

Great People, Great Nature, Great Jeju

Carbon Free Island Jeju 2030 Milestones & the Road Ahead

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I CFI 2030 Background

Preserving our clean natural environment

✓ World's only UNESCO-designated 'Natural Treasure Island'

• Biosphere(2002), World Natural Heritage(2007), Global Geopark(2010)

Securing energy supply

✓ High dependence on mainland-generated power supply

 \cdot Massive blackout (2006) due to HVDC malfunction

Optimal location for low-carbon green industry

✓ Average wind speed of 6m/s

• Installation of ROK's first land wind-farm (1998) and offshore wind farm (2011)

V ROK's only special self-governing province / Jeju Free International City

· Licensing rights transferred from the Central to the Provincial Government (2011)



"Preserving our nature and securing energy supply with rich wind resource"

II Executing and Planning the CFI 2030

2012. May Announced the Carbon Free Island Jeju by 2030 2013. Feb Published the CFI2030 Detailed Action Roadmap 2016. Apr Established the CFI2030 Vision Basic Plan 2017. Mar Established the CFI2030 Vision Detailed Action Plan 2019. Jun Announced the CFI2030 Modification Plan

II CFI 2030 Vision Action Plan

Vision

Carbon Free Island JEJU by 2030



Relative to 2030 GHG emissions

2030 Policy Targets Meeting the island's power demand Installing RE facilities (4,085MW) 2 Introducing EVs (377,000) **3** Upgrading energy DR Increasing energy efficiency Creating new energy industries (Creating 74,000 jobs) CO² emission 34% CO² emission

4,203,000 ton Reduction

2,779,000 ton

Wind of Change, Decade–long Challenges and Milestones

⁺ Transition to a Clean Mobility (Reducing GHG emissions 60,883tCO²eq)



Wind of Change, Decade–long Challenges and Milestones

Secure energy supply and welfare (GHG reduction by 449,383t CO2eq/yr)



 \checkmark Target delivery rate at over 90% with 8 years to go

Wind resource development revenue sharing

 \checkmark Supplying power to 4,000 vulnerable households (300M KRW/yr)

✓ Solar PV subsidy and after-service in community areas (315 stations / 1,558kw)

Wind of Change, Decade–long Challenges and Milestones

Discovering Future **Growth** Engine

Building RE · EV industry infrastructure

- Korea Institute of Energy Research,
 Jeju Global Research Center (2011)
 - Development & industrialization of future techs (incl. marine techs)



✓ Jeju Energy Corporation : Korea's first local energy corp. (2012)

 Maximizing revenue using local public assets and promoting RE supply



Special Zone for EV Charing (2019)

Leading EV infrastructure through charger sharing
 platform, mobile charging service



Training energy field experts

- Established RC to train
 RE experts (2005)
 - Clean Energy Demo RC, EV
 Project Group



- Korea' s only Wind Power Mechanical System Engineering (2014)
 - Annual graduates (M.S.PhD)



- 2nd in wind power related thesis patent (2019)
- Smartgrid, RE, EV related majors (2014)
 - 836 SMEs
 - Scholarships and career incentives



IV Carbon Neutral Frontier, Road Ahead

Target set too high? Unexpected hurdles

Curtailment •

Demand < Supply = first case of RE oversupply

- 225 wind turbine shutdowns until 202
- Curtailment also applying to solar PVs difficulties for small IPPs

Coverage

Focused on RE facility & EV rollout

 Lacking in primary industries, hospitalities, buildings, and other CN areas





Social licensing CFI2030 PR insufficient

 Incomplete citizen-participating CFI social governance



V CFI2030, The Future

Accelerating RE & EV to achieve carbon neutrality

Carbon

Neutrality

Reducing curtailment: Distributed Energy Action Plan

• Expanding large-scale ESS and sector-coupling (P2X)

✓ Just transition for base load sectors

Thermal plants → Hydrogen & clean energy

✓ Balance between RE and low-carbon base load

• Designating special districts for distributed energy

\checkmark ICE \rightarrow EV transition (377K)

Banning ICE registration after 2030

V CFI2030, The Future



Expans ion

Ubiquitous Expansion of Carbon Neutrality

✓ Local action plan based on the Carbon Neutral Green Growth Act

• GHG reduction across all sectors (power, industry, mobility, etc)

✓ Tailored low-carbon EE in primary industries & etc.

• Energy management system, Expanding zero-energy buildings

✓ Climate budget for climate change response

• Strengthening social security against climate crisis

Advancing Jeju's hydrogen economy

• R2H in mobility and agriculture sectors

Voluntary RE100 participation for Carbon-intensive industries

• Increase RE usage through the RE100 initiative

V CFI2030, The Future

Localizing carbon-neutrality to our citizens

Creating carbon neutral jobs & training young experts

- Inviting business and institutions through EV and Distributed Energy Districts
- Launching a specialized energy research center

Localiz ing CN

\checkmark Just transition in career in the ICE \cdot LPG industries

• Building social security networks and supporting the transition from stranded business

Building regional cooperation network through stronger energy governance

 Reducing the energy gap by supporting underprivileged sectors



VI CFI2030, Green Hydrogen Ecosystem





Revitalizing Green Hydrogen Ecosystem by Utilizing Renewable Energy Surplus Electricity

VI CFI2030, Green Hydrogen Ecosystem

Contribution to vitalization of the hydrogen economy in Korea



Legalization

Securing economic feasibility and promoting commercialization by improving laws for green hydrogen production

VI CFI2030, Green Hydrogen Ecosystem



Efforts to achieve 2050 carbon neutrality



Scientific/technological effect

Securing optimal operating technology



- Securing technology and establishing a domestic production system
- Securing power system flexibility
- Establishment of green hydrogen production management system using new technology



Economic/industrial effect

Activation of the industrial ecosystem



- Activation of domestic industry for green hydrogen production
- Securing economic feasibility by using surplus electricity
- Overseas export of green hydrogen production technology



Socio-environmental effects

Early achievement of 2050 carbon neutrality



- Eliminate power system instability
- Green hydrogen production safety standards through legal improvement
- Contribute to carbon reduction by using renewable energy and diversifying demand for green hydrogen

Jeju and the Republic of Korea will lead the way to global achievements.

Real-time Renewable Energy Supply and Demand in Jeju (제주지역 실시간 신재생에너지 수급현황) https://www.jeju.go.kr/cfi/presenteng.htm

Real-time Power Supply and Demand in Jeju (제주지역 실시간 전력수급현황) https://www.jeju.go.kr/cfi/livegrapheng.htm

