

# 2016 Medical Device

Investment  
Opportunities  
In Korea



# Medical Device

Korea's healthcare industry is growing thanks to the technological advancement of pharmaceuticals, medical devices and healthcare services and the government support for healthcare-related companies entering into the global market.

In particular, the Korean medical device market is growing rapidly and presents excellent opportunities in the area of advanced medical devices. The factors that drive such growth include the growing interest in health and wellness, government policies that value higher standard of life, the latest technologies and biomedical innovation. The Korean government designated the medical devices industry as one of its major growth engines.

## Achievement of Korea's Healthcare Industry



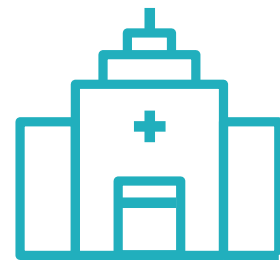
### Pharmaceuticals

World's first biosimilar antibody approved in EU('12)



### Devices

World's largest market share in ultrasound imaging devices('14)



### Services

Contract concluded to export KRW 70 billion hospital system to Saudi Arabia('14)

\* Source: Ministry of Science, ICT and Future Planning, Ministry of Trade, Industry & Energy, Ministry of Health and Welfare, Ministry of Food and Drug Safety (2014)

## Industry Overview

Status of medical devices market

Market trends

Top 10 produced items

## Competitiveness

Remarkable 'Hidden Champions' in Korea

Promising areas of Korean medical device

## Where to Invest

(Suggested Locations)

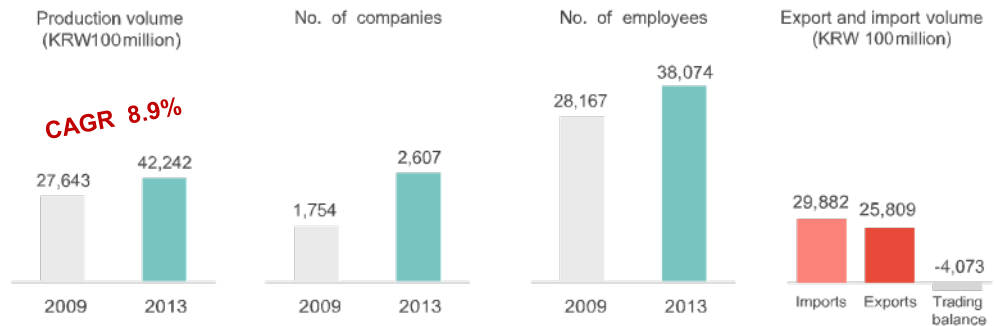
1. Daegu Medivalley (R&D)
2. Daegu Medivalley (MFG)
3. Wonju Medical Device Complex
4. Pohang Techno Valley
5. Jeungpyong 2 Industrial Complex
6. Gwangju FIZ





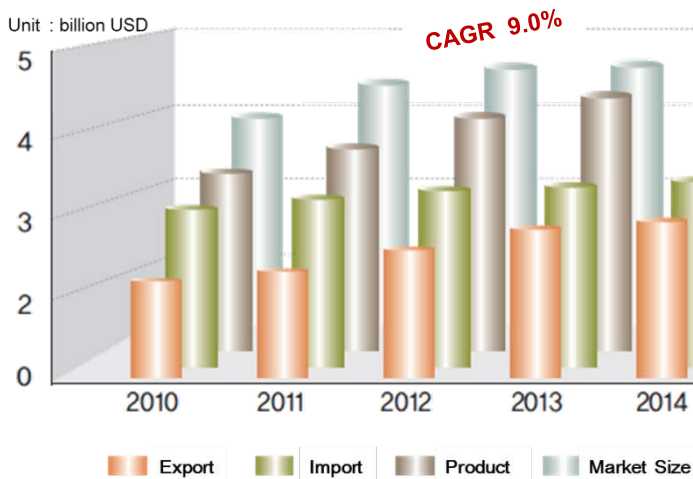
# Industry Overview

## Status of medical devices market



\* Source: 2014 KoreaHealth Industry White Book

## Market trends



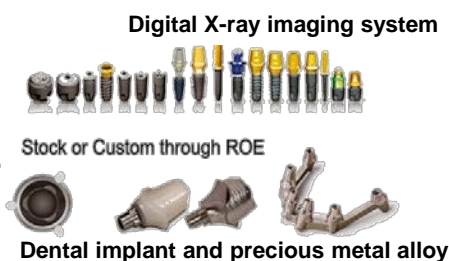
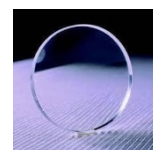
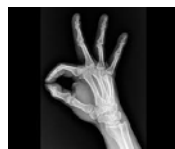
**Korea's medical device market size ('14) :**  
USD 5.1 billion

**Korea's world market share ('14) :**  
1.5%, 11th in the world

**Compound annual growth rate ('10~'14)**  
of market size: 9.0%

The market trends reflect the rapid growth of the Korean medical device industry

## Top 10 produced items





# Competitiveness

## Remarkable 'Hidden Champions' in Korea

Imaging Diagnostic Device

**Samsung Medison**

Diagnostic Ultrasound devices with live-3D technology  
Affiliate of Samsung electronics in 2011

Dermatologic lasers  
**Lutronic**



Dermatologic laser manufacturer with no.1 domestic market share and No.2 in Asia

Automated external defibrillator  
**CU Medical systems**



Korea's first manufacturer of automated external defibrillators / Having technology for world class remote medical treatment system

Dental equipment  
**VATECH**



World 5<sup>th</sup> largest dental x-ray manufacturer

Dental implants  
**OSSTEM IMPLANT**



No.1 market share in China(2013)

Capsule endoscopy  
**IntroMedic**

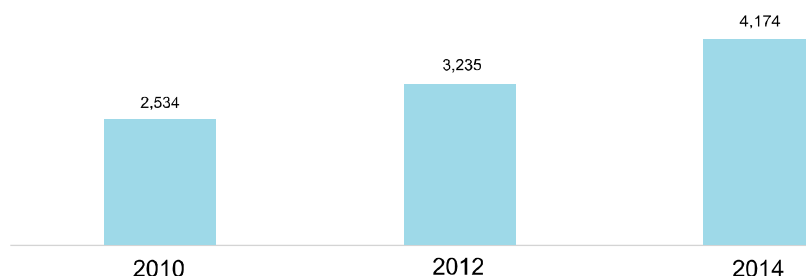


FDA approved(2012) and exported to 86 countries around the world

## Promising areas of Korean medical device

### - In vitro diagnostics(IVD) device for rapid and accurate diagnosis

(Unit : KRW 100million)



The in vitro diagnostic segment is expected to be among the fastest growing market in the biotech industry. The sector has strong growth potential thanks to new technological development and a rapidly aging population.

\* Source : Ministry of Trade, Industry & Energy, Five-year Plan for Technology Innovation (2013)

### - Applications of biomaterial-based advanced devices and artificial organs

- Biomaterials from nature or synthesized, should reveal biocompatibility, meaning that these materials may elicit little or no immune response in a given organism, and may or may not be able to integrate with a particular cell type or tissue.
- Vascular stents, biodegradable metallic implant devices, 3D cell-printing scaffolds, artificial pancreas, artificial kidney, wearable devices.

### - Digital healthcare systems

- Based on electronic engineering and IT infrastructures of Korea, digital devices and service solutions are developed.



# Where to Invest

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## Location Descriptions

1

### **Daegu Medivalley (R&D)**

Assigned by the government to focus on the development of high-tech medical equipment via intensive R&D and environmental support for medical companies.

2

### **Daegu Medivalley (MFG)**

Operated as a manufacturing zone on medical appliances and bio-information technology as a part of Daegu Medical R&D Cluster for producing high-tech medical devices.

3

### **Wonju Medical Device Complex**

Proposed as a manufacturing complex of medical device companies, which has high growth potential based on the Industry-University-Institute collaboration and medical device manufacturing cluster adjacent the capital area

4

### **Pohang Techno Valley**

Proposed as research and development or manufacturing complex for Medical Device convergence technology laboratory companies on the basis of excellent research environment such as NT, IT, BT, and mechanical engineering, etc.

5

### **Jeungpyong 2 Industrial Complex**

Proposed as R&D and manufacturing complex of medical device and natural medicine companies as it has potential for growth and is located near Osong Bio Cluster.

6

### **Gwangju FIZ**

Proposed as R&D and manufacturing complex for companies dealing with optical medical devices, materials and medical robot as an optical industry, and electronic and machine parts industry oriented complex.



# 1. Daegu Medivalley (R&D)

1 USD = 1,200 KRW

## Investment Highlights

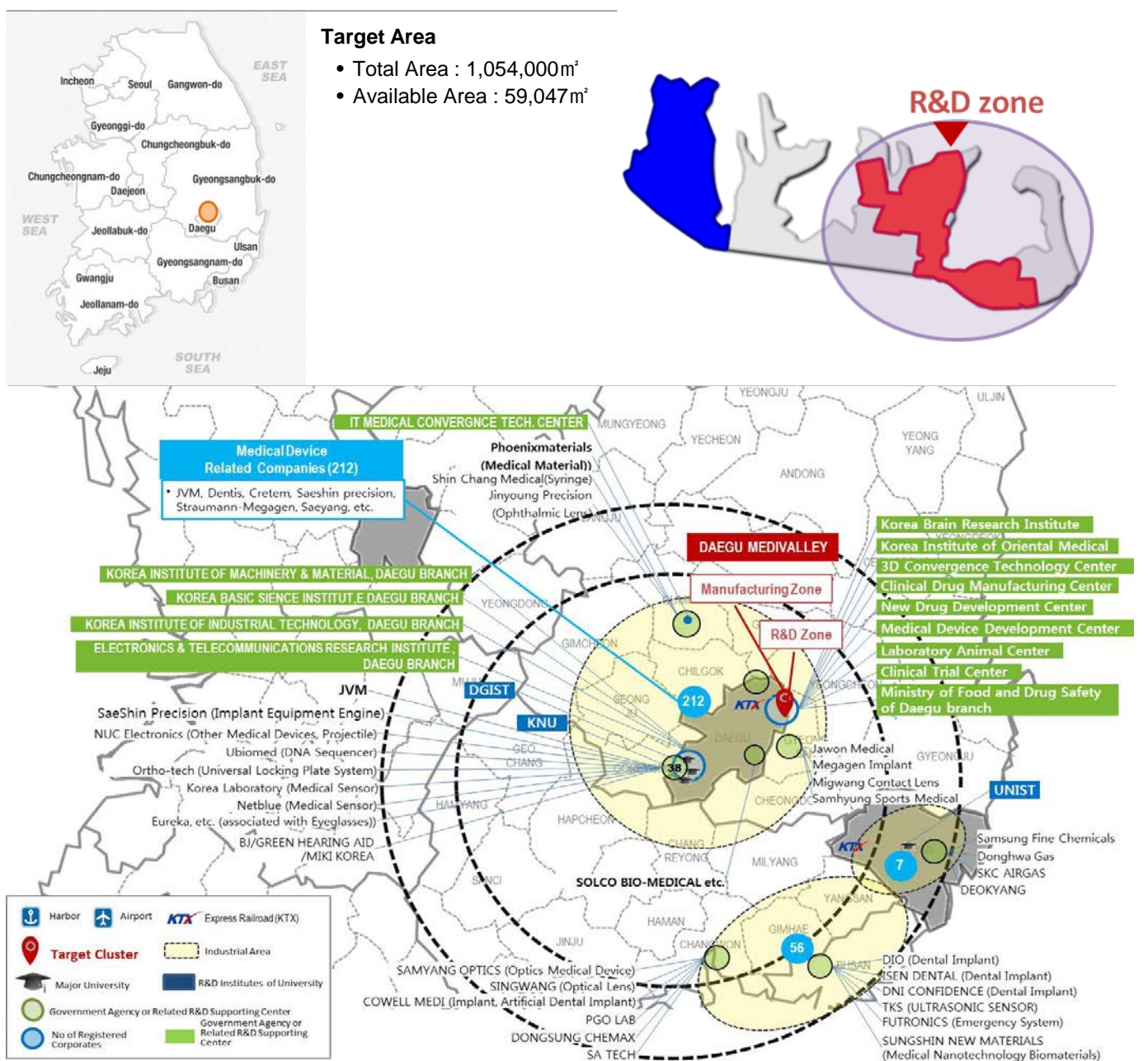
### Location Description

Assigned by the government to focus on the development of high-tech medical equipment via intensive R&D and environmental support for medical companies.

### Key Rationale

- Fully equipped with core R&D infrastructure such as the New Drug Development Center, the Medical Device Development Center, the Laboratory Animal Center, and the Clinical Drug Manufacturing Center
- One-stop service available from R&D, clinical trials, approval to commercialization within Daegu Medivalley
- Securing global medical R&D competitiveness created by synergetic effect of national research institutes : Korea Brain Research Institute, Korea Institute of Oriental Medicine, 3D Convergence Technology Center, High-tech Medical Genome Research Center, Laboratory Animal Resource Bank, High-tech Clinical Trial Center, etc.

## Location Overview





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## Case References

### Daegu city government supported Lutronic which moved into Daegu Medivalley



- LUTRONIC is a laser medical appliance company, established in 1997.
- Made an investment agreement on establishing its R&D facility in Daegu Medivalley (Daegu City, 2012.10)
- Lutronic research projects have been supported by Core Research Support Centers in Medivalley. (2013~present)
- Provided with financial subsidy(by Daegu City, 2014)
- Completion of Lutronic R&D Center(2015.12)
- Business profits of 2015 has increased 29.4% compared with that of the previous year.
- 30% of employees are assigned to R&D and the company is investing 20% of its sales on R&D every year.
- Moving into Daegu Medivalley is expected to help their product development.

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## Business Considerations

### Accessibility & Settlement

<b>Transportation</b>	<ul style="list-style-type: none"><li>• <b>Airport</b> : Daegu International Airport (12 domestic routes) 8Km, Kimhae Int Airport (40 domestic routes) 100Km</li><li>• <b>Railroad</b> : KTX train Dongdaegu region 11Km (Daegu-Seoul takes 1H40min)</li><li>• <b>Road</b> : Connects East Daegu IC with 7 highway gates (Gyeongbu, Guma, Jungang, Middle parts of Korea, Gwangju, Pohang, Busan)</li><li>• <b>Port</b> : 1 hour away from 5 international sea ports (Pohang, Ulsan, Masan, Busan, Busan New Port)</li></ul>
<b>Living Conditions</b>	<ul style="list-style-type: none"><li>• <b>A premium city fitted with living, commercial, education and leisure facilities, parks, etc. (Innovation City : 22,000 residents)</b><ul style="list-style-type: none"><li>- Parks located downtown (2<sup>nd</sup> largest park area per resident among big cities in Korea)</li><li>- Pleasant natural surroundings, including Palgong Mountain, Geumho River and Yulha Stream</li></ul></li><li>• <b>The nation's No.1 Education Condition</b><ul style="list-style-type: none"><li>- Daegu Suseong school districts are the highest class in study achievement in 2012 (middle school senior- the nation's No.1, high school junior- the nation's No.3)</li><li>- Opened Daegu II Science High School(2011) and Daegu International School(2010)</li><li>- A cluster of educational institutes in Daegu-Gyeongbuk, 21 Universities and 23 Colleges</li></ul></li><li>• <b>Concert halls(52), movie theaters (25), museums(12), and cultural events such as the annual Daegu International Musical Festival(DIMF) and Daegu International Opera Festival(DIOF)</b></li><li>• <b>The city holds International events, IAAF World Championships in Athletics 2011, World Energy Congress 2013, World Water Forum 2015, etc.</b></li></ul>



## Business Cluster

- Major Corporations in the region**
- **Foreign Investment Company:** Medi-sensor (USA, Bio Sensor), Cretem (China, DIH) etc.
  - **Domestic Company:** JVM, Dentis, SaeShin Precision, Jawon Medical, Megagen Implant, Migwang Contact Lens, etc.
  - Many electronic and machine components companies

### Potential Customers

General hospitals	Hospitals	Clinics	Dental hospitals/clinics	Oriental medicine clinics	Pharmacies	Medicinal Supply Wholesalers	Medical device Suppliers
12	175	1,607	835	837	1,158	307	2,857

- Related Organization**
- **Research Institution:** Korea Brain Research Institute, Korea Institute of Oriental Medical, 3D Convergence Technology Center, Synchrotron radiation(Pohang) and Proton accelerator(Gyeongju)
  - **Related University :** 5 medical universities, 2 oriental medicine universities, 4 pharmaceutical universities, DGIST
  - **Administrative agency:** Daegu Gyeongbuk Medical Innovation Foundation, Ministry of Food and Drug Safety of Daegu, Daegu Techno Park, Korea Evaluation Institute of Industrial Technology, Korea Industrial Complex Corporation, etc.

## Infrastructure

Category		Facility name	Scale area(m <sup>2</sup> )	Gross area (m <sup>2</sup> )	functionalities (facilities)
<b>Total</b>			<b>475,623</b>		
Government	Core Infra-structure	New Drug Development Center	70,100	23,016	New drug prototype testing · optimizing with dual development
		Medical Device Development Center		10,890	Medical appliance product blueprint · prototype testing
	Research support facilities	Laboratory Animal Center		8,717	Animal testing for clinical tests · animal cell maintenance and appliance performance measures and surgery appliance
		Clinical Drug Manufacturing Center		6,600	Clinical test facility for new medicine, medical appliance
Local government	Convenient facilities	Communication Center	10,112	17,702	Meeting room, AV room, accommodation and etc
Private	Startup R&D	Korea Medical Venture Center		21,918	Rent available for start-up medical companies

## Labor & Material

### Labor Condition

- **Regional population :**

	Population	Available labor force	Bachelor's	Master's	PhD
<b>Nation-wide</b>	51,327,916	31,600,268	7.9%	1.7%	0.6%
<b>Integrated zones</b>	7,626,969	4,692,976	9.0%	1.1%	0.4%
<b>Daegu</b>	2,493,264	1,538,942	9.7%	1.5%	0.6%

- **Average wage :** USD 30,300/year
- (4.3 years of service, average of 20 listed companies in the medical devices sector)

### Core Resource Supply Environment

- 21 universities with 236,600 students and 34 colleges with 105,000 students
- **Supply of materials:** There are many companies that can supply materials within an hour. Also, It is easy to connect with chemical materials companies and cooperate with electronic electricity industry such as electronic imaging devices and display.
- Provides integrated manpower management, information system and research equipment by government supported research institutes for improving core resources use

## Government Support

- **Tax benefits :** various tax benefits to relieve financial burdens of companies
- **Financial support :**
  - Site and investment subsidiary by Daegu City
  - Special support for large investment company : within 50% of the total investment
- **Employment and training subsidiary**
- **Foreign-invested company : support for companies with at least 30% of foreign investment**
- **Transition to metropolitan area / construction and expansion in local areas**
- **R&D budget support for drug and advanced medical device research and development**
- **Land purchase support :** interest-free installment for 5 years, discount for lump-sum payment(3% off for pre-payment)



# Daegu Medivalley (R&D) Appendix

<b>• Incentives for foreign invested companies in High-tech Medical Complex</b> - The following support is outlined by the Special Act on the Designation and Support of High-Tech Medical Complexes		
Category	Details Deregulated items	Etc
Additional Support	Grant of loan is provided for R&D of medical services conducted by any institute in a high-tech medical complex, when fails in the relevant project, abate or exempt the person's obligation to repay the principal and interest.	Article 13 (Grant of Loans)
	Any researcher of a national or public research institute may voluntarily suspend his/her employment in order to work for medical services. The period of the voluntary suspension of employment under the extension shall not exceed three years.	Article 19 (Allowances)
	The State and each local government may, by permission for commercial use, loan or sale under a negotiated contract, to any supportive institution for research and development institute of medical services.	Article 18 (Special Cases for Commercial Use, Loan, and Sale of State-Owned or Public Property)
	Issued visa amounts to 5 years for foreigners working for a supportive institution for research and development of medical services.	Article 20 (Special Cases for the Immigration Control Act)
Deregulation	Any foreign medical doctor or dentist who meets the standards may conduct medical activities for the purposes of R&D of medical services in a medical institution in High-tech Medical Complex.	Article 21 (Medical Service Act)
	Medicine, medical appliances, or medical technology applied to any person under clinical trials conducted for R&D of a medical institution in High-tech Medical Complex are deemed medical care benefits.	Article 22 (National Health Insurance Act)
	Any resident R&D institute of medical services that desires to manufacture any medicine/a medical appliance developed as a result of its research shall obtain item permission of the Minister of Food and Drug Safety.	Article 23 (Pharmaceutical Affairs Act)
	If any supportive institution for research and development of medical services or any resident research and development institute of medical services obtains approval for import from the Minister of Food and Drug Safety with regard to the item and quantity of any medicine/medical appliance imported, such institution is deemed to have obtained the permission for import.	Article 24 (Medical Devices Act)
	The National Bioethics Committee shall install a sub-committee for High-tech Medical Complex to have the sub-committee deliberate on the matters specified by Ordinance of the Ministry of Health and Welfare within High-tech Medical Complex.	Article 25 (Bioethics and Safety Act)
	The Commissioner of the Korean Intellectual Property office may authorize examiners to preferentially examine patent applications filed by any resident R&D institute of medical services in connection with research and development within High-tech Medical Complex prior to other patent applications.	Article 26 (Patent Act)
<b>• Others</b>		
<ul style="list-style-type: none"> <li>• Access to infrastructure/facilities and 200 senior research associates in Daegu Medivalley</li> <li>• Administrative support is provided by the government when investment category is within the government R&amp;D objectives</li> <li>• Various business support programs, including customized HR development, financial support</li> <li>• One-stop administrative support from site selection to moving-in</li> </ul>		



## 2. Daegu Medical Cluster (MFG)

1 USD = 1,200 KRW

### Investment Highlights

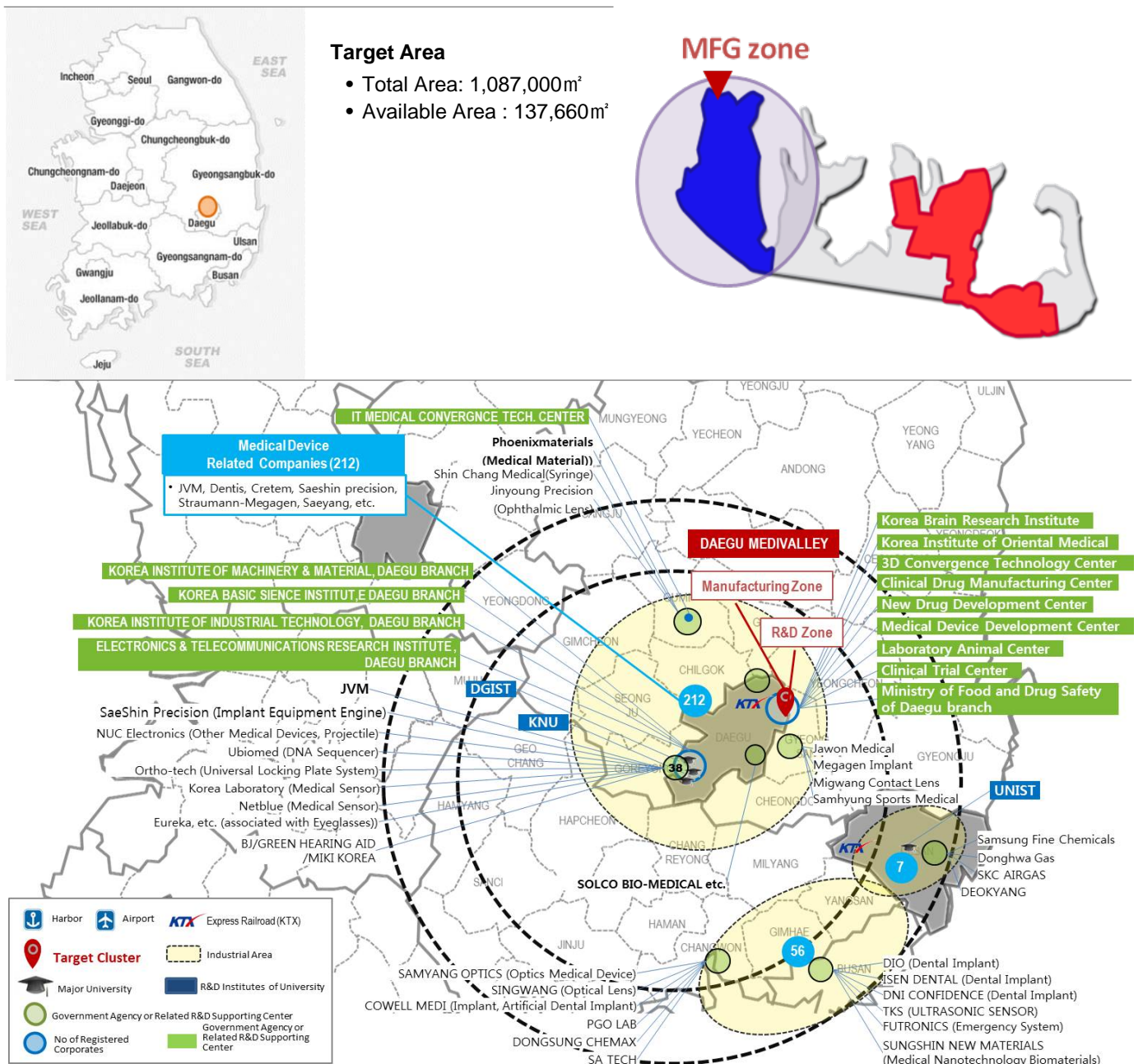
#### Location Description

Operated as a manufacturing zone on medical appliances and bio-information technology as a part of Daegu Medical R&D Cluster for producing high-tech medical devices.

#### Key Rationale

- Create a medical industry system through companies' R&D centers in Medivalley and medical institutes
- Create synergy by commercializing smart convergence technology connected with IT
- Government and local government have high interests in technology commercialization and promotion of companies

### Location Overview





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## Case References



- Dentis, established in 2005, is a manufacturer of implants and 3D printers
- Established investment agreement to build a manufacturing plant in MFG Zone (MOU signed with Daegu City in 2012)
- Established agreement contract(MOU) with Laboratory Animal Center(2015.2)
- Completion of a Dentis manufacturing plant (2015)
- 15% of employees work for R&D, mainly dedicated for new businesses
- Expected to help product development since receiving support for research from core research support center by establishing a manufacturing plant in MFG Zone

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## Business Considerations

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### Accessibility & Settlement

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#### Transportation

- **Airport** : Daegu International Airport (12 domestic routes) 8Km, Kimhae Int Airport (40 domestic routes) 100Km
- **Railroad** : Daegu Medical Cluster – 20 minutes to Dongdaegu Station (100 minutes to Seoul Sta.)
- **Road** : Connects DongDaegu IC with 7 highway gates (Gyeongbu, Guma, Jungang, 88, Jungbu Inland, Iksan-Pohang, Daegu-Busan)
- **Port**: 1 hour away from 5 international sea ports (Pohang, Ulsan, Masan, Busan, Busan New Seaport)

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#### Living Conditions

- **A premium city fitted with living, commercial, education and leisure facilities, parks, etc.(Innovation City : 22,000 residents)**
  - Parks located downtown (2<sup>nd</sup> largest park area per resident among big cities in Korea)
  - Pleasant natural surroundings, including Palgong Mountain, Geumho River and Yulha Stream
- **The nation's No.1 Education Condition**
  - Top-ranked in the 2012 national academic achievement test(middle school area)
  - Ranked 1<sup>st</sup> in the 2012 national academic aptitude test(average score)
  - Opened Daegu II Science High School(2011) and Daegu International School(2010)
  - A cluster of educational institutes in Daegu-Gyeongbuk, 21 Universities and 23 Colleges
- **Concert halls(52), movie theaters (25), museums(12), and cultural events such as the annual Daegu International Musical Festival(DIMF), Daegu International Opera Festival(DIOF)**
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- **Related University :** 5 medical universities, 2 oriental medicine universities, 4 pharmaceutical universities, DGIST
- **Administrative agency:** Daegu Gyeongbuk Medical Innovation Foundation, Ministry of Food and Drug Safety of Daegu, Daegu Techno Park, Korea Evaluation Institute of Industrial Technology, Korea Industrial Complex Corporation, etc.

## Infrastructure

- **Water :** Maximum daily consumption 13,301 m<sup>3</sup> / day
- **Sewage :** Daily maximum sewage flow 102,043 m<sup>3</sup> / day
- **Electricity :** Transformer installed capacity 313,450 kVA, Maximum demand power 282,105 KW
- **Communication link :** 174,517 circuits
- **City gas supply :** 51,673,000Nm<sup>3</sup>/year
- **Heat supply :** Perimeter annual load 417,153Gcal/year, Maximum thermal load 324.5Gcal/h

## Labor & Material

### Labor Condition

- **Regional population :**

	Population	Available labor force	Bachelor's	Master's	PhD
<b>Nation-wide</b>	51,327,916	31,600,268	7.9%	1.7%	0.6%
<b>Integrated zones</b>	7,626,969	4,692,976	9.0%	1.1%	0.4%
<b>Daegu</b>	2,493,264	1,538,942	9.7%	1.5%	0.6%

- **Average wage :** USD 30,300/year
- (4.3 years of service, average of 20 listed companies in the medical devices sector)

### Core Resource Supply Environment

- 21 universities with 236,600 students and 34 colleges with 105,000 students
- **Supply of materials:** There are many companies that can supply materials within an hour. Also, It is easy to connect with chemical materials companies and cooperate with electronic electricity industry such as electronic imaging devices and display.
- Provides Integrated manpower management, information system and research equipment by government supported research institutes for improving core resources use

## Government Support

- **Tax Benefits**
  - National Tax : corporate tax 100% exemption for 3 years and 50% reduction for the subsequent 2 years
  - Local Tax : acquisition tax exemption/property tax 100% exemption for 7 years and 50% reduction for the subsequent 3 years
  - Eligibility : advanced technology companies OR research companies
- **Land purchase support :** interest-free installment for 5 years, discount for lump-sum payment(3% off for pre-payment)
- **Administrative support :** one-stop administrative support from site selection to moving-in, one-on-one personal support from pre-lease counseling to R&D



# 3. Wonju Medical Device Complex

1 USD = 1,200 KRW

## Investment Highlights

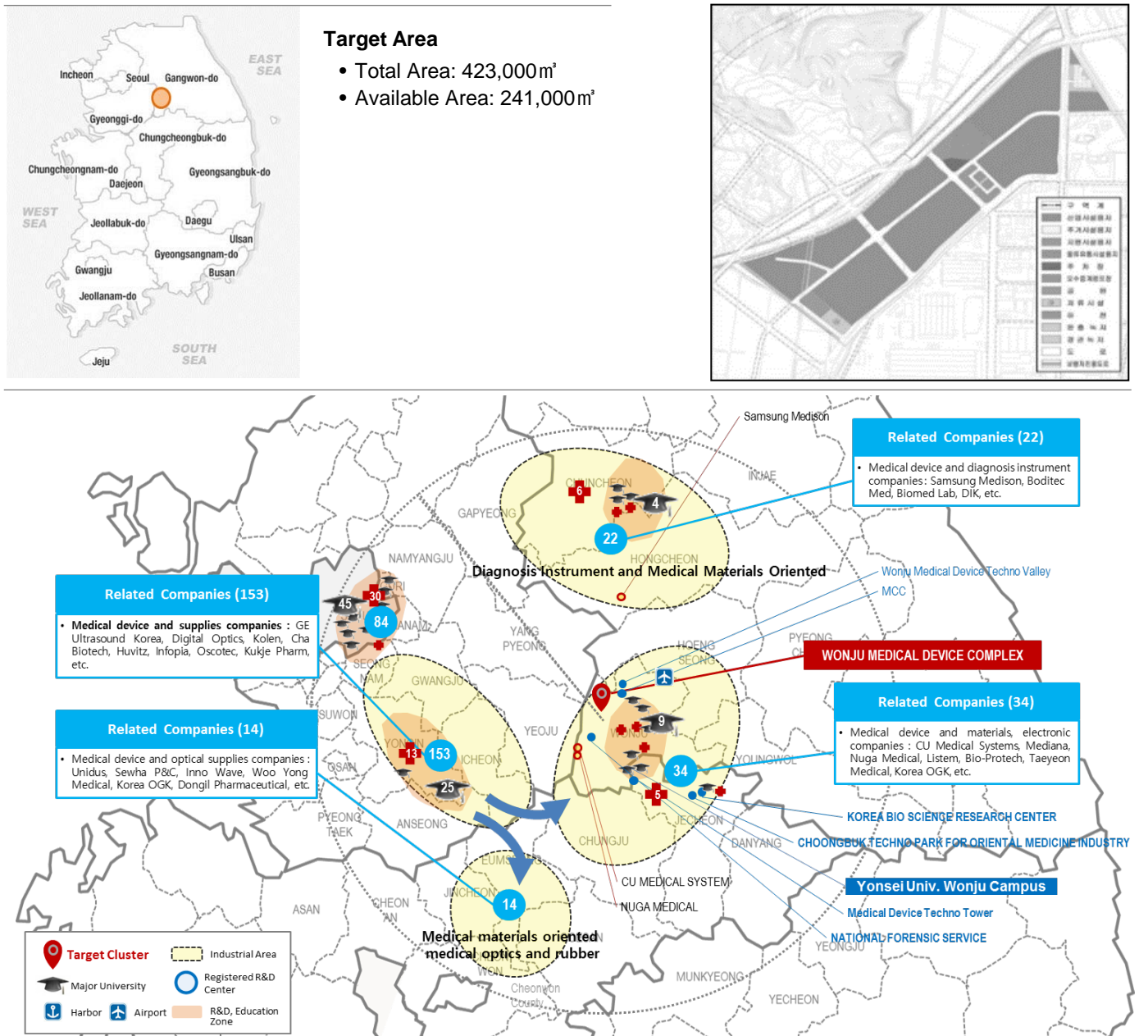
### Location Description

Proposed as a manufacturing complex of medical device companies, which has high growth potential based on the Industry-University-Institute collaboration and medical device manufacturing cluster adjacent the capital area

### Key Rationale

- It is a concentrated area of medical device manufacturing companies, which accounts for 14% of domestic medical device output and 20% of exports.
- They have an active industry-university-institute collaboration as the self-developed 'Medical Device Venture System' with Yonsei University Wonju, specializing in medical engineering, at the center.
- It is expected to further grow in the future as the center area of industrial revitalization of Gangwon area such as PyeongChang Olympics.

## Location Overview





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## Case References

### CU Medical System: (주)씨유메디칼시스템

- Registered as a foreign-invested company in Feb. 2008
- Established in 2001 and listed on KOSDAQ in 2011 with a sales volume of KRW 20 billion
- Major Business: Developing, producing and distributing medical devices, including heart defibrillators
  - The heart defibrillator is an emergency medical device that helps to recover a regular heartbeat by delivering short electric shocks to an abnormal heart like arrhythmia
  - The automatic heart defibrillator market gained huge traction in Aug. 2011 due to the revision of emergency medical service law
  - They are developing wearable life emergency response system which sends a rescue request to a server with ECG data through CDMA reader, when a symptom is detected by the movement of a patient and his/her heart rate.
- Construction of Sales: Automatic heart defibrillators 80.86%, Products 19.08%, Other sales 0.06%

### NEO Dr.

- Registered as a foreign-invested company in February 2008 (Japan Amenity Service)
- A venture Company established in 2002 to develop/manufacture medical devices and develop software
- Manufacturing electric needles

### HEMS-KTC

- Registered as a foreign-invested company in May 2015 (Singapore)
- Medical device manufacturer such as cleaning bacteria and water treatment system
- Headquarter in Singapore, Manufacturing plants and laboratories in USA, China, and S. Korea

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## Business Considerations

### Accessibility & Settlement

<b>Transportation</b>	<ul style="list-style-type: none"><li>• <b>Airport</b> : Incheon International Airport(145km), Wonju Airport(28km) (Jeju Once/day)</li><li>• <b>Port</b> : Port of Donghae(175km) (Approaching 9 berth, Loading and unloading 20.28 million Ton/year)</li><li>• <b>Railroad</b> : Wonju station connecting with Central line, Taebaek line and Yeongdong line (14km)</li><li>• <b>Road</b> : Yeongdong expressway Munmak IC(1km) (Seoul 112km, Chuncheon 88km, Gangneung 131km), National Highway(No.42(Incheon↔Wonju↔Donghae)), Local road(No. 49(Munmak↔Dogye))</li></ul>
<b>Living Conditions</b>	<ul style="list-style-type: none"><li>• <b>Education</b> : 18,197 students in 3 universities 2,526 students in 1 college , 5,321 students in 5 vocational high schools, 11,978 students in 14 high schools, 13,847 students in 22 middle schools</li><li>• <b>Medical Facilities</b> : 2 general hospitals, 6 hospitals, 154 clinics, 77 dental clinics, 77 oriental medical clinics, etc.</li><li>• <b>Others</b> : life and tourist complex such as apartments for 63,560 households, one hotel, 4 indoor gymnasiums, one sports stadium, 7 golf courses, 32 golf driving ranges, 3 swimming pool, etc.</li></ul>



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## Business Cluster

- Major Corporations in the region**
- About 200 related companies are concentrated in the field of image diagnosis, treatment, measurement diagnosis, medical supplies, materials and equipment manufacturing.
  - **Manufacturing Medical Device** : CU Medical systems, Mediana, Nuga Best, Listem, Woo Young Medical, etc.
  - **Eyeglasses and Optical Instrument**: Korea OGK, Digitaloptics, Huvitz, etc.
  - **Medical materials and Electronic parts**: Pacific Science, Korea OGK, Oscotec, etc.

- Related Organization**
- **Test Certificate Authority** : Korea Testing Laboratory
  - **Technology Research Development** : Yonsei Institute of Medical Engineering Institute, Medical Device Technological Innovation Center, Medical Measurement and Rehabilitation Engineering Research Institute, Home Health Management System Research Center, KIST Biomedical Science Laboratory, Scripps Institute, etc.
  - **Commercialization Support Organization** : Wonju Medical Industry Techno Valley, Medical Device Venture Center, Oriental Medical Industry Development Center,,Gangwon Technopark

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## Infrastructure

- **Water** : Industrial water(3,000 tons/day), water for household use(5,000 tons/day)
- **Sewage** : Handling 1,500 tons/day
- **Electricity** : voltage 154kV, Capacity 10MVA-420,000kw/day
- **Communication Link** : 1,200 line (available to infinite extension)
- **Energy Plan** : Supply LNG after Nov. 2002

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## Labor & Material

- Labor Condition**
- **Regional population** :

	Population	Available labor force	Bachelor's	Master's	PhD
<b>Nation-wide</b>	51,327,916	31,600,268	7.9%	1.7%	0.6%
<b>Integrated zones</b>	7,626,969	4,692,976	9.0%	1.1%	0.4%
<b>Daegu</b>	2,493,264	1,538,942	9.7%	1.5%	0.6%

- **Average wage** : 36.36 million KRW/year (US\$ 33,054/year)
- (4.3 years of service, average of 20 listed companies in the medical devices sector)

- Core Resource Supply**
- **Abundant professionals**

### Environment

- 50,000 graduates with a bachelor's or a master's degree in medical and biomedical engineering from Yonsei University Wonju, Mechanical & Biomedical Engineering in Kangwon University, Biomedical in Hallym University, etc.
- Located Wonju MedEqu Tech High School, the only one meister high school in Medical in Korea
- **Smooth supply of parts and technology**
  - Suitable environment to support element technology development and carry forward policy funds and R&D business

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## Government Support

- **Same incentive on foreign investment such as tax benefit**
- **Financial incentive(Support fund for small businesses in Gangwon-do)**
  - **Support Business**: automation, facilities modernization, technology development, conversion of business, transforming big company's business to small and medium sized company, systemization, creation of foundation, investment on foundation, promoting small company, linking consultant service, regional specialization, joint enterprise, attraction of enterprise
  - **Target for Support**: Small manufacturing companies which have headquarters, principal office, workplace in this area
  - **Condition of Support**: KRW 700 million for stable management capital per one company, KRW one billion for foundation and competitiveness reinforcement capital, less than KRW 500 million for L-Biz capital
  - **Loan Period**: two years for stable management capital, take out foundation and competitiveness reinforcement capital payable in five years with a three-year grace period, take out L-Biz capital payable in three years with a two-year grace period



# 4. Pohang Techno Valley

1 USD = 1,200 KRW

## Investment Highlights

### Location Description

Proposed as research and development or manufacturing complex for Medical Device convergence technology laboratory companies on the basis of excellent research environment such as NT, IT, BT, and mechanical engineering, etc.

### Key Rationale

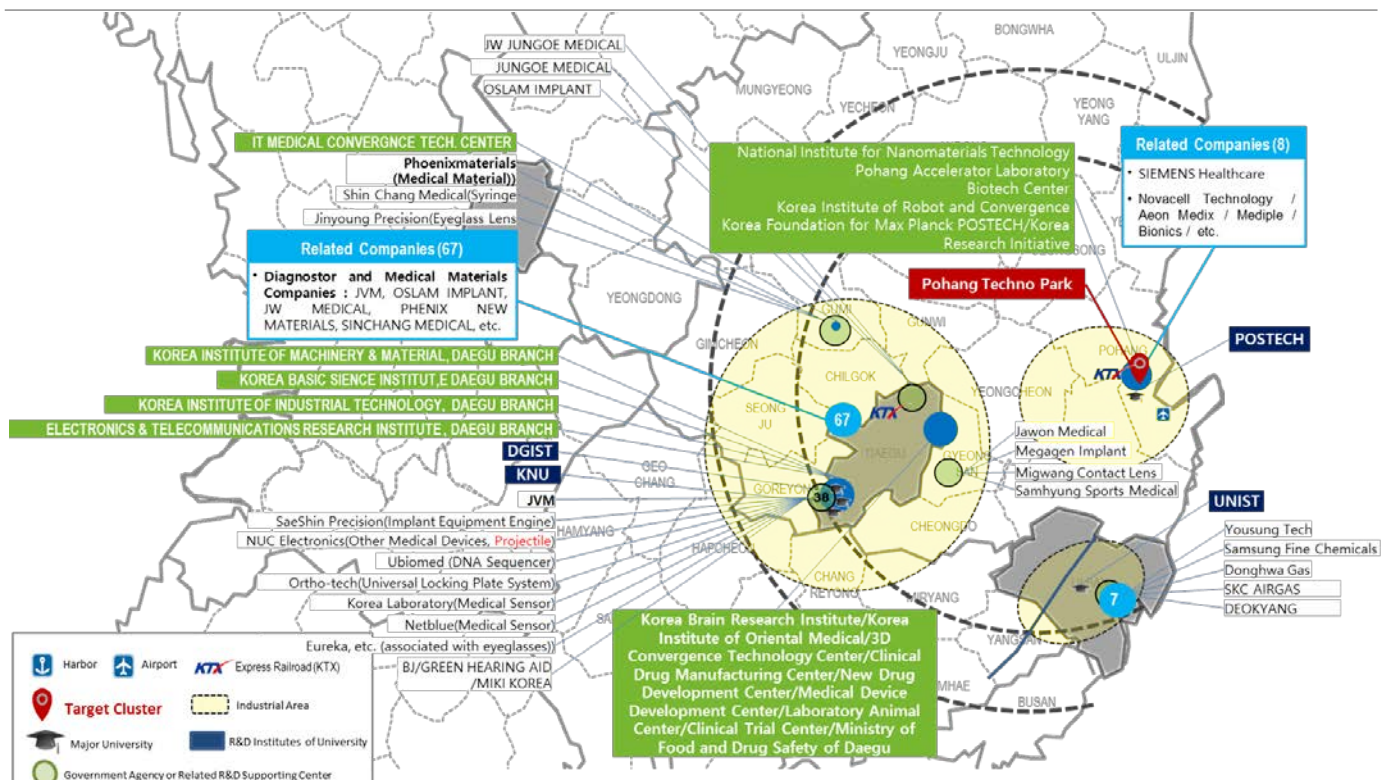
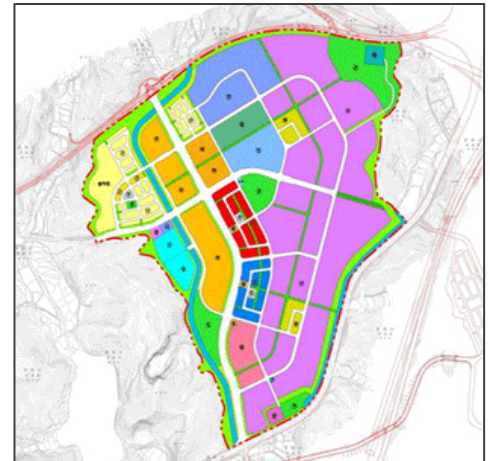
- Utilized for fusion technology development on the foundation of new steel materials and supplier industry in Pohang
- Strong R&D cooperation among National Center for Nanomaterials Technology, Korea Institute of Robot and Convergence, and Pohang Techno Park in POSTECH which is world-class experimental university

## Location Overview



### Target Area

- Total Area: 1,659,000m<sup>2</sup>
- Available Area: 648,000m<sup>2</sup>





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## Case References

### Siemens Healthcare (Ultrasonic Device) Investment

Siemens, the global medical device company, established a manufacturing plant and laboratory of Medical Ultrasonic Dept. in Pohang Techno Park

- Siemens established promotion strategy and selected Korea as a strategic position in Asia for ultrasonic medical device in Mar. 2008
- They signed the Investment Attraction MOU with Pohang city worth USD 30 million until 2018
- A manufacturing plant and a laboratory are located in the 2nd Venture building and the 3rd Venture building in Pohang Techno Park(total ground area 4,000m<sup>2</sup>)
- Employment : about 180 (Production and research manpower)
- Export of high-tech ultrasonic device, over USD 50 million per year

**Reason of investment decision : Outstanding R&D environment and excellent location condition of Pohang Techno Park**

- They build up Pohang city which has outstanding technology talents and excellent technology companies as to develop R&D and production center
- They meet the fast-growing demand of the market with the expansion of the Pohang factory and create synergy with Gyeongju factory of Medical Ultrasonic Dept.

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## Business Considerations

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### Accessibility & Settlement

<b>Transportation</b>	<ul style="list-style-type: none"><li>• <b>Airport</b> : Incheon International Airport(360km) , Pohang Airport(20km)</li><li>• <b>Port</b> : Adjacent to Yeongilman Port(14km), Pohang Port</li><li>• <b>Railroad</b>: KTX Pohang station which is connected with the Gyeongbu line(5km)</li><li>• <b>Road</b> : Daegu↔Pohang Express West Pohang IC (1km)</li></ul>
<b>Living Conditions</b>	<ul style="list-style-type: none"><li>• <b>Education</b> :<ul style="list-style-type: none"><li>- 6,400 students from 2 universities</li><li>- 5,400 students from 2 colleges, 9,000 students from 9 vocational high schools, one vocational institute</li><li>- 16,000 students from 19 high schools, 22,000 students from 33 middle school</li></ul></li><li>• <b>Medical Facilities</b>: 5 general hospitals, 12 hospitals, 224 clinics, 105 dental clinics, 2 oriental medicine clinics</li><li>• <b>Living Condition</b>: Resources of marine tourism in the eastern coast and diverse culture events such as Pohang International Fire &amp; Light Festival</li><li>• <b>Others</b>: 55,000 detached house households, 86,000 apartment households, 5 hotels, 1 golf course, 1 sports stadium, 2 indoor gymnasium, 5 youth training centers</li></ul>



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## Business Cluster

### Major Corporations in the region

- **Foreign Investment Companies in TP:** SIEMENS Healthcare
- **Medical device domestic companies related to biotechnology in TP :** Novacell Technology, Aeon Medix, Mediple, Bionics, Jawon Medical, Megagen Implant, Vision Science, Myung Shin Optics, etc.
- Lots of businesses closely clustered around Pohang parts specialized complex and Daegu Medi Valley

### Related Organization

- **Research Institutions:** National Institute for Nanomaterials Technology, Pohang Accelerator Laboratory, Biotech Center, Korea Institute of Robot and Convergence, Korea Foundation for Max Planck POSTECH/Korea Research Initiative, POSCO Technology Institute, etc.
- **University :** Postech, Handong University
- **Government organizations:** Pohang Techno Park, Pohang Korea Contents Lab, etc.

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## Infrastructure

- **Water :** Capacity of supply 9,000 tons/day
- **Sewage:** 6,000 m<sup>3</sup>/day
- **Waste Disposal:** Waste disposal on consignment(13,600 tons/year)
- **Communication:** 27,000 circuits
- **Electricity:** 546,499MWH/year
- **Energy:** Pohang City Gas supplies LNG gas (Demand: 632,000 Gcal/year)

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## Labor & Material

### Labor Condition

- **Regional population :**

	Population	Available labor force	Bachelor's	Master's	PhD
<b>Nation-wide</b>	51,327,916	31,600,268	7.9%	1.7%	0.6%
<b>Integrated zones</b>	7,626,969	4,692,976	9.0%	1.1%	0.4%
<b>Daegu</b>	2,493,264	1,538,942	9.7%	1.5%	0.6%

- **Average wage : KRW 36.36 million/year (US\$ 33,054/year)**  
(20 Medical Appliances Listed companies, average of 4.3 years of service)

### Core Resource Supply Environment

- **Talented workforce:** Producing 5,600 graduates with advanced technical expertise mainly from POSTECH and Handong University
- **Elementary technology and resources:** : Various medical device research centers and policy support institutions within the zone such as the world's 3<sup>rd</sup> largest fourth generation synchrotron radiation and Pohang Institute of Metal Industry Advancement can provide access to technologies and policy funds for development

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## Government Support

- **Equal government support for foreign-invested companies**
- **Subsidy for facility relocation : Subsidize within 3% of facility cost exceeding KRW 3 billion (maximum support amount is KRW 5 billion)**
  - With the city council's approval, additional support can be provided for companies investing more than USD 300 million or hiring more than 1,500 employees.



# 5. Jeungpyong 2 Industrial Complex

1 USD = 1,200 KRW

## Investment Highlights

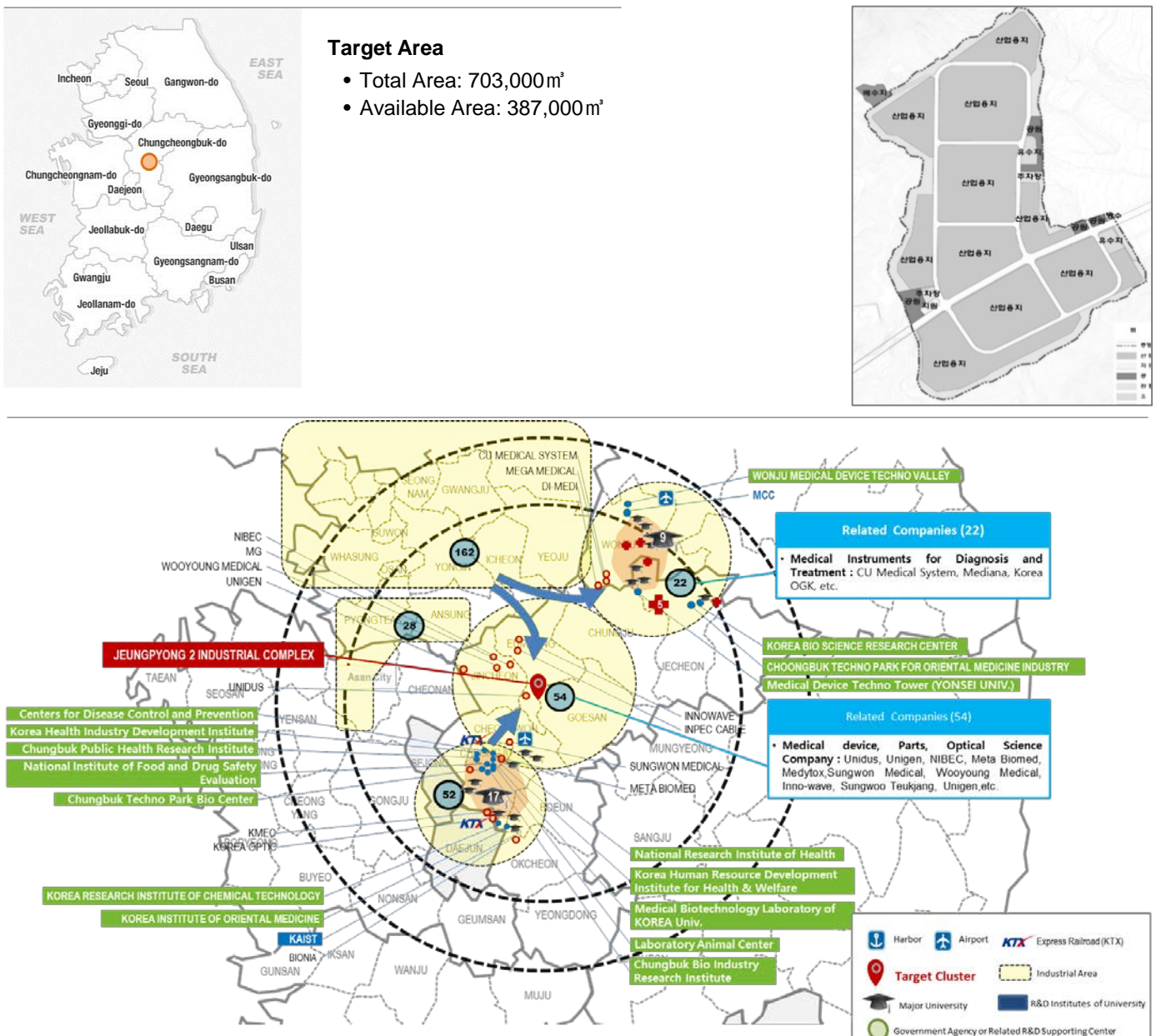
### Location Description

Proposed as R&D and manufacturing complex of medical device and natural medicine companies as it has potential for growth and is located near Osong Bio Cluster.

### Key Rationale

- Ease of securing bio raw materials thanks to its close location to the bio industrial cluster in the Seoul Metropolitan Area.
- Convenient transportation and logistics due to its characteristics of being concentrated inland
- Moderate parcel price

## Location Overview





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## Case References

### Investment interest from three of health care companies including NEXT BT



**NEXT BT made Site Purchase MOU on the 2nd Jeungpyeong Industrial Complex(a factory site 7,000m<sup>2</sup>)**

- Summary of Company: Domestic manufacturing company of health food and outstanding medicine and medical supplies, the first company obtaining GMP certification, Possessing about 20 of patents

- Scheme:

- Producing new type of health functional food
- Plan for diversifying the company business to functional cosmetics, medical devices and manufacturing sanitary aid
- Establishing a company-affiliated laboratory to facilitate research on a new drug

#### **Made distribution contracts with 17 companies including Pacific Interchem on Dec. 2015**

- Expected Investing amount: KRW 208.7 billion
- Employment: 1,092
- Investing KRW 40.3 billion on a factory site 22,000 m<sup>2</sup>
- Considering to move into Jeungpyeong-gun from Soeul-Gyeonggi area

#### **Reason of investment decision :**

- supplying lots on demand and having abundant utilities, an hour distance to get to domestic major demand company located in Gyeonggi and Chungbuk, Availability of supplying professionals as the neighbor area with Osong Bio Valley

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## Business Considerations

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### Accessibility & Settlement

<b>Transportation</b>	• <b>International Airport</b> : Incheon International Airport(158km), Cheongju International Airport(12km)
	• <b>International Port</b> : Pyeongtaek Port(80km), Gunsan Port(160km)
	• <b>Railroad</b> : Chungbuk Line Jeungpyeong station(3km)
	• <b>Express Way</b> : Central Expressway Jeungpyung IC(6km)

<b>Living Conditions</b>	• <b>Education</b> : One University, Total 3,200 students from 3 high schools and 3 middle schools
	• <b>Medical Facilities</b> : 7 hospitals, 13 clinics, 11 dental clinics, 10 oriental medicine clinics, 3 health center and others
	• <b>Others</b> : about 6,500 of apartment households, one hotel, two gymnasium, etc.



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## Business Cluster

- Major Corporations**
- **Domestic Companies:** Unidus, Unigen, NIBEC, Meta Biomed, Medytox, Sungwon Medical, Wooyoung Medical, Inno-wave, Sungwoo Teukjang, Unigen, etc.
  - **Foreign Investment Companies:** SCAS-BTT BIOANALYSIS (Laboratory company for Bio technology), GLOTEC (Optical Instrument)

- Related Organization**
- **Research Support Institute:** Medical Device Development Center, Laboratory Animal Center, Clinical Trial Center, etc.
  - **Health and Medical Services Administrative Agencies:** Ministry of Food and Drug Safety, National Institute of Food and Drug Safety Evaluation, Centers for Disease Control and Prevention, Korea National Institute of Health, Korea Health Industry Development Institute, etc.
  - **Related University :** Many medical laboratories/educational institutions such as Chungbuk University (Medical College, College of Pharmacy), Cheongju University (Biomedical Science Department), ChungBuk Provincial College (Bio-Medical Science and Pharmacy Department), KAIST, etc.
  - **Company Support Institute:** Chungbuk Techno Park

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## Infrastructure

- **Water** : Industrial Water 4,000 m<sup>3</sup>/day, water for household use 380m<sup>3</sup>/day
- **Sewage** : handling capacity 2500m<sup>3</sup>/day
- **Communication** : 43,700 circuits
- **Electronic** : 110Mwh/year
- **Supply of Energy** : 89,000 Gcal/year
- **Waste Disposal** : 3,000 ton/year

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## Labor & Material

- Labor Condition**
- **Regional population :**

	Population	Available labor force	Bachelor's	Master's	PhD
<b>Nation-wide</b>	51,327,916	31,600,268	7.9%	1.7%	0.6%
<b>Integrated zones</b>	7,626,969	4,692,976	9.0%	1.1%	0.4%
<b>Daegu</b>	2,493,264	1,538,942	9.7%	1.5%	0.6%

- **Average wage** : 36.36 million KRW/year (US\$ 33,054/year)  
(20 Medical Appliances Listed companies, average of 4.3 years of service)

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## Core Resource Supply Environment

- **Human Resources**
  - 510,000 graduates with a bachelor's degree or higher in production management and other idle research manpower
  - Located closely to Osong Bio Valley (40 min. away), favorable environment to supply highly educated R&D manpower (380 of manpower related to medical and science are produced every year from Chungbuk University, Cheongju University, ChungBuk Provincial College)
- **Research/Trial Support Facility:** It has favorable environment to use research/trial facilities owned by Institutes supported with research by government since it is closely located with Medical Device Development Center, Laboratory Animal Center, Clinical Trial Center

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## Government Support

- Additional financial support according to a city ordinance besides supports for foreign investment company
- **Financial Incentives (Support funds for small and middle companies in Chungcheongbuk-do Province)**
  - **Use of Support Fund:** Facility investment funds, Operational funds
  - **Loan Limit:** one billion KRW for facility investment funds, 0.3 billion KRW for operational funds
  - **Condition of Repayment:** Payment within 8 years for facility funds (payment in five years with a three-year grace period), Payment within two years for operational funds at once
- \*. KRW 100 million limit for operational funds in case of foundation



# 6. Gwangju FIZ

1 USD = 1,200 KRW

## Investment Highlights

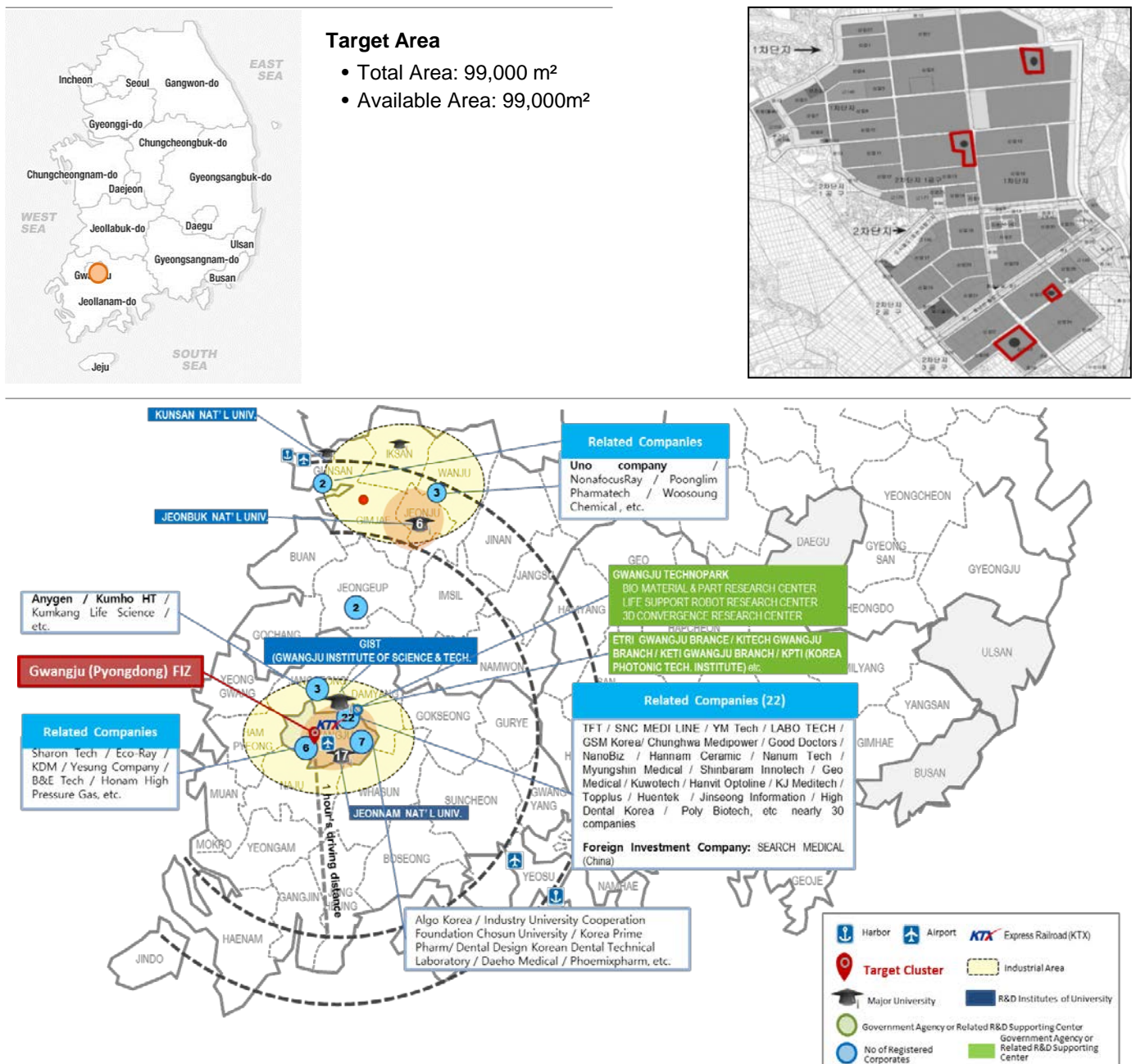
### Location Description

Proposed as R&D and manufacturing complex for companies dealing with optical medical devices, materials and medical robot as an optical industry, and electronic and machine parts industry oriented complex.

### Key Rationale

- It is suitable for medical device convergence technology thanks to the industrial ecosystem of an optical industry, machine parts and material technology industry.
- Policy to promote and technical professionals of new material development mainly by excellent research-oriented university in the area such as GIST

## Location Overview





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## Case References

### ANYGEN



- Location : Jeonnam Nano Bio Research Center in Jangseong-gun, Jeonnam
- Establishment : 2000
- Business : Bio material and new drug development company
- Employment : 50 of researchers
- Teaching staff of research-oriented University GIST playing a pivotal role of High-technology research and education in Gwangju area(selected by Time Higher Education / institutions of higher education, No.4 in nation and No.96 in global) established AnyGen. It is the company to play a pivotal role of Bio technology establishment in Gwangju.
- Until its project finished successfully in 2013 after 10 years of research and its profit turned black for the first time, it relied on the R&D subsidy and investment provided under the government's active technology support policy for quite a long time to pay for its development expenses. Now it is preparing for a special listing based on its technology.

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## Business Considerations

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### Accessibility & Settlement

<b>Transportation</b>	• <b>Airport</b> : Gwangju airport(3km), Muan international airport(55km)
	• <b>Port</b> : Mokpo port(70km), Gwangyang port(125km), Yeosu port(163km)
	• <b>Railroad</b> : Honam line Songjeong-ri station(2km), Reaching to seoul within 2.5 hours by KTX
	• <b>Road</b> : Honam expressway Dongrim IC(12km)
<b>Living Conditions</b>	• <b>Education</b> : 16,000 from 3 universities / 5,000 from a colleges, 4,000 from 4 vocational high schools / 14,000 from 15 high schools, 19,000 23 middle schools
	• <b>Medical Facilities</b> : 21 general hospitals, 900 hospitals/clinics, 531 dental clinics, 57 oriental medicine clinics
	• <b>Others</b> : 360,480 of apartment households, 234,401 of detached house households, 4 tourist hotels, 32 golf driving ranges, a convention center



## Business Cluster

- Major Corporations in the region**
- **Domestic Company related to Biotech:** Anygen / KumhoHT / Kumkang Life Science / TFT / SNC MEDI LINE / YM Tech / LABO TECH / GSM Korea/ Chunghwa Medipower / Good Doctors / NanoBiz / Hannam Ceramic / Nanum Tech / Myungshin Medical / Shinbaram Innotech / Geo Medical / Kuwotech / Hanvit Optoline / KJ Meditech / Topplus / Huentek / Jinseong Information / High Dental Korea / Poly Biotech, etc nearly 30 companies
  - **Foreign Investment Company:** SEARCH MEDICAL(China) and 63 Companies located in foreign investment zone (mainly machine and equipment company)
- Related Organization**
- **Research Institutions:** GIST, GWANGJU TECHNOPARK (BIO MATERIAL & PART RESEARCH CENTER, LIFE SUPPORT ROBOT RESEARCH CENTER, 3D CONVERGENCE RESEARCH CENTER), Jeonnam Nano Bio Research Center, Korea Photonics Technology Institute, ETRI Gwangju Branch, KETI Gwangju Branch, etc.
  - **Support Organization:** Gwangju Techno Park, etc.

## Infrastructure

- **Water** : Industrial water : 39.2ton/day, water for household use : 5,000ton/day
- **Sewage** : 60,000 tons/day (the whole quantity is disposed by terminal disposal plant of sewage of Gwangju)
- **Waste disposal** : Committing process to Korea Environment Corporation, transferring to disposal plant of Hanam industrial complex and disposing of
- **Communication** : 5,200 circuits
- **Electronic** : Voltage 154kV, Volume 120,000kVA
- **Energy** : Supply LNG

## Labor & Material

- Labor Condition**
- **Regional population :**
- |                         | Population | Available labor force | Ratio | Bachelor's | Master's | PhD  |
|-------------------------|------------|-----------------------|-------|------------|----------|------|
| <b>Nation-wide</b>      | 51,327,916 | 31,600,268            | 61.6% | 7.9%       | 1.7%     | 0.6% |
| <b>Integrated zones</b> | 7,626,969  | 4,692,976             | 57.3% | 9.0%       | 1.1%     | 0.4% |
- **Average wage** : 36.36 million KRW/year (US\$ 33,054/year)  
(4.3 years of service, average of 20 listed companies in the medical devices sector)

- Core Resource Supply Environment**
- **Professional Manpower:** Stable access to human resources of 8 organizations for training professional manpower such as the national research institutes located in Gwangju area, and Gwangju Institute of Science and Technology
  - **Industrial Manpower:** Educating 6,000 people from vocational high schools(4), special classes for industrial(2), high technical school(1)

## Government Support

- Additional financial support according to a municipal ordinance including support for foreign investment company, and others
  - **Financial Incentives (Gwangju city's support fund for small and medium Enterprise)**
    - **Management Stability Funds:** support amount 260 billion KRW, an object of small and medium sized manufacturing firms and service firms related to manufacturing, support within 0.3 billion KRW per one company, repayment at once with a 2-year grace period
    - **Promoting Venture Company Funds:** support amount 15 billion KRW, an object of venture companies and companies related to optics established within 5 years, support within 0.3 billion KRW per one company, repayment at once with a 2-year grace period
    - **Small and Medium Enterprise Structural Sophistication Fund:** support amount 260 billion KRW, an object of small and medium sized manufacturing firms and service firms related to manufacturing, support within 1.3 billion KRW per one company, repayment in five years with a three-year grace period
- \*. Pyungdong Foreign Investment Zone (in Pyungdong general industrial complex), based on 2012. 12



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