

BLUE ECONOMY

Jeollanam-do

Secondary Battery Industry



전라남도
JeollaNamdo

BLUE ECONOMY

Jeollanam-do Secondary Battery Industry



Jeollanam-do Secondary Battery Industry

CONTENTS

- 01 | **Introduction of Jeollanam-do**
- 02 | **Status of Secondary Battery Industry**
- 03 | **Investment Environment in Jeollanam-do**
- 04 | **Investment Proposal**
- 05 | **Investment Incentives**



• Jeollanam-do Secondary Battery Industry •
01. Introduction of Jeollanam-do



Introduction of Jeollanam-do

BLUE ECONOMY
전라남도 2차전지 산업

Center of Northeast Asia Gateway to the Pacific

Mongolia

Russia

China

Republic of Korea

Japan

Jeollanam-do



Population
(1,868,745 people)



Area - 12% of the nation
(12,345km²)



Administrative District
(5 Cities, 17 Counties)

Introduction of Jeollanam-do

Current Status of Traffic Network



- **Muan International Airport** 9 countries / 13 routes
(Shanghai, Tokyo, Bangkok, etc.)
- **Yeosu Airport** Domestic (Seoul 8 times/day, Jeju 2 times/day)



- **Mokpo ↔ Seoul** 2 hours
- **Yeosu ↔ Seoul** 3 hours
- **Mokpo ↔ Busan** 2 hours 20 mins. (To be completed in 2020)



- **Seohaean Expressway** Mokpo ↔ Seoul about 3 hours
- **Namhae Expressway** Mokpo ↔ Busan about 3 hours



- **Port of Gwangyang** 101 berths / 3.84 million TEU
- **Port of Mokpo** 29 berths / 23,212 TEU
- **Mokpo New Port** 29 berths / 23,212 TEU



Center of the Key Industries in Korea

Source: Korea National Statistical Office (2019)

Chemistry



- Oil refining 840,000 barrel/day
- Petrochem 4.14 mil.ton/year(Based on Ethylene)
- * World's best electric vehicle battery company
LG Chemical



Energy



- #2 on Forbes World's best electric power company list (2017)



Shipbuilding



- Order status : 49ships / USD 4.5 bil(2019)
- Remaining order : 98 ships / USD 10 bil



Steel



- Steel 21mil ton/year



• Jeollanam-do Secondary Battery Industry •

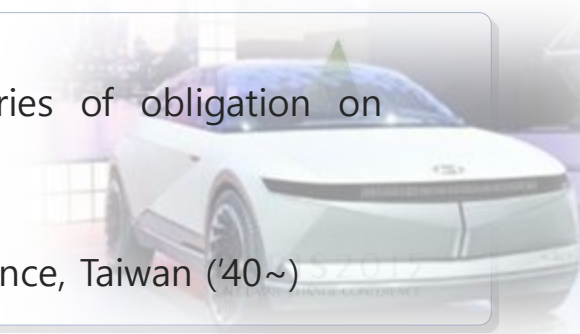
02. Introduction of the Secondary Battery Industry



World Trend in the Secondary Battery Industry





International cooperation on greenhouse gas mitigation

- ❖ Paris Climate Change Agreement (2015): Expansion on countries of obligation on greenhouse gas mitigation (37→195 countries)
- ❖ Announcement of plan to ban production of diesel engines
 - Norway, Netherlands ('25~)
 - Germany, India, UK ('30~)
 - France, Taiwan ('40~)



Global Electric Vehicle Outlook

- ❖ Expected annual sales: ('18) 1.5 million cars → ('19) 2.21 million cars
→ ('25)19.63 million cars
- ❖ Investment expansion plan for Global Electric Vehicle sector (~ by 2025)

	27.2 trillion investment	Launching 80 kinds of electric vehicles
	41.5 trillion investment	Targeting 50% electric vehicles production
	Stopping diesel engine production	'30 targeting annual sales of 5.5million Cars
	61.1 trillion investment	Ecofriendly vehicle, personal air vehicle manufacture

Secondary Battery Industry Growth Outlook [Support Policy for Electric Vehicles]

Support policy for Electric Vehicles from leading countries



Differential reduction on **Income tax**, providing **subsidy based on the battery volume**



Subsidy, tax reduction, free charge for cars with no carbon emissions



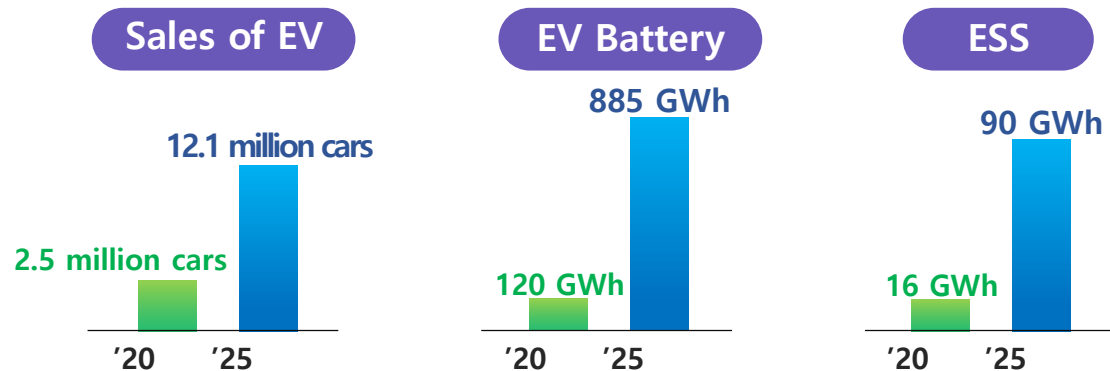
Differential **subsidy pay, sales tax exemption** based on mileage



Government **subsidy support** + **Additional support** through regional subsidy projects



Battery and ESS market outlook based on the demand for Electric Vehicles (EVs)



Korean Government Policy on the Secondary Battery Industry

BLUE ECONOMY
전라남도 2차전지 산업



“Through **Renewable Energy 3020**
Fostering a New Energy Industry”

- President MOON Jae-in's commitment -

Establishing 2020 Platform of Industry Innovation

- **New Energy Industry** USD 143 million Investment on energy new industry, creating about 200,000 jobs (~'22)
- **Ministry of Trade, Industry and Energy (MOTIE)**, Selecting Secondary Battery as a supporting project in industry innovation manpower growth (August, '20.)
 - ⇒ **Training professional manpower for the field of Battery industry** (5 universities)
KRW 10 billion investment for 5 years

Korean Green New Deal Policy

- **Korean New Deal Fund** Creation
 - ⇒ **1.8 billion USD for 5 years** / Development of Electric Hydrogen Vehicles, Investment in new renewable energy infrastructure, etc.
- **About USD 114 billion** investment in the field of energy industry in 2021(22.9% of the entire budget)
 - ⇒ Scale of about **USD 8.1 billion** budget of Green New Deal
(about 50% of budget of MOTIE + Ministry of Environment)

Korean Government Policy on the Secondary Battery Industry

Policy on Electric Vehicles

- National government subsidy and local government subsidy
- Support on **Individual consumption tax, etc.**
Tax deduction, reduction on charging cost, etc.

Government Subsidy

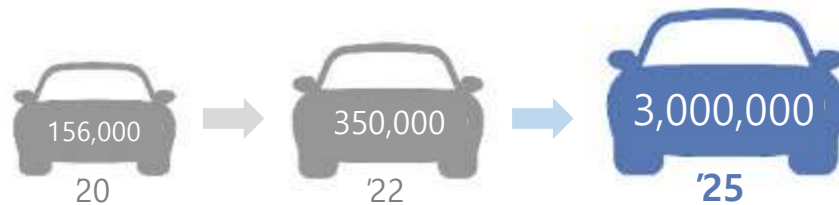
Up to USD 10K

Local Government Subsidy

Up to USD 9.8K

Government Electric Vehicle supply plan and current sales

- **Supply Plan** (Accumulated)



- **Sales Status** (yearly)



Domestic Electric Vehicle market is expected to continue to expand due to the increased market demand thanks to the government support

* Registration of diesel-powered cars will be prohibited starting in 2035.

Location of 3 Leading Global Battery Companies

Global Battery Power, Republic of Korea



**Global Electric Vehicle
 Battery Market Share No. 1 Korea**






World's No.1

13.4 GWh / 25.1%

Production of Electric Vehicle Batteries, Small Batteries, ESS, Anode Materials, etc.

Market share of leading countries

	19 GWh / 35.6%
	15.9 GWh / 29.7%
	10.1 GWh / 18.9%



World's No. 4

3.4 GWh / 6.4%

Production of Electric Vehicle Batteries, Small Batteries, ESS, Anode Materials, etc.



World's No. 6

2.2 GWh / 4.1%

Production of Electric Vehicle Batteries, Energy Development

*as of September, '20, SNE Research

• Secondary Battery Industry in Jeollanam-do •

03. Investment Environment in Jeollanam-do



New Energy Industry Outlook in Jeonnam-do




Center of futuristic transportation: Jeollanam-do



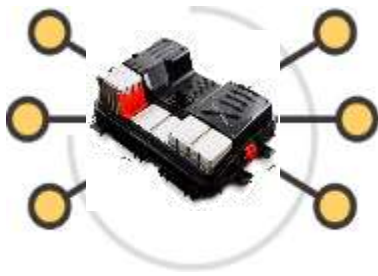
Focusing on **new core industry for the Blue Economy** with battery based **advanced transportation equipment** (e-mobility, drone) and the **New Energy Industry**

⇒ In connection with the original strategic industry (steel, chemical, etc.)

Active investment in the materials and parts industry for Secondary Batteries

	Location	Manufacturing Item	Investment
	Yulchon Industrial Complex	Anode Materials	USD 774 million
	Yeosu Industrial Complex	Carbon Nanotubes	USD 58 million
	Yeosu Industrial Complex	Secondary Battery Electrolytes	USD 18 million

Construction of Secondary Battery Supply Chain



- POSCO Chemical, etc **Materials Supply** and materials processing companies in the complex
 - ⇒ Anode Materials 6, Cathodes 2, Separation membranes 3, Electrolytes 1, Battery manufacturing 1
- Micro Electric Vehicles ·ESS, etc. **Creating conditions for new industry growth**

the Best Environment : Industry-University-Institute Collaboration



- I** Certified institution of Specialty in Batteries : Korea Battery Industry Association, Korea Electronics Technology Institute
- U** KEPCO Institute of Technology providing professional personnel and joint research (Scheduled to open in March, '22)
- R** Secondary Battery Research Inst. : GreenEnergy Inst., Jeollanam-do TP, etc.

RE 100 Best Location, Jeollanam-do

❖ Possibility to secure maximum production power from new renewable energy nationwide

- Possession of **solar energy generation** (21% nationwide), Wind power (20% nationwide), Ocean Energy 80% nationwide)



❖ Haenam Solaseado Industrial City

- The largest solar energy generation operation in Korea (98 MW)
 - * 306.27 MWh storability ESS equipment (The largest scale in the world)
- Spare space for scale of 1 GW solar energy generation (about 14.15 millionm²)

❖ 8.2 GW Offshore Wind Power ('20 ~ '29) Mass supply of New Renewable Energy

- * Ocean Wind Power generation + the Application of Weights in REC (Renewable Energy Certificate) of ESS (Energy Storage System)

New Renewable Energy Certificate(REC)

Classification	Target Energy	Standard Details	Weight
Wind Power	Onshore wind power		1.0
	Ocean wind power	Connected distance less than 5 km	2.0
		Connected distance 5 ~ 10 km	2.5
		Connected distance 10 ~ 15 km	3.0
	Connected distance exceeding 15 km	3.5	
ESS	Connected to wind power equipment		4.0



Construction of Secondary Battery Platform

BLUE ECONOMY
전라남도 2차전지 산업

Construction of Secondary Battery Materials Cluster

- **Location:** Within Sepoong general industrial complex, Gwangyang / about 670,000m²
- **Project period:** 2021 ~ 2022 (2years)
- **Attracting Industry :** Core materials(anode materials · cathodes · separation membranes, etc.)
Core materials Recycling, Institutes for research and personnel training



Construction of Secondary Battery Platform

Designation of Kang-so Research Development special zone

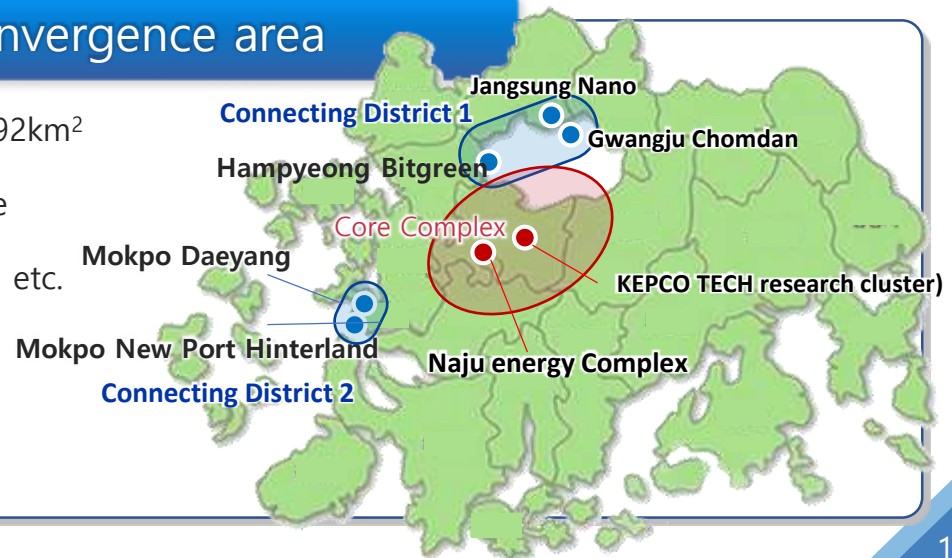
(Small-Strong Special Zone: Small Scale, high density intensive research development area closely located with regional innovative institutes)

- **Location:** Bitgaram Innovation City, Naju / 1.69km²
- **Specialty:** Energy New Industry (Solar power, ESS, etc.)
- **Support Details:** Tax exemption, R&D budget support, support on lot rental for building infrastructure, private contract on the final product with KEPCO



Designation of Energy New Industry Convergence area

- **Location:** Bitgaram Innovation City, Naju, Mokpo etc./ 18.92km²
- **Purpose:** Fostering new energy industry convergence base
- **Effect:** Infrastructure, R&D, support for training personnel, etc.
- **Support Details:** Local investment subsidy 2% preference, Priority purchase from public institute, Exemption on local tax



Construction of Secondary Battery Platform

e-Mobility Control Free Special Zone

·**Location** : Yeonggwang-Mokpo-Shinan area
(Daema Industrial Complex, etc. 7 areas)

·**Project period** : 2019 ~ 2021

·**Project cost** : USD 36 million

·Support Details



Administrative support

- e-Mobility **R&D· Demonstration**
- e-Mobility **practical working Support group**

Project Support

Demonstration of **regulation special case**, e-mobility battery industrialization

sharing Hydrogen · fuel cell technology development result and support for the supply

Energy New Industry Control Free Special Zone

·**Location** : Naju area (19.94km²)

·**Project Period** : 2020 ~ 2023

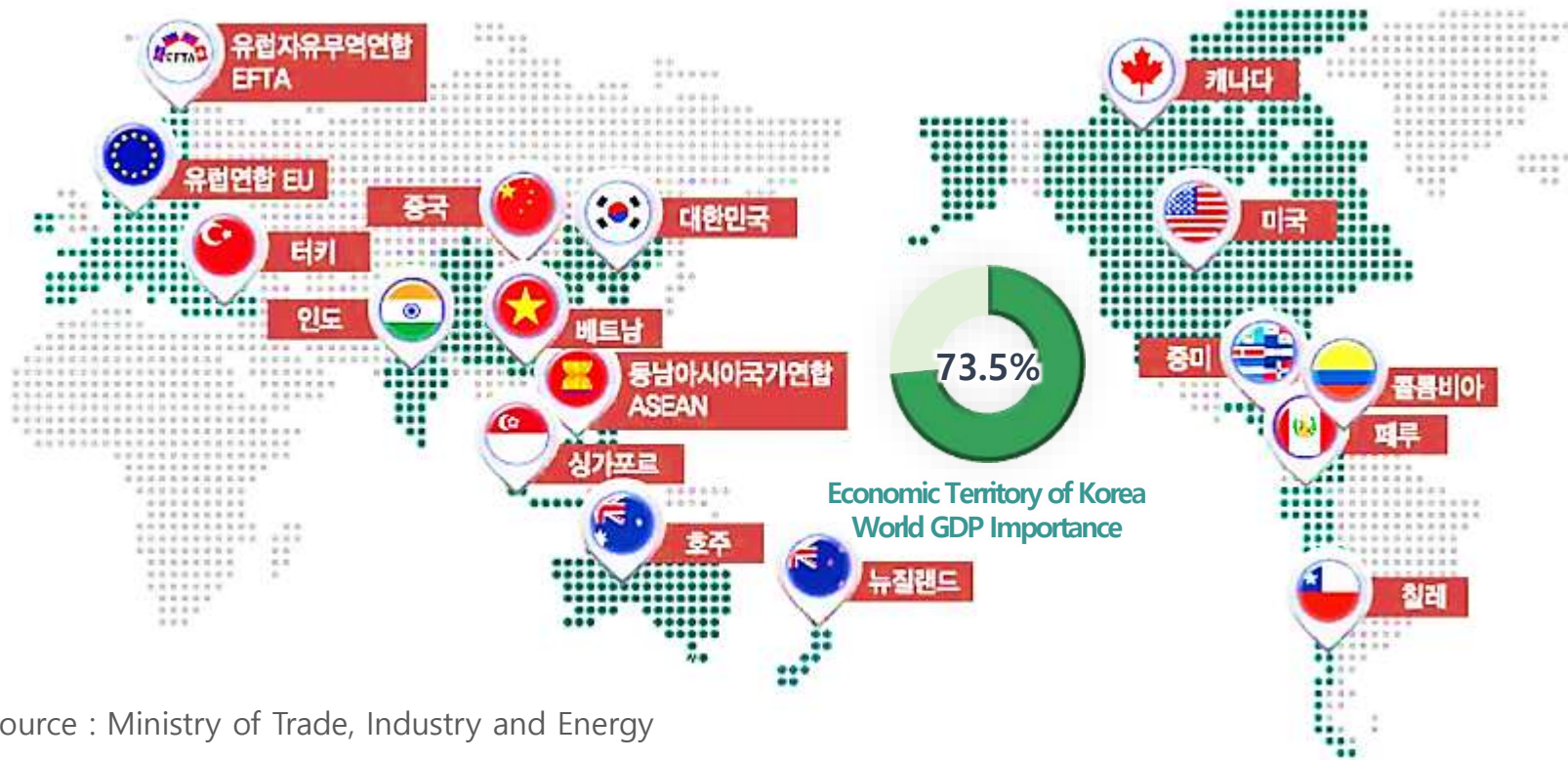
·**Project Cost** : 35 million USD

·Support Details

- Support for **special case regulations**, etc.
- Support for **MVDC** (Medium Voltage Direct Current) **materials and equipment**
- Support for exclusive use of **direct current grid dematerialization**
 - ① Easing of regulations on **power transfer volume of direct current circuits**
 - ② Easing of regulations on **installment height of direct current circuits**

Best Location for Usage of FTA Platform

Concluding with 73.5% Countries Worldwide (as of October '19)



*Source : Ministry of Trade, Industry and Energy

Details for concluded countries, tax exemption, economic cooperation, etc.

Technology Development and Base Construction on Secondary Batteries

Propulsion on industrialization of battery recycling after using EV·ESS



- Location:** Naju Innovation industrial complex
- Project Details:** Waste battery reuse test·Evaluation center, function·Stability test equipment, finding model for industrialization, etc. / 20 million USD
- Participating Institutes (12) :** Research institutes **6**, Private companies **6**
 - **(Research institutes)** Korea Battery Industry Association, Battery R&D Association of Korea, KETI, Green Energy Institute, Mokpo National University, Jeju TP
 - **(Private companies)**



Electric Car Ferry and Portable Power Supply System Development

- Location:** Within Mokpo Daeyang Industrial complex
- Project Details:** Replaceable portable power supply system technology development, Operating technology development, Electric Car Ferry development, etc. / 43 million USD
- * the registered coastal liner in Jeollnam-do : **60%** of the nation (86 vessels)



Technology Development and Base Construction on Secondary Batteries

Technology development for reuse of used battery parts

- **Location:** within Naju Innovation City Industrial Complex
- **Project details:** Used EV·ESS Battery reuse · reproduction · reproduction test · research and demonstration / 19 million USD

Construction of Test evaluation center for secondary battery materials

- **Location:** Within Naju Innovation Industrial Complex
- **Project Details:** test evaluation infrastructure of secondary batteries core material and core parts efficiency testing and technology development / 324 million USD





Construction of standard certificate platform for secondary battery reuse

- **Location:** Gwangyang area
- **Project Details :** Technology development and standards development for eco-friendly reuse of core materials of used batteries, construction of recognition systems, establishing advanced equipment for recycling, etc. / 32 million USD

Successful Investment Case

BLUE ECONOMY
전라남도 2차전지 산업

POSCO 포스코케미칼

- **Location:** Yulchon Industrial Complex in Gwangyang area
- **Scale:** Manufacturing factory of anode material
(annual production of 70,000 tons) / 774 million USD
- **Main Product:** Battery anode materials (**No.1** in the market)
- **Main Clients:**  LG Chem  SAMSUNG  SAMSUNG SDI  SK innovation



제이셀주식회사
JCEL CO. LTD.

Korea – Japan Joint Investment

- **Location:** Yeosu National Industrial Complex
- **Scale:** Manufacturing companies of electrolytes
(annual production of 12,000 tons) / 18 million USD
- **Main Product:** Electrolytes for batteries (**No.2** in the market)
- **Main Clients:**  LG Chem  SAMSUNG  SAMSUNG SDI  SK innovation





• • Jeollanam-do Secondary Battery Industry • • •

04. Investment Proposal



Kwangyang Saepoong Industrial Complex

BLUE ECONOMY
친환경 전자지 산업

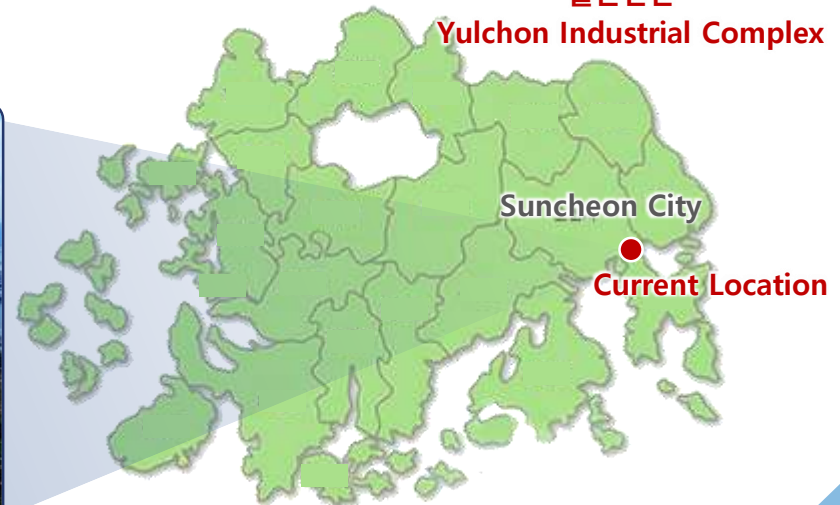
- **Location:** Kwangyang area
- **Main Industries:** Chemical, Secondary batteries
- **Cost:** average 231.68 USD/m²
- **Advantages**
 - Designated in the rear area of Gwangyang Port
 - *258KRW/m², Max. 100 years rent available
 - Close to Gwangyang Port, Easy access to imported raw materials and exporting Products



Gwangyang Bay Area Yulchon Industrial Complex

BLUE ECONOMY
전라남도 2차전지 산업

- **Location:** Suncheon, Gwangyang area
- **Main Industry:** Chemical, Secondary Battery
- **Cost:** Average 125.45 USD/m²
- **Advantages**
 - Easy to integrate POSCO anode materials manufacturing factory, etc. secondary batteries · next generation ESS
 - Easy access to Suncheon Jeonnam Technopark and industry support center



Naju Innovation Industrial Complex

BLUE ECONOMY
전라남도 2차전지 산업

- **Location:** Naju area
- **Main Industry:** Energy, Secondary Battery
- **Cost:** Average 171.19 USD/m²
- **Advantages:** Energy Valley, Energy industry convergence complex designated area
 - R&D, training personnel, financial support, etc. easy to participate in management support project
 - Close to KEPCO TECH(Opening in 2022), Chonnam National University (designated university of core material manpower training)
→ **Easy to obtain manpower**



Yeonggwang Daema Industrial Complex

BLUE ECONOMY
전라남도 2차전지 산업

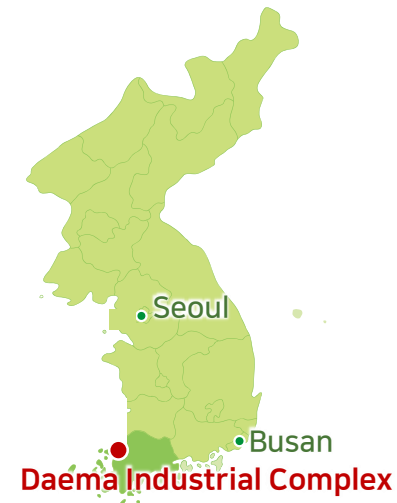
• **Location:** Daema-myeon, Yeonggwang-gun area

• **Main Industry:** E-mobility

• **Cost:** Average 107.22 USD/m²

• **Advantages**

- Special industrial complex for eco-friendly vehicles, perfect set-up for development, evaluation, certification, and production
- Due to the suspension or exemption on various regulations fast product development and easy access to temporary permission for special production



Jeollanam-do Secondary Battery Industry

05. Investment Incentives



Local Investment Promotion Subsidy

Division	Support details
Location Subsidy	Maximum 50% of land purchase amount
Equipment Subsidy	Up to 34% of equipment investment amount

Provincial Incentive for Investment Corporation

Division	Support Details
Location Subsidy	Up to 30% of sales price , within USD 359K
Equipment Subsidy	Construction , facility equipment purchase , base structure installment , etc., up to USD 449KW
Employment Subsidy	Exceeding 10 regular employees , USD 539K per an employee, within one-year support
Mass Scale Investment Special Support	Investment more than USD 44 million or regular employees of 100 or more , up to USD 89K support
Local Tax Exemption	Exemption on acquisition tax and income tax (Maximum 15 years)

Foreign Investment Incentive

Division	Support details
Cash Support	<ul style="list-style-type: none"> - (target) In case of material parts, advanced technology, large scale employment industry investment - (details) Support on land purchase cost and capital goods purchase
Reduction on Rental fee	In case of moving in to foreign investment complex area, reduction on the rental fee (Up to 100%)

U-turn Corporation Incentive

Criteria	Main contents
Corporate Tax	Up to 7 years 50~100% exemption
Customs	Equipment installation customs exemption 50~100%
Investment Subsidy	Location, Equipment investment Up to 44% support
Location Subsidy	Relocation of equipment from abroad within the limit of USD 360K support
Construction of Smart Factory	USD 135K ~ 180K support
Promotion on the Creation of Employment	New employment up to 100 people partial labor cost support
Financial Support	Provision of favorable interest on equipment investment and guarantee
Consultation Support	Provision of foreign establishment settlement consultation cost



202011



JeollaNamdo

Jeollanam-do Provincial Government

1, Oryong-gil, Samhyang-eup, Muan-gun,
Jeollanam-do, 58564, Republic of Korea

www.jeonnam.go.kr

Tel. +82 – 61 – 286 – 5120~3
+82 – 61 – 286 – 5150~3

Fax. +82 – 61 – 286 – 4746

E-mail. demi2114@korea.kr
secoory@korea.kr