between conventional industry-academia cooperation and the new industry-academia cooperation

	Conventional cooperation	New cooperation
Basic concept	Supplier centered	Demand centered
Support level	Partial support per project/ college/ department	University level comprehensive support
Participation level	Minor (per professor/task)	Comprehensive (student/professor/industry personnel)
Cooperation purpose	R&D focused	Practical use/merchandising focused
Training	Theory/research focused	On site work/training focused

Source: *New Industry-Academia Cooperation*, Presidential Committee on Balanced National Development (2004)

Table 3.9 Key support projects for industry-academia cooperation focused universities

Key projects	Contents	Level
Technology development, instruction and transfer with regional businesses	-On demand R&D center support center installation and R&D cost, etc.	Within 40%
Purchase of research equipments to support the usage of regional businesses	-Common equipment support center establishment, common equipment search application service setup, etc.	Within 40%
Business expenses and operating expenses for business support system reorganization	-Family business (exclusive professor per business), industry-academia cooperation committee, etc. -Specialization department reorganization, contract based department, on site credit system support. -Introduce an exclusive professor for industry-academia cooperation, expand personnel exchange between university-industry. -Provide meeting spots, various seminars and special lectures, web services, etc.	Within 40%
Expense support to foster personnel needed for regional businesses	-Specialized education course for industrial complex business employees, and etc. -Scholarship, research funds for outstanding students and Master and Doctoral courses to promote mutual project and research development with businesses.	Within 20%

Source: SMBA

Table 3.10 Technology transfers of universities in Busan region

	Location of businesses			
	Overseas	Busan	Ulsan. Gyeongsangnam-do	Other domestic regions*
1996				
1997				
1998				2
1999				
2000		1		2
2001		1		1
2002		7		1
2003		10	6	8
2004		6		4
2005	1	4	1	2
Total	1	29	7	20

Note: * 'Other domestic regions' refer to institutions in Korea apart from those in Busan, Ulsan and Gyeongsangnam-do regions. Five universities did not give answers. The results have been officially confirmed with the Universities, but does not include personal technology transfers by professors, hence can be regarded as an underestimate.

Table 3.11 Overall R&D projects in Busan

(unit: case, 10M KRW, %)

Category	Total	Pure R&D	Infrastructure setup	Personnel fostering	Others
Cases	120 (100.0)	44 (36.7)	32 (26.7)	33 (27.5)	11 (9.2)
University R&D	72 (100.0)	34 (47.2)	9 (12.5)	28 (38.9)	1 (1.4)
Total working expenses	15,398 (100.0)	3,751 (24.4)	6,202 (40.3)	4,692 (30.5)	753 (4.9)
University R&D	7,095 (100.0)	2,265 (31.9)	938 (13.2)	3,639 (51.3)	254 (3.6)
2005 working expenses	2,736 (100.0)	605 (22.1)	1,053 (38.5)	957 (35.0)	120 (4.4)
City expenses	699 (100.0)	46 (6.6)	393 (56.2)	230 (32.9)	30 (4.2)
University R&D	1,321 (100.0)	330 (25.0)	169 (12.8)	774 (58.6)	48 (3.6)
City expenses	118 (100.0)	38 (31.9)	26 (21.8)	49 (41.7)	6 (4.7)

Source: Busan Metropolitan City

Table 3.12 Busan's R&D activity supported by central government

(unit: case, 10M KRW)

Category		No.	Amount	Category		No.	Amount
MOCIE	Regional business	6	965	MOST	NRL	16	184
	RIS	6	163		MRC	2	244
	RRC	4	513		ERC	1	198
	TIC	3	457		ABRL	1	100
	Industry foundation	3	256		Others	2	53
	Others	6	699		Sub total	22	778
	Sub total	28	3,053		NURI	13	1,890
MIC	ITRC	1	52	MOE	Technical college specialization	7	496
	Media device	1	328		Industry-academia cooperation focused universities	2	441
	Sub total	2	380		BK21	2	582
MOGAHA	3	53	Regional research focused		1	108	
MOHW	3	185	Others		1	14	
SMBA	3	664	Sub total		26	3,531	
Busan City	33	6,754	Total		120	15,398	

Note: projects funded by Busan City are all included to Busan City

Table 3.13 Busan · Ulsan SMBA's industry-academia-research connection support projects (2003)

Tasks	Content of support	No. of businesses	Amount	Remarks
Industry-academia-research consortium status	Utilize technology development resources at universities and research institutes to support technological difficulties at SME worksites with fragile technology base, funded through local government and matching funds.	16 universities, 263 businesses	2,500M KRW	'99~'03 1,144 businesses, 10,252M KRW
Triangle of Technology Assistance for SMES (TRITAS)	Utilize high-quality (professor) and potential (Master, Doctoral courses) personnel from universities to visit SME work sites to counter technological difficulties, promote management reforms, and provide opportunities for undergraduates to have on site experience and job opportunities.	9 universities, 159 businesses	260M KRW	'00~'03 582 businesses, 914M KRW
Setup comprehensive system to support SMEs	Create DB of various support projects and expert personnel, test equipments to provide systematic information for the industry-academia-research cooperation between universities-research centers.	Underway		
University technology transfer center	Setup and operate an exclusive department within universities for technology transfer to make it easy for SMEs to utilize transferable technologies held by universities.	Donggeui university, Ulsan university	50M KRW	45consultations, 4 transfers, 413 DB management technologies, 75 industrial properties

Note: includes Busan and Ulsan regions

Source: internal data from Busan-Ulsan SMBA, 2003

Appendix II

<Questionnaire to Universities in the Busan Region for the OECD International Project>

□. Questions related to the University's employment rate

1-1. What region's high schools did your new students come from for the past ten years.

<Regions for new students' high schools>

unit: person

High School Region	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Busan										
Ulsan										
Gyeongsangnam-do										
Seoul										
Incheon										
Gyeonggi-do										
Daegu										
Gyeongsangbuk-do										
Daejeon										
Chungcheongnam-do										
Chungcheongbuk-do										
Gwangju										
Jeollanam-do										
Jeollabuk-do										
Gangwon-do										
Jeju-do										
Total										

1-2. Please state the paths your university's graduates took for the past ten years.

<Paths upon graduation>

unit: person

	Graduates	Employed	Graduate School	Military Service	Unemployed	Unknown	Employment Rate (%)
1996							
1997							
1998							
1999							
2000							
2001							
2002							
2003							
2004							
2005							

Note: employment equation = employed/[graduate-(graduate school+ military service)]×100(%)

□. Questions on the University's make-up

2-1. State the number of your university's faculty members and students (as of April 1st of each year).

<Changes to the number of faculty members and students>

unit: person

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Professors										
Staff										
Undergraduates										
Graduates (sub total)										
Common Graduate school										
Technical Graduate school										
Special Graduate school										
Total										

Note: please state the same number you've submitted to the Ministry of Education.

2-2. Professor make-up.
(as of April 1st of each year)

<Professor make-up>

unit: person

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Age limit track professors										
Non age limit (contract) track professors										
Sub total										
Full professor										
Associate professor										
Assistant professor										
Full-time lecturer										
Part-time professor										
Part-time lecturer										
Sub total										

2-3. Comparative importance of education and research functions of your university. Please check in the relevant box.

	Education more important	Similar importance	Research more important
Past			
Present			
Future			

□. Questions on the role of university's research to regional development.

3.1. Aspects of university's researches satisfying region's needs and demands

3-1-1. How much regional characteristics (including industrial characteristics) and needs are reflected in your university's overall research policies and research promotion plans? (check relevant box)

Not reflected	Slightly reflected	Average	Much reflected	Fully reflected

3-1-2 State what regional considerations (reflecting regional characteristics or needs) your university give in planning/promoting your university's research policies and research promotions. (attach relevant data if possible)

3-1-3 How much importance do you give to regional partners that you consider in your researches' regional aspects (reflecting regional characteristics and needs). Check relevant box (add any other partners than given).

	Not considered	Slightly considered	Average	Considered much	Fully considered
Regional business					
Regional government					
Regional research institute					
Regional media/civic group					
Other universities in the region					

3-1-4 Introduce how your university has formed relations with each of the above given partners (attach relevant data if possible).

3-1-5 Questions on examples of your university's technical transfer

1) Does your university have a system that handles external technical transfers from the university? Give a brief introduction, if there isn't any such system, leave the space empty. (attach relevant data if possible).

2) State the number of external technical transfers from your university for the past ten years (attach relevant data if possible).

(please state even if it's just a single case)

	Location of business for transfer			
	Overseas	Busan	Ulsan·Gyeongsangnam-do	Other domestic region*
1996				
1997				
1998				
1999				
2000				
2001				
2002				
2003				
2004				
2005				
Total				

* 'Other domestic regions' refer to institutions in Korea apart from those in Busan, Ulsan and Gyeongsangnam-do regions.

3-1-6 How does your university create an environment to fulfill the needs and demands for actual technical reform that comes from specific groups in the region such as SMEs (including all partners such as businesses, regional governments, and regional research institutes, etc.)?

- 1) Do you provide specific services to link regional research demands and your university's research personnel? If so, state the organization in charge.
- 2) State in detail any other system that helps your university's research satisfy the region's research demands more effectively.
- 3) What roles do institutions related to technologies and reforms (such as Busan Technopark, etc.) apart from universities in the region play in providing services and operating systems that help your university's research satisfy regional demands more effectively? State in detail any cooperative relation or help received.

3-1-7 Introduce your university's systems to promote or reward region based research ('region based research' is a concept that is contrast to "basic" knowledge created for domestic/international university, and means utilization of pre-established knowledge on the regional society. Region based research refers to service researches and industry-university cooperation tasks which have been traditionally been excluded from academic journals and peer reviews).

3.2. Environment to increase research and reform

3-2-1 Are you satisfied with the support function of national legal framework (intellectual property laws or Ministry of Education regulations, for example) to your university's research-reform function (including research-reform partnerships with the industry) (Check relevant box).

Very unsatisfactory	Mostly unsatisfactory	Average	Mostly satisfactory	Very satisfactory

3-2-2 From the views of universities, researchers, and industry (from the university's point of view), state the promotional aspects and impeding aspects of your university's industry- university cooperation.

	Promotional aspects	Impeding aspects
University		
Researcher		
Industry		

3-2-3 Introduce what methods and systems (or programs) your university has to promote the industry-university cooperation in a broad term including knowledge transfer between university researchers and regional industry (a detailed explanation, if a successful method is something that is unique to your university).

3-2-4 Introduce any national, regional, Busan city's policies that lead or recommend strengthening your university's industry-university cooperation.

3-2-5 State any requirements for mutual participation or exchange cooperation with regional partners (industry, local government, other universities or research institutes, etc.) on financial supported projects by the central government or the regional government related to industry-university cooperation research and mutual exchange of researchers between industry and university that is currently in progress or has been carried out by your university for the past ten years (or as long as data exists). (i.e. policy details or programs related to research development programs or regional promotion projects by MOCIE, MOST, MIC, etc., or center projects such as RRC TIC, etc., recent RIS pilot project, Busan city related industry- university researches, etc.)

Project	Support Department	Cooperation related aspects with other partners (participation, exchange, etc.)

(additional items to be added)

3.3. Point of promoting knowledge utilization and transfer

3-3-1 What mechanisms (including systems or programs) do you have to commercialize your university's research base and promote technology transfer between your university and the regional society (business)? And what efforts has your university made in promoting such mechanisms. Give answers in the table below. (if any, introduce your university's special mechanism other than given in the table)

Mechanism (system)	Existence		university's efforts to promote the mechanism
	Yes	No	
Advice and support services related to research contracts			
Registration/transaction of intellectual property (patents, etc).			
Campus enterprise inauguration (research lab inauguration)			
Business incubators			
Providing space/manpower/equipment for businesses within the campus (science park)			
Technical education/training for businesses			
Exchange of research personnel between industry-university (including invitation of industry personnel)			
Others (the university's original system or program other than stated in the table)			

3-3-2 What roles have each of the central government, regional government, universities, regional research institutes and the industry have played in creating the above seven mechanisms?

Mechanisms (system)	Roles of entities in creating mechanisms				
	Central government	Regional government	University	Regional research institute	Industry
Advice and support services related to research contracts					
Registration/transaction of intellectual property (patents, etc).					

Campus enterprise inauguration (research lab inauguration)					
Business incubator					
Providing space/manpower/equipment for businesses within the campus (science park)					
Technical education/training for businesses					
Exchange of research personnel between industry- university (including invitation of industry personnel)					
Others (the university's original system or program other than stated in the table)					

3-3-3 Give a detailed introduction of mechanisms (including systems or programs) that were mutually (in union) created with other universities to commercialize your university's research base and promote technology transfer between your university and the regional society (business).

3-3-4 Introduce regional mechanisms (systems or programs) that will spread the word to the wider audience about your university's R&D and reform promotion efforts, including partner companies under contract with your university (i.e. exhibitions, contests, periodic demonstrations, mass media, regional website, etc.)

3.4. Conclusion

3-4-1 Give an overall evaluation on the following five items related to the role of researches on regional development (reform). (1) inter-regional university cooperation, (2) cooperation between universities and businesses, (3) cooperation between universities and regional governments, (4) cooperation between universities and research institutes, (5) cooperation between universities and higher education bodies other than universities.

University's cooperation partner	Level of cooperation				
	Very weak	Mostly weak	Average	Mostly fine	Very fine
Other universities					
Businesses					
Regional governments					
Research institutes					
Technical colleges					

3-4-2 Briefly suggest your university's SWOT analysis related to the contributions of research on the regional development (reform) in the Busan region.

Strength		Weakness	
1.		1.	
2.		2.	
3.		3.	
Opportunity		Threat	
1.		1.	
2.		2.	
3.		3.	

□. Questions on the role of professors' education towards the labor market and skill training

4-1. Localization of curriculum

4-1-1. If your university has established a curriculum that reflects the needs of Busan region's various traditional aspects such as industry·economy·society·culture, state the curriculum of the most representative college, department, or major. Plus state the level of regional relativity your student's consider in choosing their courses (lowest consideration to regional relativity to be 1, highest to be 5 with 2-4 in between).

College·Department·Major	Region related course	Content
		1) Curriculum 2) Student's preference toward region related course [1 2 3 4 5]
		1) Curriculum 2) Student's preference toward region related course [1 2 3 4 5]
		1) Curriculum 2) Student's preference toward region related course [1 2 3 4 5]

4-1-2. If your university is operating a specialized and individualized education programs in the regular curriculum for the development of the Busan region, give examples.

Education program	Content

4-1-3. If your university has setup a special department or operated an education course (i.e. customized curriculum) to foster the students' capacities while focusing on the development of the Busan region, give examples.

4-1-4. If your university has a department in charge of learning contents specializing process to fit the characteristics of the Busan region (related committees, education or employment related departments, etc.), state in detail the role of the departments.

Committee·Department	Course	Role and performance

4-1-5. Questions on your students' level of regional relativity.

1) State the level of students with residential facilities (dormitory, home, boarding, self-boarding, etc.) within the Busan region.

Category	Percentage
Living within the region (number of students in dormitories)	_____ % () persons
Living outside the region	_____ %

* percentage of students living within the region + percentage of students living outside the region = 100

2) State the level of volunteer activity within the Busan region by your students.

Category	Volunteer activity	Number or percentage of volunteer activities
Within		
Outside		

* percentage of volunteer activities within the region + percentage of volunteer activities outside the region = 100

4-1-6. If your university has a system or a department that monitors extra curricular activities (volunteer activities, field training, internship, and etc.) and recognizes them as credits, give examples.

Extra curricular activities	Content (system)	Given credits	Department

4-1-7. If your university's graduate course has special programs or institutions (i.e. technical graduate school, special graduate school, CEO course, etc.) that satisfy the needs of the regional society (through technology transfer or fostering of high quality personnel, etc.), give examples (i.e. recognizing industry personnel's as professors in Britain, doctoral course industry program in Denmark).

Program·Institutions	Content

4-1-8. If your university is voluntarily associating or combining with other universities to share the expertise and the knowledge related to key areas of the region such as Busan region strategic industry and etc. give examples.

Activities	Contents

4-2. Student admission and employment within region

4-2-1. If your university has any special systems, or strategies, or activities to increase the competitiveness of student admission by increasing the number of students applying from the Busan region, or the Ulsan/Gyeongsangnam-do region, or other region, give examples.

Region	Contents
Busan	
Ulsan /Gyeongsangnam-do	
Others	

4-2-2. If your university is operating a student capacity control system in partnership or in mutual cooperation with other universities to manage the student induction and admission within the Busan region, give examples.

University	Contents

4-2-3. If your university makes any effort to collect regional labor market information for the employment of your graduates, give examples. If any interested parties within the region are involved in this process, give detailed introduction.

4-2-4. If your university has special policies or plans to support business startups and business management to allow graduates to stay in the region and expand employment of graduates', give examples.

Education program	Content

4-3. Increased lifelong education and continuous expertise development and training

4-3-1. If your university is making efforts towards lifelong learning (continuous education) and continuous expertise development, give detailed education program examples (i.e. culture courses for adults, continuous education, training to develop expertise that has been specialized to fit regional requirements).

Education program	Content

4-3-2. If your university has established an independent education institute in the off campus (i.e. social education centers, lifelong education center and education centers operated independently) to provide expert education towards lifelong learning for the people in the region, give examples.

Education institute	Education program	Content

4-3-3. If your university has making efforts to satisfy demands for lifelong education and training in the region together with a regional partner (i.e. other universities, local governments, public organizations, etc.), give examples and detailed accounts of the cooperation.

Regional partner	Education program	Cooperation

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4-3-4. If your university has any special systems or organizations to extend the opportunity for higher education to those traditionally neglected from higher education (i.e. ethnic minority, readmitted adult learner, challenged learner, aged, etc.), give examples.

4-4. Changes to education service communication method

4-4-1. If your university has any systems or organizations for a more flexible education service communication to your regular students (i.e. satellite campus, online lectures, scholarship recognition network, video lectures, cyber lectures, credit bank system, timework student registration, etc.), give examples.

System·Organization	Content

4-4-2. If your university provides a new form of education service based on IT technology (online lectures, scholarship recognition network, visiting education center to the neglected, cyber lectures, credit bank system, timework student registration, etc.) to provide education opportunity to more learning groups (incumbent, elderly, unemployed, housewives, poor, challenged, etc), give examples.

Education service	Subject	Content

4-4-3. Describe, in your university, how the classroom oriented education service communication method and the virtual form education service communication method (i.e. online lecture, cyber lecture, video lecture, etc.) effect each other, and the problems they cause.

4-5. Regional education system improvement

4-5-1. If your university has any visions to setup education systems to contribute to the regional society, give description.

4-5-2. If your university has done any relevant data analysis to identify the supply and demand of higher education ‘products (courses, education programs, etc.)’ within the region, give description.

4-5-3. If your university is operating credit recognition (exchange) system with any other universities in the region, give details accounts.

University	Credit recognition

4-5-4. If your university is cooperating with any universities or technical colleges within the region on teaching, learning, student admission and employment, give description. If any cooperation is being made in other areas than the four key areas, give additional description.

Cooperation field	Cooperating university	Cooperation
Teaching		
Learning		
Student admission		
Employment		

4-5-5. Give a SWOT analysis on the areas of teaching, learning, student admission and employment that is compared to the region. Give further SWOT analysis for other areas that are thought to be important (weaknesses and threats are not announced for individual universities).

Category	SWOT	Aspects
Teaching	Strength (S)	-
	Weakness (W)	-
	Opportunity (O)	-
	Threat (W)	-
Learning	Strength (S)	-
	Weakness (W)	-
	Opportunity (O)	-
	Threat (W)	-
Student admission	Strength (S)	-
	Weakness (W)	-
	Opportunity (O)	-
	Threat (W)	-

Employment	Strength (S)	-
	Weakness (W)	-
	Opportunity (O)	-
	Threat (W)	-
	Strength (S)	-
	Weakness (W)	-
	Opportunity (O)	-
	Threat (T)	-

□. **Questions on your university's contribution towards social-cultural-environmental development**

<Social development>

5-1. Does your university open the facilities and provide expert support to the regional society in the following areas of social service (advice and support)? (add any fields not included)

< Social service fields and contents >

Fields	Key facility opening	Advice and expert support	Remarks
Health and hygiene			
Welfare related			
Culture exchange			
Regional people			
Religious support			

* If your university is focusing on any of the above fields related to regional social service, give a brief introduction of its progress and results up to date and attach relevant data (give question number on the attached data).

5-2. How does your university partner with the regional society in order to communicate the above social services? (if your university has a model case of partnership for a periodic or ordinary mutual project, give around half an A4 sheet introduction).

<Cultural development>

5-3. Does your university provide diverse support services such as facilities, expertise, education programs to the region's cultural groups? If so, give a brief statement in the below table (add additional groups if necessary).

<Support service to regional cultural groups>

Regional culture (civic) groups	Key facility openings	Expertise support	Key education programs

1.			
2.			
3.			

* If there's a model case from the above given items that your university is focusing on, give a brief introduction of its progress and results up to date and attach relevant data (give question number on the attached data).

5-4. How does your university contribute to the regional sports development? (give around half an A4 sheet introduction of type of sports such as baseball, basketball, etc., and methods of contribution and key achievements to the development of the sport in the regional society).

5-5. How does your university support the region's art society through self infrastructure, programs, services and etc.? Give a brief statement of each areas (add additional art fields if necessary).

<Support to regional art society>

Art fields	Key infrastructures provided	Key programs	Key results
Music			
Art			
Dance			
Movies, images			
Design			

* If there's a model case from the above given items that your university is focusing on, give a brief introduction of its progress and results up to date and attach relevant data (give question number on the attached data).

5-6. Does your university have a **system** in place to mutually manage your cultural facilities with the regional society and conduct marketing to the regional society? If so give around half an A4 sheet introduction of the system related to mutual management marketing methods and attach relevant data (add pages if necessary).

<Environmental sustainability>

5-7. If your university's campus should be recognized as the model case of resolving regional society's environmental issues, what would be the reason? If your university has a model case of key researches, key events and campaigns to resolve environmental issues of the regional society, give around half an A4 sheet introduction and attach relevant data (add pages if necessary).

5-8. Does your university have mutual plans with universities, regional society and other entities to show the regional society the possibilities of improving the region's environmental sustainability? Give around half an A4 sheet introduction of key contents of current or soon to be implemented mutual plans and attach relevant data (add pages if necessary).

<Conclusion>

5-9. If currently your university has a model case of cooperation between the region's interest parties on the region's social-cultural-environmental development, give brief introduction of the project name and key results in the each of following fields.

< cooperation between the region's interest parties on the region's social-cultural-environmental development >

Category	Social development	Cultural development	Environmental development
Cooperation with local governments and the region's relevant organization			
Cooperation with the region's other universities			
Cooperation with the region's businesses			
Cooperation with regional neighbors			

* Give statements for the given fields, and if your university has a exemplary case among the stated cooperation, give detail and results on a separate sheet and attach relevant data.

5-10. Give a brief SWOT analysis of your university to the region's social-cultural-environmental development (related to regional social service activities).

<SWOT analysis on the region's social-cultural-environmental development >

Strength	Weakness
1. 2. 3.	1. 2. 3.
Opportunity	Threat
1. 2. 3.	1. 2. 3.

□. Question on building competency for regional cooperation.

6-1. Questions on systems to increase cooperation and participation between universities and the region.

6-1-1. Give the number of cases and amount of support for industry-university-government-research cooperation in the fields of industry·economy·society·culture·welfare·environment, etc. in the Busan region between 2001 and June 2005, and for very successful cases give brief summaries.

< Number of cases and amount of support for industry-university-government-research cooperation >

	'01		'02		'03		'04		'05	
	Cases	Amount	Cases	Amount	Cases	Amount	Cases	Amount	Cases	Amount
Industry/ Economy										
Society/ Culture/ Welfare										
Environment										
Others										

< Outstanding cases >

	Name	Case summary
Industry/ Economy		

Society/ Culture/ Welfare		
Environment		
Others		

6-1-2. Does your university have, within the university, a system (system and process) to identify the needs of various industry·economy and culture·welfare in the Busan region? If you have such system for any fields, give a detailed introduction of the system.

6-1-3. Does your university have a system to support or promote participation in various projects in the Busan region? (i.e. industry-university cooperation body, etc.)

6-1-4. What contents related to Busan region's development does your university's development plan have as a key field? (reference to page numbers of the development plan also acceptable).

6-1-6. If your university utilizes Busan region's government or business social infrastructure (i.e. education facilities, factories, etc.), what are the details?

6-1-7. What facilities, instruments, equipments and other various infrastructure (i.e. laboratory, etc.) does your university have that is being used by government, business, or private sector of the Busan region out of necessity?

6-2. Questions on communication process and mutual marketing in the region.

6-2-1. What system does your university have for discussion between interest parties regarding Busan region's social development and who are the key participants?

6-2-2. What institutions does your university have setup within the university to resolve the development and current issues of the Busan region and who are the key participants?

6-2-3. What central or affiliated institutions does your university have in which outside personnel participate in the decision making process? State the characteristics of the institution and the positions held by key participants.

6-2-4. If your university has conducted mutual promotion, marketing, purchase of own regional products together with the region (regional government/regional business), give relevant data and brief contents.

6-3. Questions on evaluation and influence of regional university's effects.

6-3-1. If your university has conducted a self examination to identify the details of methods to contribute to the development of the Busan region, what are they?

6-3-2. What efforts has your university made to increase its role and contribute to the Busan region's development. Give brief introduction of key items.

6-4. Questions on setting up systematic capacity for regional cooperation.

6-4-1. Of your university development plan or the management policy of the university administration, what are the items to contribute to regional development, and what academic, policy efforts have been made towards that end?

6-4-2. What institutions, positions, committees does your university have within the university that handles issues related to regional development (various fields including regional industry-university cooperation and etc.)

6-4-3. Since 2001, has your university hired an expert on regional cooperation? If so, state the relevant position and hiring period.

6-4-4. Since 2001, what new IT technologies has your university introduced and setup, and what future plans do you have?

6-4-5. Since 2001, what technologies, techniques, system operations for management structure improvement has your university introduced and what are the future plans?

6-5. Questions on human resource and financial resource management.

6-5-1. If your university has considered the Busan region's industry-university cooperation, regional characteristic research, regional needs based support when hiring professors or faculty, or managing human resources, what are its details?

6-5-2. Has your university conducted any education or training for the staff or the professor in charge of the Busan region related works?

6-5-3. When there're regional development and regional industry-university related budget support, which department manages the budget, and how independently and freely is the relevant budget executed to other budgets in the administration?

6-6. Questions on new organization culture creation.

6-6-1. What are the key barriers in the university's active regional social development and industry-university cooperation?

6-6-2. State the idea of your university to actively participate in the regional society's development, and give brief introduction of key events and academic activities related to it since 2001.