

# Blue Economy

## Jeollanam-do Wind Power Industry



전라남도  
JeollaNamdo



## Jeollanam-do Wind Power Industry

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# 01. Introduction of Jeollanam-do



# Introduction of Jeollanam-do

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## The center of Northeast Asia and Gateway to the Pacific

Mongolia

Russia

China

Korea

Japan

Jeollanam-do



**Population**  
(1,868,745 persons)



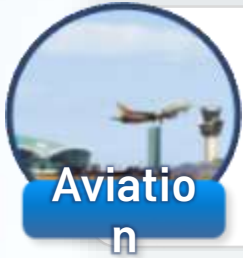
**Size** – 12% of Entire Territory  
(12,345 km<sup>2</sup>)



**Administrative districts**  
(5 cities, 17 counties)

# Jeollanam-do Traffic Network

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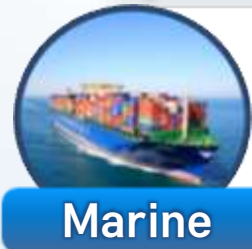
- **Muan International Airport** : Intl. airlines  
9 countries/7routes (Shanghai, Tokyo, etc.)
- **Yeosu Airport** : Domestic airlines  
(Seoul 8 flights/day, Jeju 2 flights/day)



- Mokpo ↔ Seoul : Approx. 2 hours
- Yeosu ↔ Seoul : Approx. 3 hours
- Mokpo ↔ Busan : Approx. 2. hr 20 min (Completed in 2022)



- **Seohaean Expressway** (Mokpo ↔ Seoul: Approx. 3 hours)
- **Namhae Expressway** (Mokpo ↔ Busan: Approx. 3 hours)



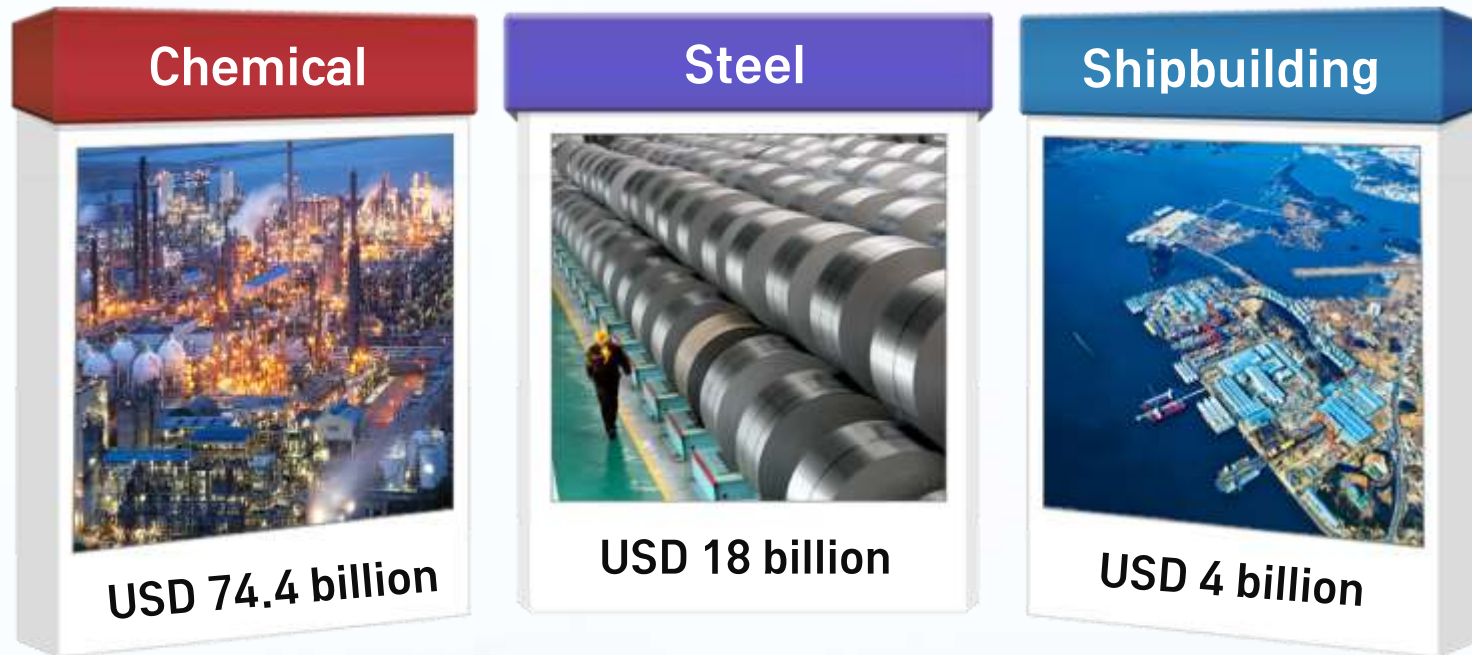
- **Port of Gwangyang**: 101 berths / 3,840,000 TEU
- **Port of Mokpo**: 29 berths / 23,000 TEU





## Productivity of Key Industries in Jeollanam-do

\*Source : Statistics Korea(2019)



**Boast Having Excellent Wind Power Base**  
**Shipbuilding & Steel Industry**

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## 02. Current Domestic & Overseas Wind Power Industry



# Global Wind Power Industry

## The Global Wind Power Generation Accumulated Facility Capacity is 597GW

- ❖ The 2019 Global wind power new facility capacity is 60.4GW
- ❖ Around 60% of new installation are made in China and US ; China 236GW / US 105GW

## The Global Offshore Wind Power Generation Accumulated Facility Capacity is 29.1GW

- ❖ 2019, the size of global offshore wind power generation market is 6.2GW (up 37% from 4.5GW on year)

## The Annual Average Growth Rate of Global Wind Power Industry is 4%

- ❖ From 2020 to 2024, more than 355GW capacity is estimated to add(71GW for each year)
- ❖ Importantly, offshore wind power will grow to 50GW for 5 years and annual average growth would be more than 19.5%

## Prospect of new installation offshore and onshore



\*2019 GWEC Report(2020)



# Current Wind Power Industry In Korea

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## Current Wind Power Generation Capacity

- ❖ 2019 : 1,490MW  
(Onshore 99 sites 680units, offshore 4 sites 13 units)
- ❖ Offshore Wind power plants : 73MW

	2010	2019
Installation capacity	373MW	1,490MW
No. of Complex	28	103
No. of Turbine	233	693
The Rate of Unit made in Overseas	94.1%	49.9% (346 Units)

\*Source : Korea Wind Power Industry Association, GWEC(2020)



# Current Wind Power Industry in Korea

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## Renewable Energy 3020



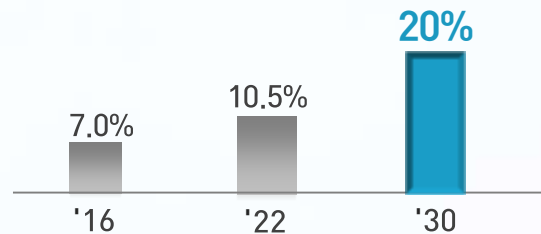
**“Nurture a new energy industry  
through Renewable Energy 3020”**

- President Moon Jae-in's pledge -

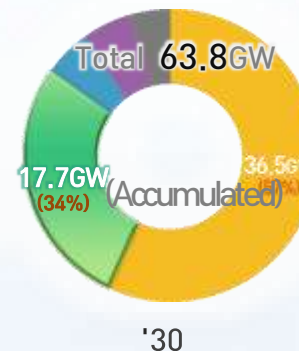
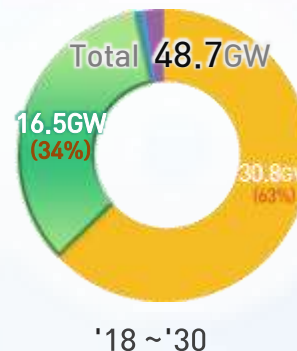
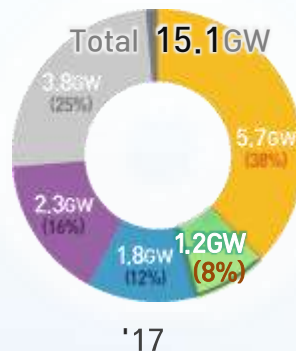
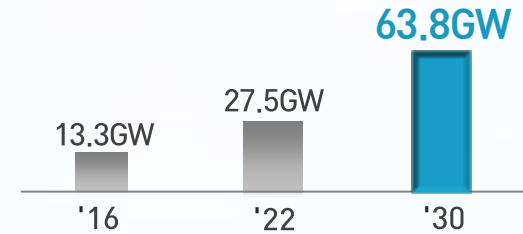
renewable energy  
power generation  
Occupy 20% of the  
total energy by 2030.

Plan to supply clean  
energy with 95% or  
More of new facilities

Portion of Renewable Energy  
Power Generation



Capacity of Renewable Energy



- Photovoltaic
- Wind Power
- Water Power
- Bio
- Waste
- Others

## Renewable Portfolio Standard (RPS)

- ❖ Subject : 21 power generation and energy companies(with generator capa. of 500mw or more)
  - Subsidiary company of KEPCO (6 companies) + private generator (15 companies)
- ❖ RPS quota by year

\*Source : Korea Energy Agency(2019)

Year	2017	2018	2019	2020	2021	2022	2023~
RPS quota (%)	4.0	5.0	6.0	7.0	9.0	10.0	10.0

## Renewable Energy Certificate (REC)

Power Supply	Classification	Subcriteria	REC weighted value	Remarks
Wind power	Onshore wind		1.0	
	Offshore wind	Connection distance : 5km or less	2.0	
		Connection distance : 5 ~ 10km	2.5	
		Connection distance : 10 ~ 15km	3.0	
		Connection distance : More than 15km	3.5	
ESS	Connected to wind power facility		4.0	

## Korean Green New Deal Policy

**“Plan to expand renewable energy facilities  
such as wind power by more than 3 times by 2025”**

– First International Day of Clean Air for blue skies(Sept. 7, 2020), President Moon Jae-in –

- ❖ **Announcement of Korean Green New Deal Policy (July, 2020)**
  - Support of large scale offshore wind power complex site research : 13 areas
  - Establishment of large scale offshore wind power demonstration complex and testbed  
(Yeong-gwang County ; Jeollanam-do , etc.)
  - Expansion of renewable energy generation capacity such as offshore wind power  
(12.7GW in 2020 → 42.7GW in 2025)
- ❖ **About \$114 bil will be invested in the energy industry in 2021 (22.9% of the total budget)**
  - Green new deal related budget would be about \$8 billion  
(50% of budget from Ministry of Trade, industry & Energy and Ministry of Environment combined)
- ❖ **Announcement of Korean New Deal Fund Plan (Sept. 2020)**
  - \$ 17 bil scale fund will be created in next 5 years, investment will be made in  
new renewable energy infrastructure construction



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## 03. Jeonnam, Optimal Location of Wind Power Industry





## Jeonnam Wind Power Potential

Theory : **445GW**



Technology : **339GW**



Market : **32GW**



Source : 2018 Renewable Energy White Paper – Offshore Wind Energy Potential(GWh)



### ✓ Wind Power Complex Permit Status

- ❖ Total Permit : 77sites 3,715MW
- ❖ Under operation : 16sites 329MW
- ❖ Under construction : 59sites 3,386MW

# Jeonnam Win-Win Job Project

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Activate offshore wind industry and build a job creation system

Win-win job project using clean Jeonnam blue energy

## Site Development

- Shinan,  
Yeonggwang-

Support of 8.2GW  
large scale offshore  
wind complex site  
search

Large power  
system  
Establishment  
of promotion  
system

Realization of win  
win strategy for  
locals and regional  
development model

## Industry Support

- Mokpo, Yeongam -

Offshore wind power  
of the shipbuilding  
industry linkage and  
conversion  
Support for  
development of marine  
equipment suitable for  
the Southwest Sea

Port-oriented  
wind power industry  
Build a support system  
Wind power system  
International  
certification  
& verification  
Build a support system

## Technology Development

- Mokpo Daeyang  
Industrial Complex. -

Offshore wind  
power connection  
Hydrogen energy  
Conversion study

Consumable parts  
Localization rate  
Improvement study

## Maintenance Support

- Mokpo Daeyang  
Industrial Complex. -

Offshore wind farm  
Control system  
Construction

Ship utilization  
maintenance  
Build a support  
system

4th industry connection  
Advanced  
Maintenance  
Wind farm output  
improvement  
control tech support

## Education and Experience

-Yeonggwang, Naju -

Maritime safety  
training and Secure  
international  
certification

Wind power field  
Technical education

Wind energy  
promotion and  
safety experience  
program operation

# Jeonnam Win-Win Job Project

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## Offshore wind power convergence industrialization platform construction

### Period

From 2020 to 2022

### Size

Mokpo Daeyang Industrial Complex/ KRW31.5 billion

### Participants

KEPCO, KPS, Jeonnam Development Corp., Green Energy Research Institute, Energy Valley Industry-Academic Convergence Center

### Contents

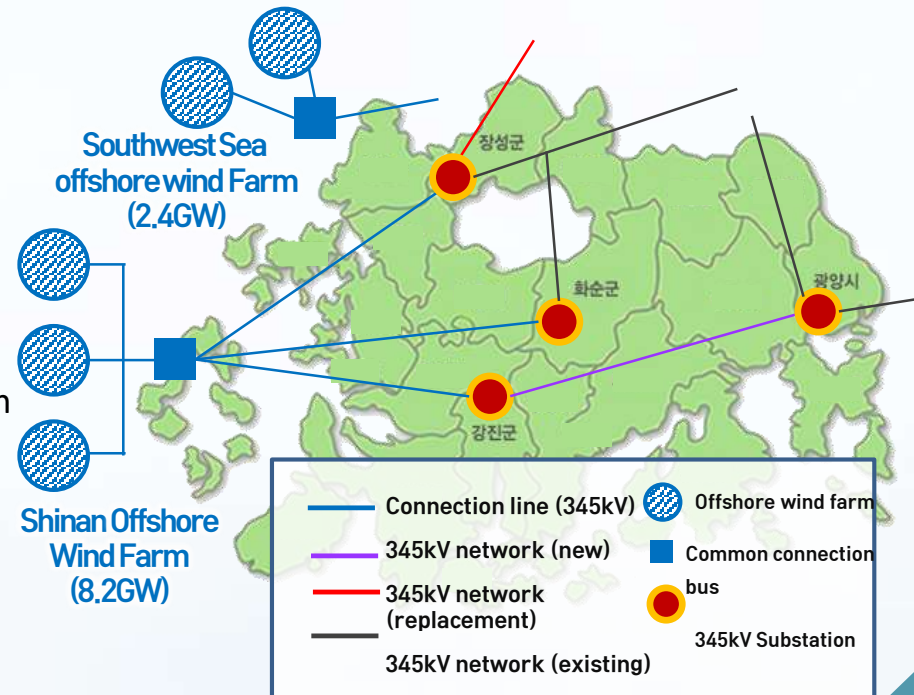
### Offshore wind power convergence industrialization platform center

#### • R&D field support

- Logistics management operation S/W development
- Support system for the hinterland of the wind complex
- Offshore wind power integrated control system construction

#### • Support for manufacturing fields

- Large-scale offshore wind complex EMS server construction
- Large parts storage and assembly site: 287,000m<sup>2</sup>
- Offshore wind power equipment warehouse construction



## Energy & New Technology Research Institute

- **Size** : 98,781㎡ / Research, test, demonstration test site  
※ Project period: 2016. ~ 2021. (5 years)
- **Project cost** : USD 71.7 mil / Approx. 100employees (2021)
- **Function** : New Energy Business Nurturing, Research, Demonstration

## Energy Valley Enterprise Development Institute

- **Size** : Total floor area / 10,186㎡
- **Facilities** : R&D support center, research facility, job center, etc.
- **Project cost** : USD 21 million
- **Institutions** : KEPCO materials inspection & disposal center, Korea Electric Industry Promotion Association, etc.

## Green Energy Institute

- **Size**: 15,070㎡ / R&D facility, test production facility, etc.
- **Function**
  - Development of profit-generating energy convergence technology such as solar and wind power
  - Energy welfare support projects such as building an energy independence island, etc.

## Jeonnam T.P. Wind Turbine System Assessment Center

- **Size**: 908㎡ / wind power test site (5 large, 6 small)
- **Function**
  - Attracting&Supporting wind power system test bed companies
  - Wind turbine performance evaluation/certification /verification support and technical development support





# Designated as an Energy Industry Convergence Complex

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- ❖ Designation Purpose : Fostering a convergence base for new energy industries  
(Ministry of Trade, Industry and Energy ; December 6th, 2019)
- ❖ Key industries : ① smart grid, ② energy efficiency improvement, ③ wind power
- ❖ Designated area : Bitgaram Innovation City, Mokpo, Hampyeong, Jangseong, etc. 10.49km<sup>2</sup>
- ❖ Support information
  - Institutional support : ① Establishment of infrastructure, ② Designation and Support of energy-specialized companies, ③ Support energy specialized research and human resources training institutions, etc.



Infrastructure	Necessary facilities for R&D, corporate support, and manpower training
Energy specialized company	R&D / Local tax reduction / Priority product purchase request
Specialized research institute	R&D and demonstration / Discovery of new energy industry / International joint research
Professional manpower training institution	Education and training expenses such as practical equipment / International exchange

- Other support : preferential treatment for local investment promotion subsidies, additional points for participation in government technology development projects, tax benefits, etc.



## Local company that can be linked with offshore wind power business

Sector	Field	Company
Offshore structure manufacturing industry	Offshore plant, jacket, etc.	Hanyoung Industries, Bowon M&P, Sungchang ENC, Daesang Heavy Industries, etc.
Ship component parts manufacturing industry	Ship components, ship structures, shipbuilding equipment	Daehan Shipbuilding, Yooil Heavy Industries, Hyundai Samho Heavy Industries Co., Ltd. and more than 140 companies
Other ship building business	Offshore floats, offshore structures, power plants, etc.	Vinsen Co., Ltd., Wooyoung Marine Co., Ltd., Jeongsu Marine Co., Ltd., Cobuy Tech, Dae-a Energy, Innovation
Steel wire drying industry	Shipbuilding, etc. repair, steel wire construction, ship, Iron equipment, ship components, etc.	Winner Shipbuilding Co., Ltd., Joongang Offshore & Heavy Industries Co., Ltd. GS H Shipbuilding & Offshore Heavy Industries Co., Ltd. Daehan Ship Technology Co., Ltd.
Painting and other film treatment business	Painting, shipbuilding equipment, ship components	Hyundai Samho Heavy Industries Co., Ltd. and 25 other companies

# Jeonnam, Optimal Location of Wind Power Industry

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Easy to convert and utilize shipbuilding infra  
Which is a major industry in the region

## Offshore Wind Power System Components

### Materials

- Hot rolled plate
- Carbon fiber  
Glass fiber  
Epoxy resin
- Surface treatment rolled steel

### Parts

- Tower
- Blade
- Accelerator
- Driving system component

### Power Equipment

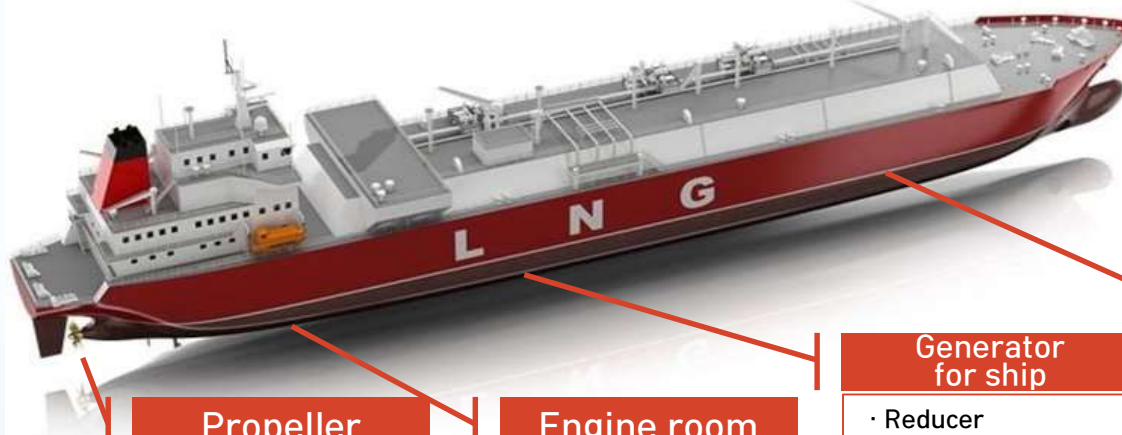
- Generator
- Power rectifier

### Service Industry

- Complex building
- Transportation and Installation  
Maintenance
- System Connection



## Shipbuilding and Marine System Components



### Ocean platform

- Tower
- Substructure

### Hull

- Steel plate
- FRP(Small and Medium size vessel)

### Propeller

Similar to blade design principle

### Engine room

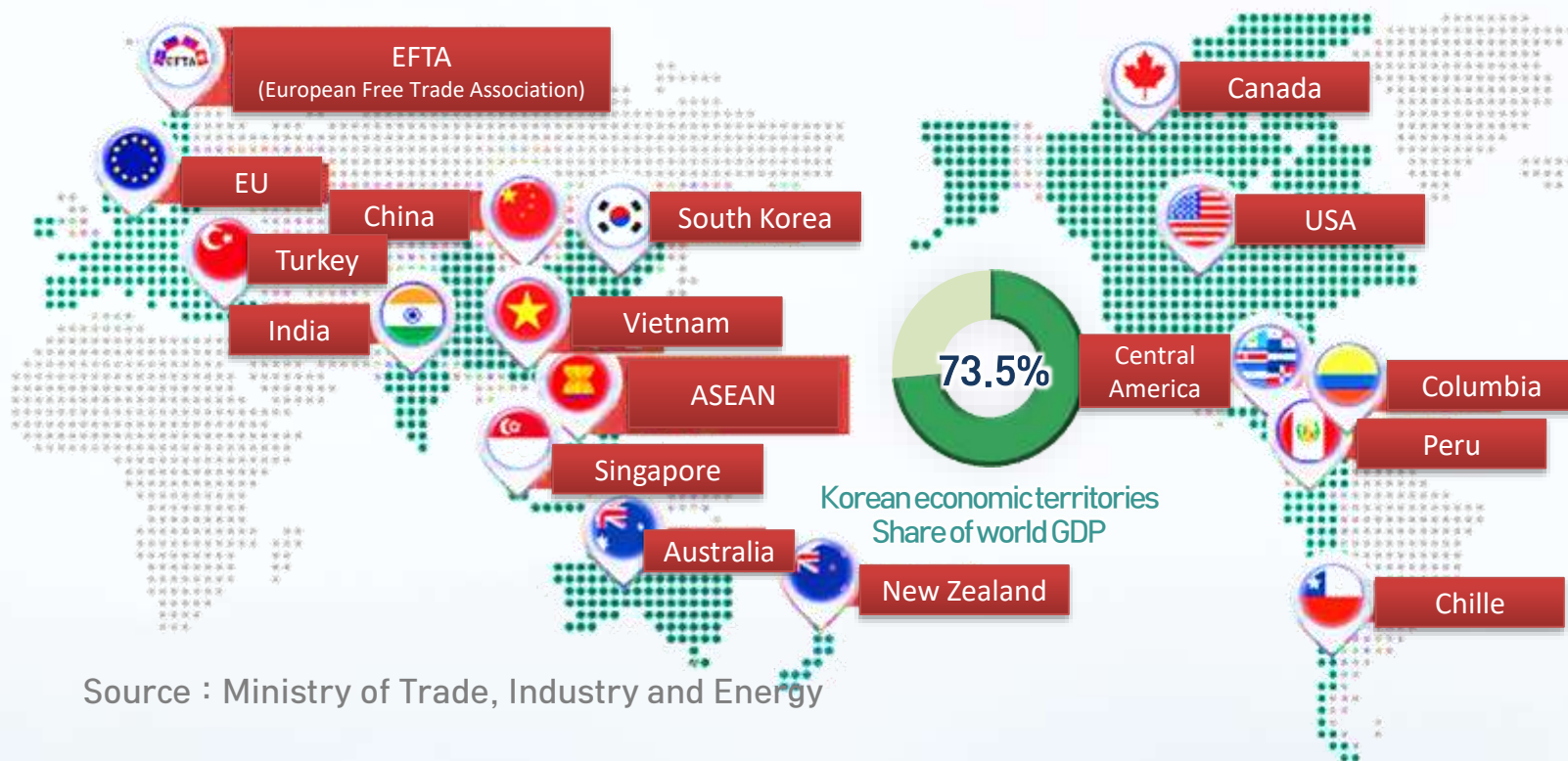
- Reducer
- Driving system component

### Generator for ship

- Reducer
- Driving system component
- Driving system component

# FTA Platform in Korea

- ✓ **Signing status:** Signing with 73.5% of countries around the world (as of October, 2019)
- ✓ **Main contents:** tariff elimination between signatory countries, economic cooperation, trade relief, etc.



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## 04. Proposal of Investment





# Site proposal for wind power equipment factory

## Location of industrial complexes related to the wind power industry



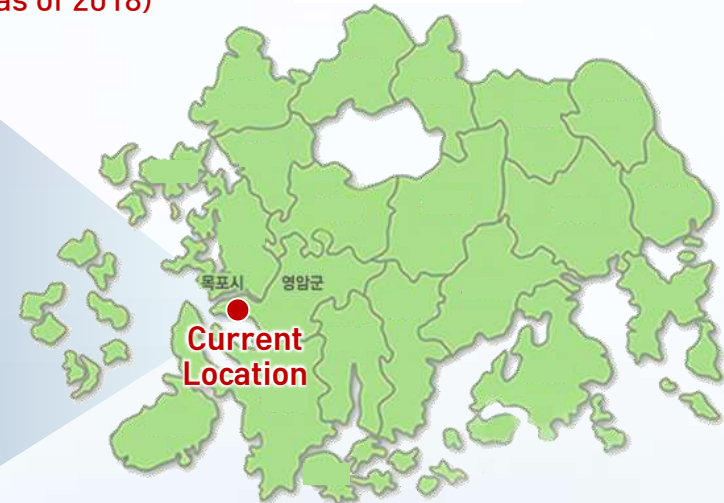
Efficient production and assembly at the integrated wind power industrial complex with excellent transportation infrastructure such as Muan International Airport & Mokpo Port, Consistent demand in large-scale wind power complex that are advantageous for transportation & adjacent to infrastructure.



# Site proposal for wind power equipment factory

## Daebul National Industrial Complex

- ❖ Location : Samho-eup, Yeongam-gun, Jeollanam-do
  - ❖ Size : 11,374,000m<sup>2</sup> / 342 companies moved in
  - ❖ Advantages
    - Easy to convert wind power equipment business to shipbuilding equipment integration complex
    - Excellent manpower pool : about 26,000 / year
      - \* universities, vocational training centers, etc.
    - Adjacent to various research inst.(new energy technology research center, etc.), easy to establish industry-academia-research cooperation
- ※ Hyundai Samho Heavy Industries will be moved in (Global Top 5 as of 2018)

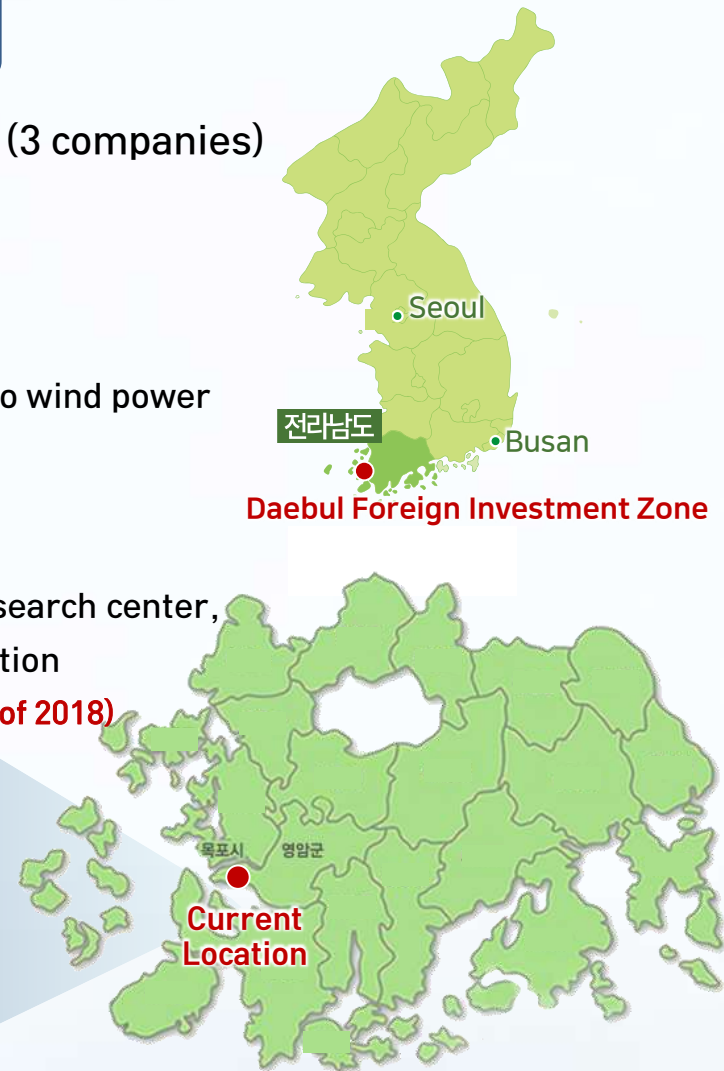


# Site proposal for wind power equipment factory

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## Daebul Foreign Investment Zone

- ❖ Location: Yeongam-gun, Jeollanam-do / 135,061 m<sup>2</sup> (3 companies)
  - ❖ Estimated building cost : USD 10.8 mil
  - ❖ Land rent: USD 0.74 / m<sup>2</sup> / year
  - ❖ Advantages
    - Easy to convert shipbuilding equipment integration complex to wind power equipment business
    - Excellent manpower pool : about 26,000 / year
      - \* universities, vocational training centers, etc.
    - Adjacent to various research inst. (new energy technology research center, etc.), easy to establish industry-academia-research cooperation
- ※ Hyundai Samho Heavy Industries will be moved in (Global Top 5 as of 2018)



# Site proposal for wind power equipment factory

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## Mokpo Daeyang Industrial Complex

❖ Location: Daeyang-dong, Mokpo-si, Jeollanam-do

❖ Project scale: 85,000m<sup>2</sup>

❖ Pre-sale price: USD 232 / m<sup>2</sup>

### ❖ Advantages

- Excellent manpower pool : about 26,000 (universities, vocational training centers, etc.) / year

- Infrastructure, research institutes, tax support, etc. ; according to the designation of the new energy industry convergence complex





# Site proposal for wind power equipment factory

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## Mokpo New Port hinterland

- ❖ Project period: 2017. ~ 2021. (Phase 1)
- ❖ Project cost: USD 40 million
- ❖ Location: YuDal-dong, Mokpo-si, Jeollanam-do
- ❖ Scale: 485,000m<sup>2</sup> (residence facilities, yard, etc.)
- ❖ Advantages : low rental price



# Site proposal for wind power equipment factory

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## Yeongam Yongdang Industrial Complex

- ❖ Location: Yongdang-ri, Samho-eup, Yeongam-gun
- ❖ Scale : 318,000 m<sup>2</sup> / Pier and yard
- ❖ Sales price : about USD 161 / m<sup>2</sup>
- ❖ Owner: Hyundai Samho Heavy Industries
- ❖ Advantages : Easy to **supply** raw materials and **transport** products by utilizing **own infrastructure** such as piers



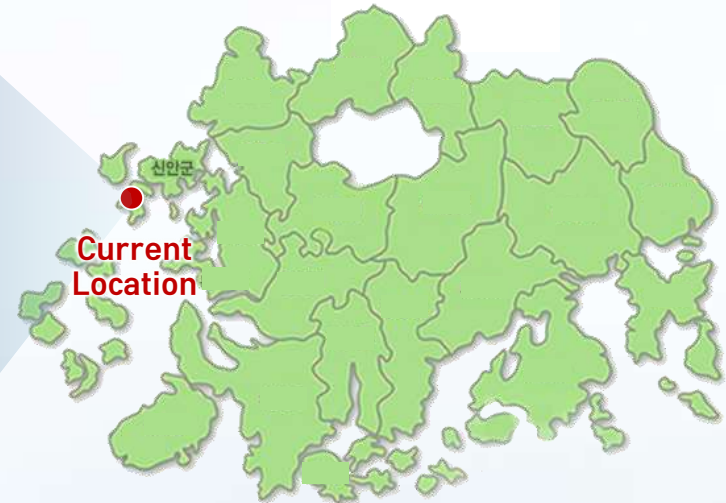


## Shinan Bokryong Industrial Complex

- ❖ Location: All over Abhae-eup, Sinan-gun
- ❖ Size: about 490,000m<sup>2</sup>
- ❖ Project period: 2022 ~ 2027
- ❖ Advantages : The closest industrial complex to the power generation complex, capable of large-scale assembly and transportation



Shinan Bokryong Industrial Complex



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## 05. Investment Incentive



## Local Investment Promotion Subsidy

	Detail
Location subsidy	Subsidize up to 50% of land purchase cost
Facility subsidy	Subsidize up to 34% of facility investment

## Incentives for Investment Companies

	Detail
Location subsidy	USD 358,000 limit, within 30% of the pre-sale price
Facility subsidy	Up to USD 448,000 in construction cost, facility equipment purchase cost, infrastructure installation cost, etc.
Employment subsidy	If the number of regular employees exceeds 10, USD 538 per month per person, for one year
Special support for large-scale investment	Support for up to USD 90,000 in case of investment of 45,000 or more or permanent employment of 100 or more
Local tax reduction	Acquisition tax and income tax reduction (up to 15 years)

# Investment Incentive

## Foreign investment incentives

\* **Conditions of support:** foreign investment ratio of 30% or

	Detail
Cash support	<ul style="list-style-type: none"><li>- (Subject to support) When investing in materials and parts, high-tech, and large-scale job creation</li><li>- (Content of Support) Support for land purchase cost and capital goods purchase cost</li></ul>
Rent reduction or exemption	Rent reduction or exemption when moving into a complex-type foreign investment area (max. 100%)

## U-turn company incentives

	Main Contents
Corporate Tax	50-100% reduction for up to 7 years
Tariffs	Facility introduction tariff reduction 50~100%
Investment subsidy	Support for up to 44% of investment in location and facilities
Transfer subsidy	Overseas facility transfer cost support within 400 million won
Build a smart factory	1.5 ~ 200 million won support
Employment Creation Incentive	Partial support for labor costs up to 100 new employees
Financial support	Facility investment interest rate preferential treatment and guarantee
Consulting support	Offer consulting expenses for liquidation of overseas business sites

## Investment incentives in areas of employment and industrial crisis

### Response to industrial crisis Special area

(May, 2018 ~ May. 2021)

- ❖ Designated area: Mokpo-si, Haenam-gun, Yeongam-gun
  - ❖ Support contents
    - Technical support (prototype production, patent/certification, consulting, etc.), commercialization support (exhibition, marketing, etc.)
    - Tax support
- (Target) SMEs and mid-sized companies newly investing in employment and industrial crisis areas
- (Content) 100% reduction in corporate tax (start-up company) and income tax (workers) for 5 years

### Employment Crisis Area

(May, 2018 ~ May. 2021)

- ❖ Designated area: Mokpo-si, Yeongam-gun
- ❖ Support contents
  - Employer: Employment maintenance support, employment and industrial accident insurance premium support, etc.
  - Workers: training benefits, support for life stabilization, support for employment promotion, etc.





JeollaNamdo

## Jeollanamdo Provincial Government

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