



Solving the Renewable Energy Disconnect

Enabling Korea's 100GW RE Target through Priority Grid Connection Policy

I. Executive Summary

- South Korea's target of 100 GW of renewable energy by 2030 is in jeopardy. While viable solar and wind projects are being delayed due to an outdated first-come first-served grid connection system, scarce grid capacity is occupied by fossil fuel and zombie projects.
- The current first-come, first-served system should be replaced with a transparent "ready and needed" framework that prioritizes grid connection based on development readiness and alignment with decarbonization, energy security, and just transition goals.
- Reform is especially urgent in coal-dependent regions such as Chungcheongnam-do, where delays in connecting renewable energy projects to the grid persist, despite the ongoing phase-out of coal power generation.
- **Policy Proposals:**
 1. **The Ministry of Climate, Energy and Environment (MCEE) should reform grid connection queue policy from first-come first-served to a system based on project "readiness"**
 2. **MCEE should introduce "sustainability" as a requirement to grid queue evaluation criteria**
 3. **MCEE should require Korea Electric Power Corporation to disclose the criteria and information used to determine grid congestion, and should immediately revoke the designation of unnecessary grid management substations**

II. Background

Grid Connection Delays Hinder Renewable Energy Progress:

- Although the South Korean government has declared a target of achieving 100GW of renewable energy by 2030, the very attainment of this goal is under threat due to worsening delays in grid connection for renewable energy projects, slowing down the pace of the energy transition and driving up project costs¹.
- These issues are particularly pronounced in regions where coal-fired power plants are being phased out. Although a total of 9GW of coal-fired capacity is scheduled to be decommissioned in Boryeong, Dangjin, Taean, Sacheon and Hadong by 2030, grid connection for new renewable energy projects in these areas is largely restricted to 2032 or later [1].

Urgent Need for Policy Reform:

- If the current grid connection system—which operates on a first-come, first-served basis—is maintained, it will become difficult for South Korea to achieve its 2030 target of 100 GW of renewable energy, and the just transition in coal-dependent regions will also be delayed.
- With at least 650 MW of solar power² and 815 MW of offshore wind power awaiting grid connection in South Chungcheong Province alone, it is no longer justifiable to allow fossil fuel projects—which are inconsistent with national energy transition targets—to continue occupying limited grid capacity.
- A new “renewable energy first” grid connection paradigm—already in place in some countries—is essential to accelerate the clean energy transition and ensure alignment with national climate and energy objectives.

¹ According to a study by Lawrence Berkeley National Laboratory [11], grid interconnection is one of the top reasons for both delays and cancellations for renewable energy projects. The cost of project delays averaged \$200,000 USD per MW.

² Open Data Portal. 2026. “충청남도 발전사업 허가현황”. <https://www.data.go.kr/data/15032204/fileData.do>

Delays in Local Renewable Energy Transitions

Chungcheongnam-do (Chungnam), the region where half of South Korea's coal-fired power stations are located, committed in 2016 to phasing out coal generation [2]. The province is phasing out 5 GW of coal by 2030, and local governments and workers have sought legal and economic support for a just transition to renewables [3]. However, under the 9th and 10th Basic Long-term Plan for Energy Supply (BPE), the outgoing coal was planned by the central government to be replaced with LNG plants [4], going against local preferences for renewables and leaving Korean citizens exposed to the volatility of oil and gas prices.

Due to construction delays for multiple of these LNG plants, the lifespans of the coal plants are being extended³ [5], further exacerbating air pollution and carbon emissions in the region. Had the principle of priority grid connection for ready renewable energy projects been implemented, transition delays and additional carbon emissions could have been avoided. Boryeong, a city within Chungnam home to six coal plants, has been developing an offshore wind project with the intention of replacing the coal plants scheduled to go offline approaching 2030 [6]. However, Korea Electric Power Corporation (KEPCO), the owner of the transmission and distribution grids, notified the city that their publicly owned offshore wind project cannot connect to the transmission grid until at least 2032, long after the coal plants have gone offline.

The grid reserve capacity resulting from the decommissioning of coal-fired power stations has effectively been allocated to LNG-fired power stations as a priority under the BPE. New renewable energy projects are facing connection delays due to long-term disruptions in construction of new grid infrastructure [7]. With limited available grid capacity, to achieve 100 GW by 2030, the grid capacity recovered from decommissioned coal-fired power plants must be allocated to renewable energy as a priority. The success of the transition ultimately depends on grid connection.

Delays in renewable projects contribute to job losses, economic decline, and provoke local protests against coal plant closures. On the other hand, swift renewable energy deployment in Chungnam could create over 270,000 jobs, compared to just 29,000 under LNG transition plans [8]. Other regions in Chungnam, such as Taejeon and Daejeon, are also investing in large-scale wind and solar projects, but could face similar grid access challenges in the near future [9] [10]. With the implementation of the European Union's Carbon Border Adjustment Mechanism (CBAM), steel industry regions, such as Chungnam and Gyeongsangnam-do (Gyeongnam), are also in urgent need of renewable energy to produce green steel and remain competitive on the global stage.

³ "An official from Korea Midland Power, which operates the Boryeong Thermal Power Station, stated, "We have recently been contacted by the Ministry of Climate Change and Energy, indicating that a review is needed regarding the adjustment of the closure schedule," adding, "As the completion of the Boryeong New Combined Cycle Power Station—the replacement for Unit 5 at Boryeong—is scheduled for March 2027, we are currently discussing a nine-month extension." Furthermore, Korea Southern Power, which operates the Hadong Thermal Power Station, stated, "Taking into account that the replacement facility for Hadong Unit 1 is due to commence commercial operation in March next year, we are discussing a plan to postpone the closure by approximately nine months."

[Table 1] Current status of coal transition plans until 2030

Generator	Capacity (MW)	Transition Plans (Based on 9 th and 10 th BEP))	Planned Decommissioning Year	Delay	Current Replacement Year	Annual Emissions (Million Tons, 50% Usage Rate)
Boryeong #5	500	LNG (Boryeong)	2026	+9 Months	2027	3.65
Boryeong #6	500	LNG (Haman)	2027	+9 Months	2028	3.65
Hadong #1	500	LNG (Andong)	2026	+9 Months	2027	3.65
Hadong #2	500	LNG (Hadong)	2027	+24 Months	2029	3.65
Hadong #3	500	LNG (Hadong)	2027	+24 Months	2029	3.65
Hadong #4	500	LNG (Goyang)	2028	+12 Months	2029	3.65
Taeon #2	500	LNG (Gongju)	2026	+12 Months	2027	3.65
Taeon #3	500	LNG (Yeosu)	2028	+4 Months	2029	3.65
Taeon #4	500	LNG (Asan)	2029	+4 Months	2030	3.65
Samcheonpo #3	560	LNG (Goseong)	2027 (April)	+8 Months	2027 (December)	3.65
Samcheonpo #4	560	LNG (Goseong)	2027 (April)	+8 Months	2027 (December)	3.65
Samcheonpo #5	500	LNG (Hwaseong)	2028	+11 Months	2029	3.65
Samcheonpo #6	500	LNG (Cheonan)	2029	+25 Months	2031	3.65
Dangjin #1	500	LNG (Yeosu)	2029	+9 Months	2030	3.65
Dangjin #2	500	LNG (Ulsan)	2029	+12 Months	2029	3.65
Dangjin #3	500	LNG (Yongin)	2030	-	2030	3.65
Dangjin #4	500	LNG (Yongin)	2030	-	2030	3.65

Source: Seyoung Jung. 2026. "Closure of 28 coal plants is approach... but construction of replacement LNG is delayed. Electric Times.

III. The Issue

Outdated Grid Connection Policies:

- South Korea still uses a "first-come, first-serve" grid connection system. This approach allows viable new renewable energy projects to get unnecessarily stuck behind fossil fuel and inactive "zombie projects".
- Current law grants KEPCO the right to define terms of use of the transmission and distribution grid, with approval from the Minister of Climate, Energy and Environment (Electricity Business Act, Article 15, Paragraph 1). However, other than technical standards published in the Regulations on the Use of Transmission and Distribution Electrical Equipment, it is unknown what methods KEPCO uses to allocate grid capacity due to a lack of data transparency.
- In early 2026, an amendment to the Electricity Business Act was submitted to the National Assembly which would grant priority connection to renewable energy projects that are small scale and publicly led. Although this bill is a positive step for supporting community

renewable projects, the inherent limitations mean that it will have little impact on the country's ability to meet its goal of 100 GW of renewables.

- Conversely, as plans to replace decommissioned coal-fired power stations with LNG-fired ones have been incorporated into the BEP, new LNG plants established under this plan are being connected to the grid before renewable energy projects, effectively inheriting the grid connection capacity previously held by the coal-fired stations.
- This goes beyond the issue of a simple 'first-come, first-served' approach; as there is already intention for grid capacity to be prioritized for the transition to LNG, the function of grid capacity allocation as a policy tool for expanding renewable energy in its current form is being rendered ineffective.

Lack of Criteria and Information for Determining Grid Congestion:

- In May 2024, the government designated 205 substations in regions such as Honam and Jeju as "grid management substations" on the grounds of grid congestion, thereby implementing measures to restrict new renewable energy connections until the end of 2031. In October of the same year, it also introduced a "conditional curtailment-based connection system," which allows grid connection only for project developers that agree to unlimited curtailment.
- However, the power authorities have not disclosed which transmission lines are experiencing grid congestion or the specific causes behind it, and they are effectively shifting supply constraint problems—originating from a system centered on large-scale generation resources—onto renewable energy developers.
- As curtailment has increased in recent years, project developers have accumulated losses and uncertainty due to the unclear standards for curtailment and the lack of compensation. Yet rather than resolving these issues, the conditional curtailment-based connection system institutionalizes them. As a result, renewable energy developers are being pushed into a structure in which they must either accept unfavorable conditions or give up grid connection altogether.
- Growth of the renewable energy industry in South Korea is being shackled by the power system authorities both before and after getting connected to the grid. It is now more vital than ever to unlock these shackles by aligning power grid policy with a distributed renewable energy-based system.

IV. International Cases of Priority Grid Access



Great Britain

Grid Connection Policy: "First Ready & Needed, First Connected"

Standards:

- **"Ready"** : Maintain exclusive land rights and sufficiently progress planning status within a defined period.
- **"Needed"**: Being aligned with the generation capacities outlined in the Clean Power 2030 Action Plan to meet net-zero goals.
- Projects must also meet standard technical criteria laid out in the Connections and Use of System Code.
- The lower threshold for undertaking Transmission Impact Assessments was raised from 1 MW of registered capacity to 5 MW in export capacity.

CP2030 Action Plan

Offshore wind: +28.2-35.2 GW

Gas: No new gas

Onshore wind: +12.8-14.8 GW

LDES: +1.1-3.1 GW

Solar: +28.4-30.4 GW

BESS: +18.5-22.5 GW

Source: Ofgem, Decision on Connections Reform Package (TM04+) 2025

- Great Britain added 2.8 GW of solar in 2025, the largest increase since 2015.
- Ofgem, Great Britain's energy regulator, is mandated with various obligations. Among these include protecting the interests of both current and future consumers in relation to the Climate Change Act of 2008 as well as security of the supply of electricity to them and costs faced by the consumers. One of Ofgem's many obligations include acting in a way that is compatible with the right to peaceful enjoyment of possessions. Ofgem considered whether implementing the "Ready and Needed" policy would be consistent with this obligation and concluded that this policy is necessary to achieve the strategic objectives of the CP2030 Action Plan and strikes a fair balance between public needs and individual interests.
- Under the new policy, almost all projects in the pipeline will be reevaluated for grid connection based on the new standards. The only exceptions are projects that have contracts to connect in 2026 or are "significantly progressed" in development. This ensures that projects coming online in the near future will align with the goals of the CP2030 Action Plan.



Germany

Grid Connection Policy: Renewable Energy Act (EEG) - Grid Connection Priority

Standards:

- Article 2 Special Significance of Renewable Energies: The construction and operation of facilities and their associated ancillary facilities are in the overriding public interest and serve public safety. Until electricity generation in Germany is virtually greenhouse gas-neutral, **renewable energies shall be given priority**
- Article 8-1: All renewable energy shall be **granted priority connection rights** to the power grid.
- Projects must also meet standard technical criteria for grid connection
- All relevant grid information shall be made available to project owners

		2026	2028	2030	2035
EEG Renewables Targets	Wind:	84 GW	99 GW	115 GW	157 GW
	Solar:	128 GW	172 GW	215 GW	309 GW
	Generation Rate:	388 TWh	479 TWh	600 TWh	N/A

Source: Act on the Expansion of Renewable Energies (Renewable Energies Act – EEG 2023)

- Germany has added 117 GW of solar and 77.6 GW of wind since 2000.
- Under the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz) of 2000, renewable energy projects were granted priority grid connection in the interest of meeting greenhouse gas reduction targets. The law also sets out renewable energy development targets to ensure project development and generation levels matched policy goals.
- Germany's Energy Industry Act (EnWG) requires grid operators to connect generation, storage, and end customers to their networks on reasonable, non-discriminatory, and transparent terms. On top the EnWG, the EEG grants priority to renewables under the principle that the development of renewable energy is in the overriding public interest.

V. Policy Recommendations

The Minister for Climate, Energy and Environment must instruct KEPCO to amend the regulations governing grid access and connection, thereby institutionalizing a system that gives priority to renewable energy. KEPCO must revise and implement its queue management regulations in accordance with this principle and disclose the relevant data. At the same time, the connection order of projects currently on the waiting list must also be reassessed in line with the revised connection system. Specifically, the following recommendations are made.

1. MCEE must change the criteria for grid connection from a “first-come, first-served” to priority based on “project readiness”. Recently, KEPCO has terminated grid use contracts with zombie projects on several occasions and established new grounds for terminating contracts with speculative operators through the amendment of the Regulations on the Use of Transmission and Distribution Electrical Facilities in April 2025. Although 4.1 GW of spare capacity has been secured in the power grid, this is insufficient to resolve the connection delay issue, and a more systematic overhaul of the system based on project readiness is required. Projects that fail to meet these criteria should be removed from the connection queue or have their priority downgraded, thereby granting priority connection rights to prepared renewable energy projects.

2. MCEE must add a “needed” (for energy transition goals) requirement to the criteria for priority grid connection. Consistency with national and regional decarbonization and energy security objectives must be reflected in the determination of connection priorities. To this end, a transparent, points-based evaluation system may be applied, incorporating factors such as projected emission reductions, contributions to grid flexibility (through the parallel deployment of storage devices and congestion mitigation), benefits to local communities, and the effects of a just transition (local jobs and revenue sharing).

For these sustainability criteria to be effectively implemented, the current practice whereby LNG projects are effectively granted automatic priority for grid connection through their inclusion in the Basic Plan for Electricity Supply and Demand must also be reformed. To this end, the grid capacity recovered from the decommissioning of coal-fired power stations should be managed in a separate pool, and procedures for prioritizing its allocation to renewable energy projects that align with decarbonization targets must be explicitly codified in the Korea Electric Power Corporation's regulations.

3. MCEE must require Korea Electric Power Corporation to disclose the criteria and information used to determine grid saturation and shall immediately revoke the designation of unnecessary grid management substations. KEPCO must codify in its operational regulations a procedure whereby it separately calculates and discloses the available grid capacity, including the capacity recovered upon the decommissioning of coal-fired power stations, and prioritizes the allocation of this capacity to renewable energy projects awaiting grid connection. Furthermore, it must transparently disclose the evaluation criteria and results regarding decisions on grid connection. A public record must be maintained containing an anonymized list of projects in the queue, along with evaluation results based on project implementation rates and sustainability criteria⁴.

On 30 March 2026, the designation of 16 grid control substations in Jeju was fully lifted; however, information regarding the reasons for the designation or lifting of grid control substation status, or the grounds for renewable energy output control, has still not been disclosed. In cases where renewable energy connection is unavoidably restricted—including the 189 substations in the Honam and East Coast regions where such restrictions remain in place—the technical criteria and grounds for such decisions must be made public.

⁴ For example, in the UK, power generation facilities that have received connection approval but are not yet connected to the grid, as well as those that have recently been connected, are included in the **Connection Queue** and published online. This information includes the connection point (node) and whether Active Network Management (ANM) applies, enabling the identification of each project's position within the queue and the calculation of curtailment levels. <https://connections.nationalgrid.co.uk/clear-view/clear-view-clean-power-2030/clear-view-cp30-details/solar>

° References

- [1] Korea Electric Power Corporation, "재생 에너지 연계 여유용량 조회," 2026. [Online]. Available: <https://online.kepco.co.kr/EWM098D00>. [Accessed 2026].
- [2] Powering Past Coal Alliance, "South Chungcheong Province, home to half of South Korea's coal power generation, joins PPCA," 2018. [Online]. Available: [https://poweringpastcoal.org/news/south-chungcheong-province-home-to-half-of-south-koreas-coal-power-generation-joins-ppca/#:~:text=As%20part%20of%20South%20Chungcheong's,policy%20authority%20of%20local%20governments](https://poweringpastcoal.org/news/south-chungcheong-province-home-to-half-of-south-koreas-coal-power-generation-joins-ppca/#:~:text=As%20part%20of%20South%20Chungcheong's,policy%20authority%20of%20local%20governments.). [Accessed 2026].
- [3] S. Lee, "[Exclusive] Special Act on Coal-Fired Power Plants Unveiled... Support Limited to 'Power Plant Closure Areas'," Hankyung, 22 04 2026. [Online]. Available: <https://www.hankyung.com/article/2026042297671>. [Accessed 2026].
- [4] Ministry of Trade, Industry and Resources, "11th Basic Plan on Electricity Supply," 2025.
- [5] S. Park, "Government moves to extend operation of coal-fired power stations in Boryeong and Hadong by nine months... "Oil and gas supply difficulties due to the war in the Middle East"," Chosun Biz, 25 03 2026. [Online]. Available: https://biz.chosun.com/policy/policy_sub/2026/03/25/2JEE45P5QJESFEW44O57HBQME4/. [Accessed 2026].
- [6] J. Lee, "Need to Expand Offshore Wind Power and Agrivoltaics in the Chungnam Region to Support the Transition Away from Coal," Ecojournal, 24 08 2024. [Online]. Available: <https://ecojournal.co.kr/m/view.php?idx=153333>. [Accessed 2026].
- [7] H. Jung, "Over half of power grid construction projects are 'delayed'... at odds with the 2030 renewable energy targets," IndustryNews, 22 10 2025. [Online]. Available: <https://www.industrynews.co.kr/news/articleView.html?idxno=73084>. [Accessed 2026].
- [8] S. Kim, "Analysis of the Socioeconomic Effects of the Energy Transition in South Chungcheong Province: A Comparison of Renewable Energy and Gas-Fired Power Generation," Solutions For Our Climate, 2025.
- [9] Ministry of Climate, Environment and Energy, "Taeon Offshore Wind Power Cluster Conditionally Designated," 24 03 2026. [Online]. Available: <https://www.mcee.go.kr/home/web/board/read.do?menuId=10524&boardMasterId=39&boardCategoryId=52&boardId=1852080>. [Accessed 2026].
- [10] M. Woo, "Korea Rural Community Corporation, Dangjin City, and Dangjin Urban Development Corporation Join Forces to Develop the Daehoho Renewable Energy Cluster," Chungnam Ilbo, 02 12 2025. [Online]. Available: <https://www.chungnamilbo.co.kr/news/articleView.html?idxno=862046>. [Accessed 2026].
- [11] R. B. H. J. R. Nilson, "Survey of Utility-Scale Wind and Solar Developers Report," 2024.