

Current Issues in KPX's Governance and Policy Proposal for Sustainable Change

Publication Date

October 2023

Authors

Gahee Han
Myungkyun Choi
Seoyoon Choi

Contributors

Eunho Cheong
Seokhwan Jeong
Geonyoung Kim
Kyung-sik Kim
Joojin Kim
Jinsun Lee
Sang-Bok Lee
Sang Ho Yoo

Design

Minji Kim

Contact

Seoyoon Choi, Policy Analyst at Solutions for Our Climate
(seoyoon.choi@forourclimate.org)

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1. Summary

Energy transition from fossil fuel-fired power generation to renewables and other sources is an inevitable global trend. To keep up with the energy transition, innovative policy reformations enabling flexible electricity market and the electricity power system operations are required. Such reformations cannot be expected under the current structure in which businesses with overreliance on fossil fuel-fired power generation assets dominate the electric power industry and excessively intervene in the governance of the system operator.

Therefore, the first step to energy transition is to ensure the independence and neutrality of Korea Power Exchange (KPX), which operates the electricity market and system, and to develop a structure that reflects the diverse perspectives of the changing electricity market. To do so, the following reformations to the governance of KPX are necessary.

Firstly, the independence of KPX's board needs to be guaranteed. Influences from certain interests must be preemptively ruled out by prohibiting appointment of electricity market participants (e.g., employees and board members of Korea Electric Power Corporation (KEPCO) and its generation subsidiaries) or anyone in a financial relationship with electricity market participants (e.g., a professor who has carried out research on behalf of KEPCO) as board members.

Secondly, subcommittees that discuss major policies regarding the operation of the electricity system and the electricity market need to be diversified and the closed decision-making process needs to be reformed so that various stakeholders' perspectives are reflected fairly. Furthermore, transparent disclosures of information are necessary if relationships exist among committee members and electricity market participants (including financial transactions). Discussions during the decision-making process also need to be disclosed for transparency.

Thirdly, the nomination, screening, and appointment process of KPX board members needs to be independent and transparent. A list of members on the Board Member Nomination Committee (hereinafter the "BMN committee") needs to be disclosed for transparency, and the BMN committee should have a diverse composition. The screening results also need to be transparently disclosed.

This report mainly focuses on problems and potential solutions regarding the governance of

KPX. Going forward, Solutions for Our Climate will review in depth matters such as the necessity of an independent regulatory body for the electricity market, problems of the current electric power industry's vertically monopolistic integrated structure, and specific solutions.

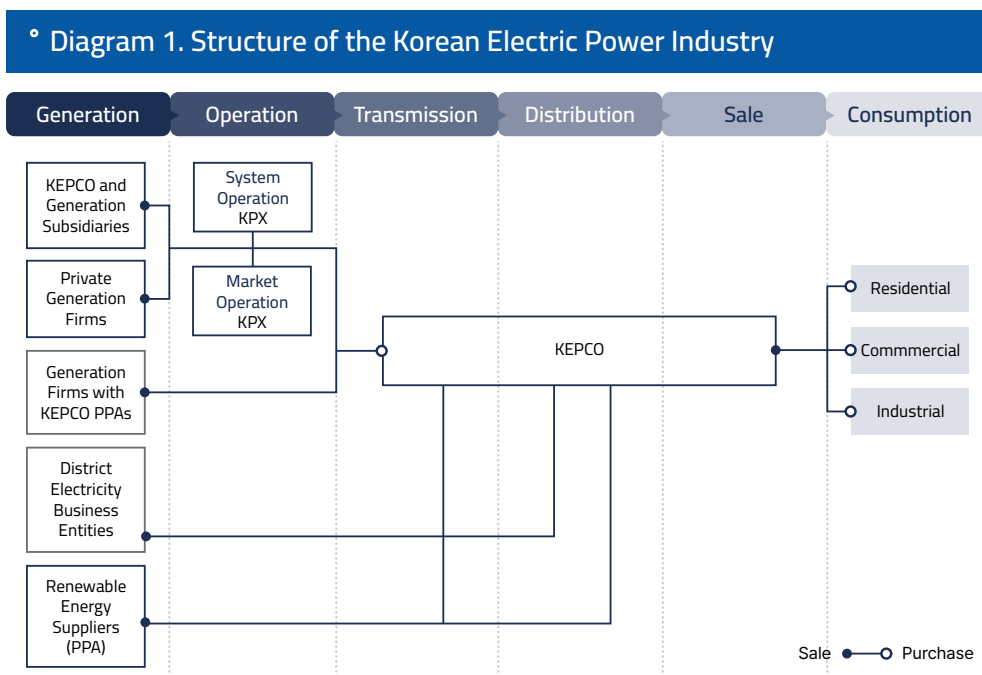
2. Importance of Independence and Impartiality of Independent System Operators (ISO)

2-1. "Judge" Needed for Fair and Effective System Operation

Electricity generated in a power station is carried by transmission and distribution networks to consumers. In this process, open access to transmission and distribution networks must be guaranteed for other electric utility business entities, electricity consumers, and others so that electric installations are available without any discrimination (Article 20, Electric Utility Act) (Lee & Jung 2021). All business entities must have access to related installations for fair competition among businesses in the electricity market.

However, a firm controlling the electrical network (hereinafter the "network")¹ may restrict access to related installations for other generation firms. For instance, if the network-controlling firm also competes in the generation market, it has an obvious interest in limiting access to the network to the other firms (Carella, 2020). In countries like Korea where a firm owns electric transmission networks and competes in the generation and sales markets, that firm is even more likely to favor its own undertakings (that are generation entities). In this situation, entrusting a different entity, an independent system operator—with system and market operations—can ensure the impartiality of the electric power industry.

1 The EU uses both "grid" and "network"; thus, this report uses "network" interchangeably with "electricity grid." "Grid connection, or network connection, is one of the areas regulated by the specific network codes" ("Connection Codes", n.d.).



Source: Kim & Kim (2020)

For instance, the European Union (EU) adopted Directive² 2019/944 to ensure independence and impartiality of system operations. The directive presents various forms of “competitive, consumer-centred, flexible and non-discriminatory electricity markets” (Directive 2019/944). An independent system operator like KPX is one of those forms. The directive provides that if a vertically integrated undertaking (VIU)³, which not only engages in transmission and distribution but also has generation and sales functions, also owns transmission network assets like KEPCO, it is recommended that the undertaking forfeits its generation and supply functions or that an independent system operator is set up. If an independent system operator is set up, transmission network asset-owning undertakings cannot participate in the system operator’s decision-making process regarding other activities not related to transmission (Directive 2019/944). Therefore, persons responsible for the management of transmission network asset-owning firms cannot intervene in the operation of undertak-

2 Directives are binding on member states, but member states can freely choose the form and means of implementation of directives (“European Union”, n.d.).

3 The EU defined VIU as an “electricity undertaking or a group of electricity undertakings where the same person or the same persons are entitled, directly or indirectly, to exercise control, and where the undertaking or group of undertakings performs at least one of the functions of transmission or distribution, and at least one of the functions of generation or supply” in Directive 2019/944. “Control” is defined as “rights, contracts or other means which, either separately or in combination and having regard to the considerations of fact or law involved, confer the possibility of exercising decisive influence on an undertaking” The Korean translation for the definition of VIU is referenced from Park and Lee (2020).

ings responsible for generation, distribution, or supply of electricity (Directive 2019/944).

In Korea, the Electric Utility Act was amended on December 23, 2000, as part of the electric power industry's structural reformations that started in 1999. Through the amendment, the non-profit special-purpose entity KPX was established as of April 2001 (Kim & Kim, 2020). According to the Ministry of Government Legislation Bureau of Economic Affairs Officer In Park's legal interpretation of the Electric Utility Act, unlike in the monopolistic system of the past, "the entity in charge of operations of the electricity market and electric power system needs to be an independent entity without direct interests in electricity trading to efficiently coordinate interests among parties to transactions and provide opportunities for fair competition" in a competitive system (Park, 2001). Therefore, with the amendment of the Electric Utility Act, KPX took over system operation from KEPCO and can issue "Demand Response" orders to electric utility business entities (Article 45, Electric Utility Act).

However, if businesses in the electricity market continue to intervene in KPX's decision-making process despite KPX's restructuring into an independent entity, KPX will not be able to fulfill its role as a neutral entity. KEPCO as a transmission and distribution business entity not only invests in and manages the grid but also owns generation assets through wholly-owned generation subsidiaries. As such, KEPCO's intervention in system operations is similar to football club owners also participating in the referees committee. For all business entities in the electricity market to compete on a "level playing field," KPX, the "referee" for the market and power system operations, must be independent from any business entity.

2-2. Accelerated Global Energy Transition

Heightened Energy Security Risk from War in Ukraine

Russian invasion of Ukraine in early 2022 led to an international energy crisis. In retaliation to Europe's sanctions on Russian fuel imports, Russia restricted natural gas exports. As a result of such measures, prices of natural gas, coal, crude oil, and other fossil fuels rose rapidly, and the global energy supply chain faced a crisis.

The International Energy Agency (IEA) stated that the world faced its first energy crisis and predicted that the impact of the global energy supply chain crisis will last for the next 10 years (Chow, & Xu, 2022; World Energy Outlook, 2022). Korea, which had an energy dependency rate of 94.8% in 2021, is not free from the influence of the energy crisis (Korea Energy Economics Institute, 2023).

The energy supply chain crisis is expected to accelerate the global energy transition to renewable energy. Major countries have already started phasing out fossil fuel-fired power generation and are making efforts to transition into renewables. The United States' Inflation Reduction Act (IRA), the EU's Fit for 55, and REPowerEU aiming to reduce reliance on Russian energy are such efforts. The current energy supply chain crisis is likely to become a turning point that advances the transition into a cheaper and safer energy system.

Changes in Electricity Market Due to Renewable Energy Expansion

In the past, KPX mainly consisted of fossil fuel-fired power generation-based members. KPX was established in 2001 with 10 members including KEPCO and its six generation subsidiaries. As of December 2022, however, KPX has 5,454 members, of which 5,236 members (approx. 96%) are photovoltaic or wind power generation businesses. Renewable electricity generation business entities have become major stakeholders in the market (KPX, 2022).

As Korea, as well as the world, transitions into a distributed electricity market centered on renewable energy, supply of microgenerators, electric vehicles, flexible resources, and other related elements are on the rise. As dispersed generation increases, KPX must incorporate perspectives of various market participants in its decision-making processes such as when amending operating rules and discussing cost evaluations. Efficient and stable system operation is possible only by doing so. The electricity market structure will inevitably transform

into a distributed one centered around renewables. KPX's governance must change accordingly but is failing to do so and maintains an exclusive and centralized structure of the past as described in Section 2-3 below.

2-3. KPX Failing to Fulfill Its Role in the Age of Energy Transition

Currently, KPX is failing to fulfill its role as an ISO because decisions are made in an unfair and opaque manner despite backlash from businesses in the market. The centralized governance structure in which major decisions are made through agreements between the Ministry of Trade, Industry and Energy (MOTIE) and KPX (in some cases, some large business entities) was appropriate in the past when the electricity market consisted of few large-scale fossil fuel-fired generation businesses. However, the structure is inadequate for the age of distributed renewable energy markets with diverse market participants. The following examples illustrate this point.

Amendment Agenda Discussions with “Market Participant Council” Exclusive to Certain Large Business Members

The Market Participant Council (hereinafter the “council”) including certain members like KPX, KEPCO and its subsidiaries, SK, GS, POSCO, and others was organized in 2022 to discuss major electricity market agendas. In some cases, non-council members were notified of the amendment agenda in 2023, even though discussions between KPX and the council started in 2022 (Lee, 2023). Despite non-council members’ complaint to the Board of Audit and Inspection, MOTIE maintained that it is realistically impossible for all market participants to join the council as there are too many registered members of KPX (Lee, 2023).

Amendment Implementing SMP Price Cap Proposed Before Meeting with Business Entities

The government implemented an emergency price cap on compensation (hereinafter “SMP cap”) in December 2022 (Kim et al., 2023). If the average system marginal price (SMP) for the immediately preceding three months is equal to or more than the top 10% of the average SMPs in the 10 years prior, an emergency SMP price cap is implemented. In November 2022, MOTIE proposed an emergency amendment agenda that implemented rules regarding the SMP cap during a KPX Rules Revision Committee session before the business meeting with the renewable energy industry took place. There was backlash from the power generation industry, but despite criticisms that the amendment was rushed, The Electricity Market Operation Rules was amended in December 2022 through two legislations supplementing the SMP cap (Yoon, 2022; Kim et al., 2023).

Insufficient Discussions Before Vote on Amendment Increasing Capacity Payment for Coal-Fired Generation

In May 2022, the government pushed ahead an amendment that deleted the environment contribution factor from the composition of Fuel Switching Factor (FSF) during a KPX Rules Revision Committee session. It was estimated that due to the amendment, the capacity payment for liquefied natural gas (LNG), nuclear energy, hydroelectricity, pumped-storage hydroelectricity, and other energy that had relatively high environment contribution factors would decrease by approximately 190 billion won, while the capacity payment for coal-fired energy—which had a low environment contribution factor—would increase by approximately 190 billion won (Yoon, 2022). The Rules Revision Committee proceeded with an anonymous vote, which was unusual, and the amendment was approved with six members out of nine participating members in favor. Criticisms arose from the generation industry that businesses' views were not properly considered (Shim, 2023).

Conclusion

As the electric power industry requires long-term investments, the efficient operation of the electricity market requires market participants to have faith that it would be possible to operate businesses in the long term regardless of changes in the political landscape. However, market participants are currently forced to follow decisions made unilaterally by the government and KPX.

The situation derives from the fact that the current governance structure makes it difficult for KPX to make decisions contrary to the government's wishes. Furthermore, only a handful of market participants, specifically large business members like KEPCO and its generation subsidiaries, are part of the decision-making process. KPX fails to fulfill its role as an ISO to "efficiently coordinate interests among parties to transactions" and "provide opportunities for fair competition" (Park, 2001).

3. Governance Structure that Interferes with KPX's Role as ISO

Chapter 3 analyzes the governance of KPX—which oversees electricity market and system operations—with focus on the board of directors, subcommittees, and the BMN committee. The analysis focuses on the governance structure that undermines KPX's independence and impartiality.

KPX's structure can be largely divided into general meetings, board of directors, and subcommittees that discuss specific policies related to the operation of the electricity market. Experts including professors specializing in electricity market-related fields and business members of KPX participate in the subcommittees. The BMN committee recommends candidates for the chairperson, non-executive directors representing public interest, non-executive director representing workers, and auditor.⁴

For KPX to serve its role as an ISO and operate the electricity market fairly, the organization and the decision-making process must be independent from the interests of other entities. However, KPX's current board and subcommittee member composition enables KEPCO and its subsidiaries, which have a high dependence on fossil fuel-fired power generation, to directly intervene in the decision-making process. On the other hand, renewable energy generation businesses, which represent 96% of KPX membership, cannot officially participate in any decision-making. Furthermore, the BMN committee fails to function independently since the government in effect appoints the board and subcommittee members. The global transition to renewable energy is accelerating, and the number of renewable energy generation businesses is rapidly increasing in Korea as well. However, KPX's governance structure has not changed much from the centralized structure of the past when KEPCO and its six subsidiaries generated most of the electricity.

⁴ See Article 36-2 (Board Member Nomination Committee) of the KPX Articles of Incorporation (16th revision).

3-1. Lack of Independence in KPX's Board of Directors

According to Article 5 of the Korea Power Exchange Board of Directors Regulations, the board has the authority to decide on (1) the amendment of the Articles of Incorporation, (2) the board of directors regulations, (3) the BMN Committee regulations, (4) matters related to electing members to the BMN Committee, and (5) proposals for dismissing the chairperson of the board of directors among others.

Considering the nature of the system operator, it must be free from the influences of specific stakeholders to balance power supply and demand stably in real time and ensure open access to the system. When electricity market participants, greatly influenced by the decisions of KPX, engage with the board of directors of KPX, it is a conflict of interest and seriously undermines the independence of KPX.

According to the KPX Articles of Incorporation, the board may appoint up to five member-representative non-executive members⁵ and there are currently three elected member-representative non-executive members. However, all three members are executives of KEPCO and its generation subsidiaries.

This is attributed to the appointment procedures of member-representative non-executive members. Article 36, Paragraph 3 of the KPX Articles of Incorporation states, "Among those serving at an executive level or above of the member companies that have invested under the interim measures of contribution payment, those serving at an executive level or above for member companies with higher contribution payments shall have the priority to become member-representative non-executive members, and if contribution payments are equal, a person shall be appointed as a member-representative non-executive member according to consultation among member companies with equal contributions."

⁵ See Article 35 (Types and Number of Executives) of the 16th Articles of Incorporation of KPX.

° Table 1. Capital status of KPX as of December 31, 2022

Shareholder name	Paid-up capital (million won)	Share ratio (%)
Korea Electric Power Corporation	63,920	50.00
Korea Hydro & Nuclear Power Co., Ltd.	18,263	14.30
Korea South-East Power Co., Ltd.	9,131	7.14
Korea Midland Power Co., Ltd.	9,131	7.14
Korea Western Power Co., Ltd.	9,131	7.14
Korea Southern Power Co., Ltd.	9,131	7.14
Korea East-West Power Co., Ltd.	9,131	7.14
Sum	127,839	100.00

Source: "Korea Power Exchange Capital and Shareholder Status" (2023)

According to related Addendum (April 26, 2022) Article 3, only executive-level positions at KEPCO or the six generation subsidiaries that invested in KPX at the time of KPX's incorporation are eligible to become member-representative non-executive members.⁶ Even at this point when the electricity market is open, and various power generation companies are competing, businesses other than KEPCO and its generation subsidiaries do not even have the opportunity to participate in KPX board of directors as member-representative non-executive members.

The KPX Articles of Incorporation stipulates that "major shareholders, executives, and employees of electric operators cannot be elected as executive members of the Korea Power

⁶ According to Article 3 of the Addendum of the 16th Articles of Incorporation of KPX (April 26, 2022), among those serving at an executive level or above of the member companies that have invested in KPX under Article 2 of the Addendum (April 2, 2001), those serving at an executive level or above for member companies with higher contribution payments shall have the priority to become member-representative non-executive members, and if contribution payments are equal, a person shall be appointed as a member-representative non-executive member according to consultation among member companies with equal contributions. Article 2 of the Addendum (April 2, 2001) specifies how KEPCO and its generation subsidiaries, which were established separately from KEPCO when KPX was established in 2001, will share the contribution until competition in a wholesale market is implemented. Therefore, "member companies that have invested under the interim measures of contribution payment in Article 2 of the Addendum (April 2, 2001)" specified in Article 3 of the Addendum (April 26, 2022) are interpreted to mean "Korea Electric Power Corporation (KEPCO) and (...) new companies established separately from the Korea Electric Power Corporation" [Addendum to the 16th Korea Power Exchange Articles of Incorporation (April 2, 2001)].

Exchange.”⁷ However, all member representatives who are non-executive members are executives of KEPCO and its generation subsidiaries. Thus, it is necessary to revise the regulations to prevent major shareholders, executives, and employees of electricity market businesses from serving as non-executive members of KPX and develop measures to reflect the voices of various electricity market participants.

⁷ See Article 36 (Appointment and Dismissal of Executives), Paragraph 9 of the 16th Articles of Incorporation of KPX.

3-2. Lack of Fairness in Subcommittees

Unfair Subcommittee Composition

Subcommittees established under the Electricity Market Operation Rules, including the Rule Revision Committee and the Cost Evaluation Committee handle and decide on detailed matters of electricity market operation. Such subcommittees must secure **fairness** in the final decision-making while including electricity market participants in discussion processes. In other words, a fair procedure of collecting opinions must be established to ensure that decisions are not made in a way that favors only certain businesses, such as KEPCO and its generation subsidiaries.

Currently, four out of five member representatives at the Cost Evaluation Committee and the Rules Revision Committee are executives or employees of KEPCO and its generation subsidiaries. In addition, the heads of the Grid Planning Division and the Distribution Planning Division of KEPCO, which monopolizes the transmission and distribution business in Korea, are included as ex officio to the Grid Evaluation Committee, and the head of Korea Midland Power Company Technology and Safety Department is included as a rotating position.

It is confirmed that numerous private experts who are members of KPX subcommittees have provided research services or served as agents, advisors, or consultants for KEPCO and its generation subsidiaries.⁸ Since KEPCO and its generation subsidiaries are heavily dependent on fossil fuel-fired power generation, they cannot represent the views of renewable energy operators. Therefore, it is difficult to fairly reflect the opinions of various electricity market participants with the current committee composition.

It was recently reported that the Private Power Generation Association and KPX conducted research to seek improvements in KPX subcommittees, such as the Rule Revision Committee and the Cost Evaluation Committee (Shim, 2023). In the market, the idea to increase the number of committee members is discussed so that the opinions of private power companies can be reflected. However, if the new additional private members are mainly composed of large power generation companies that focus on LNG power generation and do not include new business entities entering the electricity market, it will still be difficult to guaran-

⁸ The monetary compensation that members of KPX subcommittees received below was calculated by analyzing the responses that Solutions for Our Climate obtained from KEPCO and its generation subsidiaries, based on data requests from Representative Ja-geun Koo's office (Gumi Gap, Gyeongsangbuk-do).

tee the fairness of the subcommittees.

Among the 32 members of the Rule Revision Committee, the Cost Evaluation Committee, and the System Evaluation Committee, nine members were found to have provided research services to KEPCO⁹ and its generation subsidiaries and served as their agents, advisors, and consultants for financial compensation since January 1, 2018.

The total research service compensation¹⁰ the nine members received since January 1, 2018, was 5.19 billion won, and the member who gained the most significant amount obtained 2.51 billion won.

The total amount of compensation these nine members received for working as agents, advisors, and consultants since January 1, 2018, was 120 million won.

In addition, among the 32 members of the three major committees, seven are executives and employees of KEPCO and its generation subsidiaries, one is an executive of a private power generation company, and three are public officials of MOTIE. As such, the majority of members are electricity market participants who are directly affected by the decisions of KPX, have financial relationships with electricity market participants, or work for MOTIE, which can politically influence KPX.

Closed Decision-Making Process

Not only the composition of the subcommittees but also the decision-making process is not democratic. The Cost Evaluation Committee, the Rule Revision Committee, and the Grid Evaluation Committee post brief meeting minutes on the KPX website after each meeting,¹¹

9 Solutions for Our Climate requested details about research services, agent, advisor, and consultant fees for two of the 32 members as of September 2023, but this report was published before the responses to requests were obtained. Therefore, the actual total is expected to be higher if the research services, agent, advisor, and consultant fees performed by these two individuals are included.

10 The amount each member received in return for research services below is the total amount for each research service project.

11 The Cost Evaluation Committee and the System Evaluation Committee must post the results of their meetings on the Open Data Internet website within 10 days after the meeting ends following Article 2.2.2.6, Paragraph 4 and Article 5.10.12, Paragraph 3 of the Electricity Market Operation Rules. Under Article 9.3.3 of the Electricity Market Operation Rules, the Rules Revision Committee must notify each member of the results of the committee's deliberation and resolution in writing or post them on the Open Data website, and accord-

but only about 10 members and secretaries, including the chairperson, participate in the conference.

At the end of each year,¹² the Cost Evaluation Committee determines the settlement adjustment factor, one of the elements that form the market price in the wholesale power market. The settlement adjustment factor is a type of discount rate and an institution created to limit excess profits of KEPCO's generation subsidiaries and private low-cost generators (nuclear and coal generators) (Kim, 2014). The adjustment factor is divided into those applied to KEPCO's generation subsidiaries and those applied to private coal power generation companies (Park, 2021). According to an official at KPX, stakeholders such as KEPCO and its generation subsidiaries determine the adjustment factor together by deriving results according to calculation standards, and relevant government departments approve and confirm the adjustment factor. However, detailed discussion processes are not publicly disclosed due to the non-disclosure principle (Kim, 2018).

The Cost Evaluation Committee does not transparently disclose the evaluation system for flexible resources as well. Flexible resources refer to resources that can immediately respond to changes in power supply and demand to stably control the volatility and uncertainty of power supply. These include energy storage devices (Lee & Jin, 2022). Since renewable energy is expanding, expansion of flexible resources is essential to balance electricity supply and demand stably. To secure flexible resources, their value must be recognized in the electricity market and a corresponding compensation system must be established (Lee & Jin, 2022). However, in Korea, neither the evaluating criteria for the values flexible resources provide nor the discussion process of how the final formula was derived is disclosed. Unlike in some overseas cases where the value of flexible resources is determined through price signals in the market, in Korea, a few committee members determine the value through private discussions ("Capacity Market," 2023).

ing to Article 9.3.6 of the same Rules, KPX shall notify all members in writing of the revised rules within seven days from the date of approval by the Minister of Trade, Industry and Energy, and shall also post this on KPX website for at least one month.

12 "The Ministry of Trade, Industry, and Energy holds a year-end cost evaluation committee every year to determine the settlement adjustment factor for the following year. It is normally calculated once a year, but if unpredictable reasons such as sudden changes in fuel prices, adjustments in electricity rates, or changes in the market system occur, or if the forecast data for calculating the adjustment factor is significantly different from the actual results, it may be redetermined on a quarterly basis." ([Exclusive] Is KEPCO passing deficit burden to generators? Controversy over "zero" settlement adjustment factor after 14 years, Oct. 24, 2022).

Also, in the case of the Rules Revision Committee, a small number of members deliberate on revisions to the Electricity Market Operation Rules, and KPX sends the agenda resolved by the committee MOTIE without a vote at the general meeting.¹³ Only after the Minister of Trade, Industry and Energy approves¹⁴ the rule amendments, member companies are notified in writing of the rule amendments.¹⁵ The Electricity Market Operation Rules has a significant impact on various stakeholders in the electricity market, including power generation operators and consumers. Nevertheless, only a few businesses appointed as member representatives participate in deliberation and resolution on rule amendments that affect the entire electricity market.

13 See Article 9.3.5 of the Electricity Market Operation Rules.

14 Following Article 43 of the Electricity Business Act, MOTIE must undergo deliberation of the Electricity Commission before approving the enactment, change, or abolition of Electricity Market Operation Rules.

15 See Article 9.3.6 of the Electricity Market Operation Rules.

3-3. The Reasons for the Current Unfair Structure: The Nominal BMN Committee

It has been demonstrated that the current board of directors and committees of KPX do not fairly represent the views of all participants in the power market. In part, this unfair structure can be attributed to the election process for the board of directors of KPX.

Non-Transparent BMN Committee Line-Up and Decision-Making Process

As stipulated by the Act on the Management of Public Institutions, KPX has a BMN Committee that recommends candidates for the chairperson, non-executive directors representing public interest, a non-executive director representing workers, and an auditor.¹⁶

Members of KPX's BMN Committee are not publicly disclosed. In the minutes of KPX's board meeting, it is only mentioned that "the proposed line-up of the committee" was discussed and that seven BMN Committee members were chosen, including four non-executive directors and three senior members.¹⁷

For the BMN Committee to be effective, its composition should be diversified to reflect the viewpoints of a variety of stakeholders. If the BMN Committee includes power market businesses, it should not consist solely of KEPCO and its generation subsidiaries, or a few large companies, such as the aforementioned council, and it should also include plans to gather the opinions of various firms in the power market.

In addition, Article 11, paragraph 1 of the BMN Committee operating regulations states that "in the case of non-executive members, interview screening may be omitted in consideration of institutional characteristics, recruitment methods, etc." It is unclear what exactly is meant by institutional characteristics, so it is interpreted as indicating that a uniform recruitment process may not be applied to all applicants based on the company's discretionary judgment.

Considering that different procedures may be applied to different applicants and that the committee's list is not publicly available, it is difficult to describe the committee as transparent and impartial.

16 See Article 36.2 (The BMN Committee) of KPX's 16th Articles of Incorporation.

17 See Minutes of KPX's 7th Board Meeting of 2022, Resolution No. 2022-11.

Appointees selected through this opaque process will serve on the board of directors, which has the greatest influence within KPX. The chairperson of the board may serve as chairperson of the various subcommittees within KPX charged with discussing the power market mechanisms under KPX or appoint the chairperson and members of these subcommittees. When the BMN Committee is structured in favor of a particular business entity, subcommittees that are formed will have difficulty working independently.

° Table 2. Election Process for KPX Board of Directors

Type and Number of Board Member(s)		Number According to Articles of Incorporation	Operational Status	Election or Appointment Method	Note
Type of Board Member(s)					
Chairperson		1 person	1 person	Multiple nomination by the BMN Committee, recommendation by the Minister of Trade, Industry and Energy, appointment by the President	-
Executive Directors		Less than one-half of the number of directors, including the chairperson of the board	2 people	Appointment by the chairperson	-
Non-Executive Directors	Labor Representative	1 person	1 person	Employees with 3+ years of service are eligible. Multiple nominations by the BMN Committee, appointment by Minister of Trade, Industry and Energy	-
	Government Representative	1 person	1 person	Officials from the government departments that oversee operations of KPX	Ex officio member
	Public Interest Representatives	4 people or less	3 people	Multiple nominations by the BMN Committee, appointment by Minister of Trade, Industry and Energy	-
	Member Representatives	5 people or less	3 people	Executive level or above at an invested member company	Ex officio member
Non-Executive Auditor		1 person	1 person	Multiple nominations by the BMN Committee, recommendation by the Minister of Economy and Finance, appointment by the President	-
Total		-	12 people	-	-

Source: "Executive Composition and Appointment Procedures" (n.d.)

Political Influence on the Board of Directors

In response to multiple nominations by KEPCO, the President appoints the chairperson of KPX on the recommendation of the Minister of Economy and Finance.¹⁸ The head of KPX, who is supposed to run the Korean energy market in a “fair and transparent manner” free from political and economic influence, appears to be compromised by political influences (“Company Overview,” n.d.).

The chairperson of the board of directors appoints executive directors. The labor representative and public interest representatives are also nominated by the BMN Committee but ultimately selected by the Minister of Trade, Industry and Energy.

In accordance with the auditing standards established by the Minister of Trade, Industry and Energy, the auditor of KPX audits the tasks and accounts of KPX and submits his or her opinion to the board of directors. Furthermore, the chairperson of the board of directors cannot represent KPX in matters where KPX's interests conflict with his or her own interests. In this case, the auditor will represent KPX.¹⁹ KPX's auditor, who plays such a crucial role, is also nominated by the BMN Committee, which nominates multiple candidates, recommended by the Minister of Economy and Finance, and appointed by the President.

All board members are subject to government influence, such as through the non-executive director representing the government, who is an official from a government department that oversees KPX. Aside from this, the member representatives also serve as executives for KEPCO and its generation subsidiaries, depending on their share of investment payments. According to Article 18 of the KEPCO Act, the Minister of Trade, Industry and Energy has the authority to supervise and direct some of KEPCO's affairs, including the universal supply of electricity and the mid- to long-term investment in electricity facilities. In addition, in the case of the KEPCO President, after KEPCO's BMN Committee nominates more than one candidate, the President appoints the candidate recommended by the Minister of Trade, Industry and Energy through the public institution management committee and the shareholders' meeting.²⁰ Thus, even member-representative non-executive directors of KPX cannot be considered independent of political influence due to the current composition of the board.

18 See Article 36 of KPX's 16th Articles of Incorporation (Tenure of Officers).

19 See Article 38 of KPX's 16th Articles of Incorporation (Duties of Officers, etc.).

20 See Article 26(2) of the KEPCO's Articles of Incorporation (Appointment of Officers, etc.).

Chairperson Designated by the President Determines Subcommittee's Composition

The composition of the subcommittees is determined by the chairperson. Specifically, for the Cost Evaluation Committee, its chairperson and members are selected by the chairperson of KPX.²¹ The Rule Amendment Committee is directly overseen by the chairperson of KPX, who also designates its other members.²² Likewise, both the chairperson and the members of the System Evaluation Committee are chosen or appointed by the chairperson of KPX.²³

This organizational structure inherently implies that, from the board to the subcommittees, the entities responsible for pivotal decisions within KPX may feel inclined to echo the perspectives of the current government and ruling party rather than impartially and democratically represent the views of those participating in the electricity market.

21 See Article 2.2.1.1, Clause 3 of the Electricity Market Operation Rules.

22 See Article 9.2.1, Clause 3 of the Electricity Market Operation Rules.

23 See Article 5.10.1, Clause 3 of the Electricity Market Operation Rules.

4. International Examples

4-1. United States (U.S.)

ISOs in the U.S. maintain their operational independence by prohibiting members active in the electricity market from serving on their boards of directors. Specifically, PJM—a leading system operator in the country—specifies that a “Board Member shall not be ... a director, officer or employee of a [PJM member] or of an Affiliate or Related Party of a [PJM member].”²⁴ Similarly, NYISO includes in its Operation Agreement that it disallows a person who is “an officer, director, partner or employee of a Market Participant or any of its Affiliates,” such as power generation entities, transmission, or distribution businesses, from board appointments.²⁵ Both PJM and NYISO adopt a strict stance against including an individual who is “affiliated with any Market Participant or any of its Affiliates” on their boards.²⁶ As a result, private consultants who undertake paid research for electricity market participants cannot act as board members for either PJM or NYISO.

The U.S. also adopts a different approach to candidate selection. Notably, within PJM, the Nominating Committee is responsible for shortlisting candidates, which are then put forth to a broader Members Committee for consideration. Similarly, candidates for the PJM Nominating Committee are determined by an election, incorporating a representative from each industry sector to ensure a holistic decision-making structure. Only those candidates who secure a majority endorsement advance to the Members Committee,²⁷ which holds a subsequent election to determine a Board member. The process is structured to bolster impartiality and prevent undue influence from specific interest groups. Furthermore, to champion transparency in the selection process, significant U.S. system operators are obligated to leverage “third-party institutions.”

24 See Article 7.2 “Qualifications” in the PJM Operating Agreement.

25 See Article 5.01 “Composition of the ISO Board and Voting” in the NYISO Agreements.

26 See both Article 7.2 “Qualifications” in the PJM Operating Agreement and Article 5.01 “Composition of The ISO Board and Voting” in the NYISO Agreements.

27 See the PJM Nominating Committee Charter.

4-2. United Kingdom (U.K.)

To guarantee the independence of its system operator, the U.K. separated its National Grid Electricity System Operator (NGESO) from the National Grid Electricity Transmission (NGET), the owner of the transmission network, in 2019 and established it as an independent corporation. However, post-separation, NGESO still remained part of the National Grid corporate group. Considering this, in 2021, the U.K.'s Office of Gas and Electricity Markets (Ofgem) conducted a study involving interviews with various stakeholders and determined that it is inappropriate for NGESO to remain part of the same corporate group as the transmission network owner (Stewart, 2021). Consequently, the U.K. government plans to introduce a new Future System Operator (FSO) that will be fully independent from the transmission network owner ("Future System Operation (FSO)," n.d.).

In the report, Ofgem especially noted that a system operator that is not fully independent from the transmission network owner can be a hindrance to achieving net zero (Stewart, 2021). Interviews with electricity market stakeholders revealed concerns that NGESO might find it challenging to make independent decisions in the net-zero pursuit while being part of the National Grid corporate group (Stewart, 2021). This is because National Grid plc, under the same corporate group as NGESO, has investments in carbon capture and storage technology, and hydrogen production, owns the transmission grid, and has vested economic interests intertwined with electric vehicle charging facilities (Stewart, 2021). Furthermore, Ofgem assessed that as the role of the system operator is expected to expand in achieving net zero, if the system operator's independence is not guaranteed, cultivating trust and fostering collaborative relationships with market participants would prove difficult (Stewart, 2021).

Even according to current standards, prior to the establishment of the new FSO, "persons engaged in, or in respect of, the management or operation of the [NGESO]," including its board, cannot simultaneously hold roles in NGET.²⁸ This contrasts with KPX, where directors and employees of KEPCO, the owner of the transmission network, are included in the board and subcommittees.

²⁸ See Clause 2.4.4 of the NGESO Electricity Transmission Licence and the U.K. Electricity Act 1989.

4-3. Canada

The Independent Electricity System Operator (IESO) of Ontario, Canada is a non-profit organization established under the Ontario Electricity Act of 1998. When the Minister of Finance of Ontario nominates candidates for the IESO board, the Lieutenant Governor of Ontario finalizes the appointment ("Corporate IESO," n.d.).²⁹ The state's governance regulations specify that "a person who is an employee of the Government of Ontario" is disqualified from being a director of the IESO. This is in stark contrast to the domestic situation where public servants from MOTIE are included in the board and subcommittees of KPX.³⁰

Furthermore, Ontario Regulation 610/98 "The IESO," part of the Electricity Act of 1998, stipulates that a "person who has a material interest in a market participant is a member of a class who may not hold office as a director of the IESO."³¹ The IESO employee code of conduct also specifies that a member of the IESO "must not work for, supply services to, serve as a director of or volunteer with another company or organization ... that engages in transactions related to the IESO-controlled grid or IESO-administered markets as its primary business."³²

29 See c. 15, Sched. A, s. 58 (2) of the Electricity Act of 1998.

30 See 2.3 "Director Disqualification" in the IESO Governance and Structure By-Law.

31 See the "Board of Directors" section of the Ontario Regulation 610/98 "The IESO" in the Electricity Act of 1998.

32 See Section 4.4 "Outside Activities" in the IESO Employee Code of Conduct.

5. Conclusion and Recommendations

Since the electricity market's overhaul, wind and solar power operators now constitute 96% of the Korean electricity market based on operator count. Yet, the renewable energy share, excluding new energy, lags at 7.15%,³³ significantly below the 2021 OECD average of 31.06%.³⁴ Several factors inhibit Korea's renewable energy growth, notably the electricity market's governance, which remains attuned to the centralized fossil fuel-fired power generation models of the past rather than embracing distributed renewable energy sources.

The global energy supply crisis stemming from the Russia-Ukraine war is expected to last for the next 10 years. In other parts of the world, countries have underscored the urgency for expanding renewable energy and is moving forward with the expansion. Korea, which has an energy import dependency of 94.8% as of 2021, must also focus on the expansion of renewable energy. Yet, momentum to phase out fossil fuel-fired power generation and amplify renewable energy remains sluggish.

Overreliance on fossil fuels will translate into recurrent energy security crises, making a swift renewable energy transition indispensable for national security. The operation of the electricity market which is centered on fossil fuel-fired power generation, coupled with entrenched vested interests, demand prompt redress. This requires a revamp of the governance structure of KPX, the electricity market and system operator, and a broader overhaul of Korea's electricity industry.

Specifically, to enable KPX to function independently, the Board, subcommittees, and the BMN committee's makeup and protocols must be improved. The once-dominant KEPCO and its generation subsidiaries no longer monopolize power generation, with the electricity market landscape constantly shifting and welcoming new entrants. Despite this, the undue influence of KEPCO and its generation subsidiaries persists in KPX's board of directors and subcommittees. Persisting with this outmoded governance is no different from favoring PC communications in a mobile-centric age of 2023. To align with global shifts towards a renewables-centric, decentralized electricity market, KPX should offer equitable representa-

33 The 7.15% share of renewable energy, excluding new energy, is based on data from 2021. (Source: "Power Generation Supply Statistics," n.d.).

34 The 2021 OECD average share of renewable energy supply is referenced from Park Sang-wook (September 19, 2022). The 7.5% share of renewable energy mentioned in the same article includes new energy, hence the figure excluding this has been noted as 7.15%. (Source: "Power Generation Supply Statistics," n.d.).

tion to diverse market participants and disclose its discussions transparently.

Ensuring the Independence of the Board

The rules governing the operation of the electricity market must be revised to ensure that individuals with interests in electricity market participants cannot be appointed as a KPX board member. In other words, those who work for electricity market participants as directors or employees and private experts who have received payment for consulting or research services from such companies should be strictly excluded from the board to ensure its independence.

Reforming the Composition of Subcommittees and Enhancing Transparency

The composition of the various subcommittees, which discuss the regulations of the electricity market, needs to be diversified. Recently, the major stakeholders in the electricity market are shifting from fossil fuel-fired power generators to renewable energy generators. Yet, the Cost Evaluation Committee and the Rule Amendment Committee still largely comprise employees from KEPCO and power generation companies that prioritize fossil power, constituting four out of five member representatives. Given that subcommittees deliberate and make decisions on critical issues that have a tangible impact on the electricity market operation, they should reflect the changed ecosystem of the electricity market.

Moreover, various information and discussion processes should be transparently disclosed. Information such as discussions regarding the settlement adjustment factor in the Cost Evaluation Committee is currently non-disclosed by default. The non-disclosed information regarding decision-making processes in the Cost Evaluation Committee should be made public. If a member of the subcommittee has received consulting or research services from KEPCO or its generation subsidiaries, the content of such transactions should be disclosed to enhance transparency.

Changes in the Composition and Review/Appointment Process of the BMN Committee

The BMN committee should transparently disclose the recruitment and review processes for board member candidates, with more diverse composition of the committee members that review the candidates. It may be prudent to require the involvement of third-party institutions in the candidate recruitment process, mirroring practices in other nations.

At present, both the composition and review process of the BMN committee lack transparency, making it impossible to determine whether a certain party exercised influence over the processes. Drawing inspiration from practices like those of PJM in the U.S., which necessitates the participation of third-party institutions, could be beneficial. Such an approach promotes fairness by incorporating these institutions in candidate selection, review by the BMN committee, and final appointments in the members committee. A system that allows representatives from all facets of the electricity market to partake in the nomination process, which could prevent undue influence from any specific stakeholder, merits exploration.

To bolster the integrity of the electricity sector beyond refining the governance of KPX, two further enhancements are recommended.

Firstly, it is crucial to empower the independent regulatory body overseeing the electricity market. For KPX to act as a genuinely independent and unbiased system operator, it requires oversight from a regulatory authority that is not influenced by electricity market participants including KEPCO and its subsidiaries. Currently, the Electricity Commission assumes this regulatory role in Korea. However, its ability to fully execute its duties is compromised, prompting discussions about either augmenting the commission's capacities or instituting a distinct regulatory entity. To preserve the autonomy of this regulatory body, a robust and transparent procedure needs to be established, allowing for input from a broad range of stakeholders as opposed to merely a handful of large-scale businesses when recommending and appointing a board member.

Second, to prevent the transmission network operator from hindering the expansion of renewable energy, the transmission network enterprise should be separated from power generation and sales segments. In the current vertical monopoly structure, where the transmission network operator also engages in power generation and monopolizes sales, prompt and necessary investments in the network that are necessary for renewable energy expansion prove difficult.

In light of these considerations, Solutions for Our Climate intends to conduct a detailed review concerning the necessity for an independent electricity market regulatory body, the challenges inherent in the existing monopolistic framework of the electricity sector, and potential enhancement strategies for the future.

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Abbreviations

BMN committee	Board Member Nomination Committee
council	Market Participant Council
EU	European Union
FSF	fuel switching factor
FSO	Future System Operator
IEA	International Energy Agency
IESO	Independent Electricity System Operator
IRA	Inflation Reduction Act
ISO	independent system operator
KEPCO	Korea Electric Power Corporation
KPX	Korea Power Exchange
LNG	liquefied natural gas
MOTIE	Ministry of Trade, Industry and Energy
network	electrical network
NGESO	National Grid Electricity System Operator
NGET	National Grid Electricity Transmission
NYISO	New York Independent System Operator

OECD	Organisation for Economic Co-operation and Development
Ofgem	Office of Gas and Electricity Markets
PJM	Pennsylvania-New Jersey-Maryland Interconnection (Regional Transmission Organization)
PPA	power purchase agreement
SMP	system marginal price
SMP cap	emergency price cap on compensation
U.K.	United Kingdom
U.S.	United States
VIU	vertically integrated undertaking

Current Issues in KPX's Governance
and Policy Proposal
for Sustainable Change

