

# RE100 Scheme Left Stranded, with Focus on High Network Cost and Unreasonable Guidance on Trilateral PPAs





**Supported by:**

This publication was produced with the financial support of the European Union's Partnership Instrument. Its contents are the sole responsibility of Solutions for Our Climate (SFOC) and do not necessarily reflect the views of the European Union.

# RE100 Scheme Left Stranded, **with Focus on High Network Cost and Unreasonable Guidance on Trilateral PPAs**

---

## **RE100 Scheme Left Stranded, with Focus on High Network Cost and Unreasonable Guidance on Trilateral PPAs**

<b>Publication Date</b>	December 2021
<b>Authors</b>	Kyungrak Kwon, Yeji Kim, Yebin Yang, Eunbyeol Jo
<b>Design</b>	Nemolab
<b>Inquiries</b>	<a href="mailto:solutions@fourclimate.org">solutions@fourclimate.org</a>

# CONTENTS

<b>I. K-RE100 Scheme Today</b>	<b>4</b>
<b>II. Current Status of Trilateral PPA Scheme and Issues</b>	<b>8</b>
1. Industrial Electricity Tariff vs. Levelized Cost of Renewable Energy	8
2. High Network Cost Which Hinders Invigoration of PPAs	10
3. Problems with Incidental Expenses System for Trilateral PPAs	13
4. Guidance on Trilateral PPAs Which Applies to Participants' Disadvantage	16
<b>III. Summary and Conclusion</b>	<b>23</b>

## I. K-RE100 Scheme Today

RE100 is a global initiative led by The Climate Group, a UK-based NGO, and CDP (Carbon Disclosure Project), which targets companies whose annual electricity consumption is 100GWh or greater and aims to replace their electricity consumption with 100% renewable energy. As of now in December 2021, at least 340 companies, including the BMW Group and Apple, have joined in the initiative globally.<sup>1</sup> In Korea, a total of 10 companies, including SK Inc., SKIET, Mirae Asset Securities, Korea Water Resources Corporation (K-water), KB Financial Group, Amorepacific, SK Telecom, SK Hynix, LG Energy Solution, and Korea Zinc, are taking part.<sup>2</sup>



Figure 1. Main RE100 Members<sup>3</sup>

1. <https://www.there100.org/>

2. <https://www.there100.org/re100-members>

3. <https://www.there100.org/>

The RE100 Initiative broadly defines eight means of achieving the RE100 target, which can broadly be classified into four categories as follows: (1) self-generation, (2) power purchase agreement (PPA), (3) green tariff, and (4) REC purchase. In the past, corporations preferred to purchase RECs, the costs of which could be paid for with ease, but recently, the proportion of companies that are entering into PPAs with renewable electricity generation companies in the form of long-term fixed price agreements has increased rapidly. This is because, if a long-term fixed price agreement were to be entered into for renewable energy, the risk of an increase in electricity tariffs could be reduced in circumstances where the cost of purchasing electricity from traditional electricity suppliers is gradually increasing. There is also the reason that, when viewed from the perspective of expansion of renewable energy, green tariffs or purchase of RECs deliver lower “additionality” – a measure of increase in renewable energy relative to investment – than self-generation and PPAs.

Sourcing method	Share of renewable energy purchased by year					Amount purchased in 2019 (GWh)	No. of members in 2019
	2015	2016	2017	2018	2019		
REC purchase	60%	40%	46%	43%	42%	50	131
Green tariffs	35%	41%	35%	31%	30%	35.5	149
Power purchase agreements (PPAs)	3.3%	13%	16%	19%	26%	31	76
Self-generation	<1%	3%	1%	4%	2.5%	3	151
Purchase from on-site generation	<1%	<1%	<1%	2%	<1%	0.8	19

Table 1. How RE100 Members Source Renewable Energy<sup>5</sup>

As the pressure to reduce carbon is materializing on a global level, companies in Korea are also actively considering and going ahead with RE100 membership. However, due to the current structure of the electricity market, there has been virtually no way for Korean companies to join RE100 to date. This is because, in the case of purchase of RECs, RECs could not be purchased by electricity consumers who were not power generation companies with the obligation to supply renewable energy, and there was no institutional foundation allowing electricity to be purchased directly from a renewable electricity generation company that was not Korea Electric Power Corporation (KEPCO).

4. RE100 Initiative, 2020 Annual Report

5. RE100 Initiative, 2020 Annual Report

Against this backdrop, the government and the National Assembly established a Korean RE100 (K-RE100) scheme, which enabled renewable energy to be purchased in part through (1) purchase of RECs, (2) purchase of Green Premium, (3) self-construction, (4) trilateral PPAs, and (5) equity investment in renewable electricity generation projects.<sup>6</sup> In particular, in May this year a bill amending the Electric Utility Act was passed by the National Assembly pursuant to a proposal made by National Assembly member Sungwhan Kim from the Trade, Industry and Energy Committee. The amendment enabled renewable electricity generation companies and electricity consumers to enter into PPAs directly without going through KEPCO, in addition to K-RE100. In turn, a draft amendment to the Enforcement Decree of the Electric Utility Act was passed at a meeting of the State Council in October this year, but guidance containing detailed guidelines on “direct PPAs” has yet to be released.<sup>7</sup>

According to the RE100 Initiative’s recommendations, of the sourcing methods that can be used to achieve the target, the methods that deliver the highest level of additionality are self-construction and PPAs. Also, considering the likelihood of a rise in KEPCO’s electricity tariffs, high REC price volatility, and the falling trend in the levelized cost of renewable energy, RE100 members may find it more desirable to rather expand the use of PPAs as the long to medium term plan, which would allow the members to directly make the transaction with renewable electricity generation companies.

However, even though the K-RE100 is in force, the level of participation by companies is very low. In the case of purchase of Green Premium, the method that can be used by companies with the most ease, just 4.6% of the overall amount available for tender resulted in actual contracts<sup>8</sup>; as for trilateral PPAs in which KEPCO acts as an intermediary, not a single contract has been concluded to date. Companies are turning away from taking part in the K-RE100 , and trilateral PPAs in particular, because of the high network cost charged by KEPCO and the various unreasonable factors that are present in the guidance on trilateral PPAs and standard contract proposed by KEPCO. These are examined in detail in the next chapter.

6. Korea Energy Agency, 2021, presentation material on Guidance to Plan for Introduction of K-RE100 and Pilot Project on Certificate Trading Market

7. Ministry of Trade, Industry and Energy press release, October 2021

8. Today Energy, October 2021 (<http://www.todayenergy.kr/news/articleView.html?idxno=240742>)



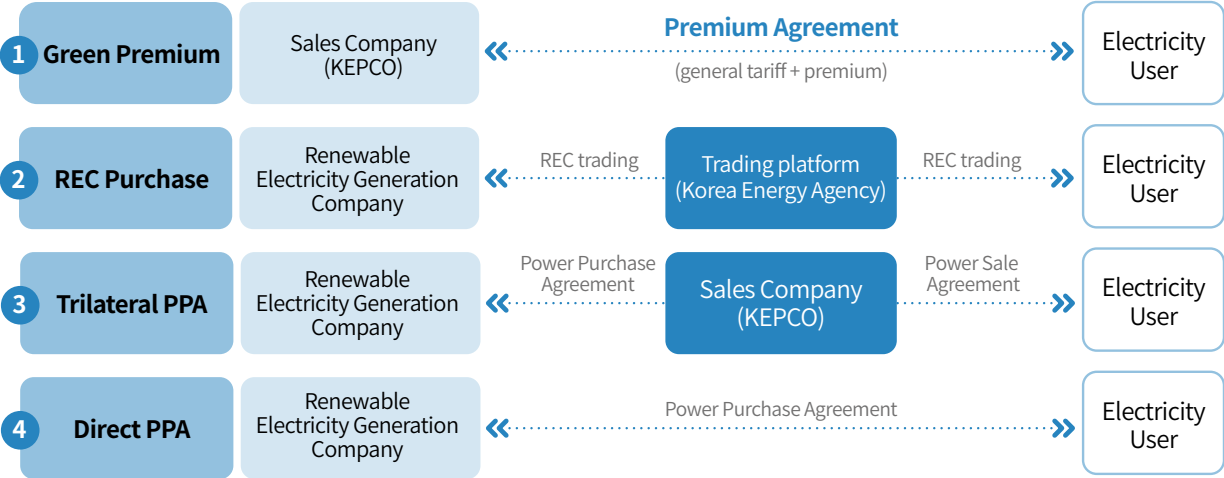


Figure 2. Overview of Main Means of Achieving Target under K-RE100 Scheme

## II. Current Status of Trilateral PPA Scheme and Issues

### 1. Industrial Electricity Tariff vs. Levelized Cost of Renewable Energy

In order to boost PPAs for renewable energy, from the perspective of electricity consumers the purchase price of renewable energy per unit must be cheaper than the industrial electricity tariff charged by traditional sales companies like KEPCO, or the PPA must be the most cost effective relative to other means of achieving the target.

In other words, where a long-term fixed price agreement for renewable electricity is being entered into for a 20-year period, renewable energy purchase by companies can spread when the unit price of purchase under that agreement is considered cheaper than the industrial energy tariff in the same period. In addition, there can be some pressure rising from the global stakeholders to make it obligatory to purchase renewable electricity. But this can only be executed if the unit price under the PPAs for renewable energy is cheaper than the other means of achieving the target, such as the purchase of RECs or the Green Premium, that PPAs for renewable energy can spread.

However, in Korea, the levelized cost of renewable energy is high relative to industrial electricity tariff. For this reason, from a short-term perspective, it is difficult to see PPAs for renewable energy being concluded. The average unit price under KEPCO's industrial electricity tariff as of 2020 is approximately KRW 107, which is lower than the levelized cost of electricity (LCOE) in solar or wind power generation.<sup>9</sup>



Figure 3. Comparison of Levelized Cost of Renewable Energy with Industrial Electricity Tariff (as of 2020, KRW/kWh)

9. KEPCO's website (<https://cyber.kepco.co.kr/ckepco/front/jsp/CY/H/C/CYHCHP00104.jsp>)

In circumstances where the industrial electricity tariff is lower than the levelized cost of renewable energy, Korean companies that are taking part in RE100 as a result of global pressure cannot but choose the Green Premium or REC purchase, which involve lower procurement costs in the short term. According to the Trade, Industry and Energy Committee's 2021 inspection of state administration, not a single case of trilateral PPA, in which KEPCO acts as an intermediary between the consumer and the power generation company, has been entered into to date, and the reality is that most companies are opting for KEPCO's Green Premium scheme, which involves payment of premium at the level of approximately KRW 10.<sup>10</sup>

Currently, the RPS (Renewable Portfolio Standard) – the compulsory renewable energy supply scheme – and the emissions trading system are enforced, but regulations are not as effectively implemented as they are in other countries. Rationalization of the electricity tariff has yet to take effect in substance even though the relevant costs are being reflected in the electricity tariff to a certain extent. The government is planning to reflect the cost of greenhouse gas emissions in the electricity market by applying the environmental power dispatch scheme from 2022, but no details have been released to date.<sup>11</sup> Considering the structure of the renewable energy industry in Korea, which has yet to deliver a real fall in LCOE through economies of scale and simplification of procedures for permits and licenses, the top priority is that the environmental costs are properly levied on the existing traditional fossil fuel-based generators. In addition, if the emissions allowance allocation plan were to be revised under the strengthened 2030 NDC, such a regulatory pressure also needs to be actively reflected. Ultimately, through the foregoing, companies need to be given a signal that KEPCO's electricity tariff cannot but increase in the medium to long term.

As mentioned earlier, in order to contribute directly to expansion of renewable energy, the PPA method, rather than the Green Premium or purchase of RECs, needs to be widely implemented. The problem lies in the fact that the electricity market in Korea does not provide for an institutional environment which electricity consumers can freely enter into PPAs.

10. Today Energy, October 2021 (<http://www.todayenergy.kr/news/articleView.html?idxno=240742>)

11. The Hankyoreh, October 2020 (<https://www.hani.co.kr/arti/society/environment/976234.html>)

## 2. High Network Cost Which Hinders Invigoration of PPAs

From the perspective of electricity consumers, if the gap between the industrial electricity tariffs and the levelized cost of renewable energy were to be kept wide, and further incidental expenses, such as the network cost levied by KEPCO, were to be incurred in these circumstances, it is inevitable that they would refrain from entering into PPAs even more.

The cost of distribution of renewable energy, such as the network cost, is levied on electricity users by KEPCO under the Electric Utility Act and the related guidance, and the price has never been formally announced to date. However, through its “Energy Marketplace,” a separate platform, KEPCO has recently released a simulation tool that can be used to calculate the price for the user if it were to enter a trilateral PPA, which is inclusive of all incidental expenses such as the network cost.<sup>12</sup>

Using the “Simulation for Calculation of Trilateral Agreement Fees” released by KEPCO, we investigated on the level of incidental expenses that would be incurred if a renewable electricity generation company and electricity consumer were actually to enter into a PPA in the Korean electricity market. Incidental expenses were calculated for the most representative cases of solar and wind power generation; the results were as follows.

12. KEPCO's Energy Marketplace, (<https://en-ter.co.kr/ft/ppa/thpty/fee/simulation.do>)

Scenario based on network cost	Photovoltaic Power Generation Case 1 (Medium to large)		Photovoltaic Power Generation Case 2 (Small: 500kW or under)		Wind Power Generation Case	
Power generation company	Non-metropolitan area		Non-metropolitan area		Non-metropolitan area	
Electricity user	Metropolitan area		Metropolitan area		Metropolitan area	
Network access by power generation company	High-voltage distribution network		Low-voltage distribution network		Transmission network	
Network access by electricity user	Distribution network		Distribution network		Distribution network	
Substation	Substation in different area		Substation in different area		Substation in different area	

	Unit cost (KRW/kWh)	Percentage	Unit cost (KRW/kWh)	Percentage	Unit cost (KRW/kWh)	Percentage
Levelized cost of renewable energy	136	77%	136	72%	170	78%
Total Incidental Expenses	40	23%	53	28%	45	22%
Network cost (base rate)	18	10%	22	12%	13	6%
Network cost (usage rate)	7	4%	15	8%	15	7%
Cost of network loss	3	1%	3	1%	3	1%
Uplift cost	4	2%	4	2%	4	2%
Transaction fee	0	0%	0	0%	0	0%
Welfare/special discount	3	2%	3	2%	3	1%
Electric Power Industry Base Fund	6	4%	7	4%	7	4%
<b>Total</b>	<b>176</b>	<b>100%</b>	<b>189</b>	<b>100%</b>	<b>215</b>	<b>100%</b>

Table 2. Calculation of Incidental Expenses in Different Renewable Energy Scenarios

As set out above, total incidental expenses for the purchase of renewable energy presented by KEPCO comprise ▲ network cost, ▲ amount reflecting network loss, ▲ uplift, ▲ transaction fee, ▲ welfare and special discount amount, and ▲ the Electric Power Industry Base Fund. Of these items, the network cost comprises the base rate and usage rate.

Of these items, the amount reflecting network loss is something that is included in the tariff to take account of network loss rate because, once electricity is generated, it is inevitable that some electricity would be lost before it reaches the consumer. As for the uplift, it is inevitable given the structure of the wholesale electricity market, which is run as a day-ahead market, that errors arise relative to the amount of electricity that is actually generated. Therefore, by taking such a difference

into account, the concept of uplift includes in the tariff the costs of operating the generator in cases amounting to constrained-ON generation or constrained-OFF generation.

Separately from the above, transaction fees for KEPCO are added in trilateral PPAs in which KEPCO acts as an intermediary, and special discounts offered by KEPCO, such as other energy welfare, and expense such as the Electric Power Industry Base Fund, are also applicable as in the case of the general electricity tariff.

Using the simulation tool released by KEPCO, we set out three scenarios: Photovoltaic Power Generation Case 1 is based on the premise of a medium to large photovoltaic power generation facility that transmits electricity to other regions through a high-voltage distribution network, while Photovoltaic Power Generation Case 2 is based on a scenario involving a small photovoltaic power generation facility no larger than 500kW, which would transmit electricity through a low-voltage distribution network. The Wind Power Generation Case is based on a scenario in which the power generation company supplies electricity to the metropolitan area through a transmission network.

In view of the current speed of dissemination of renewable energy and its types, we expect that Photovoltaic Power Generation Case 1 (Medium to large) would constitute the most typical scenario. This is because, given the domestic environment where places with the demand for electricity and places that supply electricity are not the same, it is likely that most of the electricity generated using photovoltaic power in the regions would be used to supply the metropolitan area or metropolitan cities and industrial complexes.

When we ran the simulation for incidental expenses in Photovoltaic Power Generation Case 1 (Medium to large), incidental expenses, including the network cost, were shown to amount to KRW 40/kWh in total. Given that the current LCOE for photovoltaic power generation is at the level of KRW 136/kWh, when all incidental expenses are aggregated, the total unit price of purchase reached KRW 176/kWh from the position of the electricity consumer, which is 1.6 times more expensive than the industrial electricity tariff.

As in the case of Photovoltaic Power Generation Case 2, in small power generation projects no larger than 500kW, the power generation company would gain access through low-voltage distribution networks. In these cases, incidental expenses, including the network cost, rose even further to reach KRW 53/kWh. Considering that approximately 63% of photovoltaic power

generation that has been made available to date constitutes photovoltaic power facilities no larger than 500kW, such high incidental expenses are expected to be the largest obstacle to conclusion of PPAs going forward.<sup>13</sup>

Since wind power generation has larger generation capacity than photovoltaic power generation, we assumed a scenario where electricity is supplied through the transmission network and consumers receive electricity through the distribution network, and in wind power generation, incidental expenses reached KRW 45/kWh. In a case where the LCOE for wind power generation was assumed to be KRW 170/kWh, the actual purchase price per unit was shown to amount to KRW 215/kWh. From the company's position, this means that the company would in practice end up purchasing electricity at a price that is twice the industrial electricity tariff offered by KEPCO. The result is that, under the current structure, there is no incentive for companies to enter into PPAs for renewable energy at a relatively higher cost.

### 3. Problems with Incidental Expenses System for Trilateral PPAs

#### (1) Duplication of base rate component of network cost

The key component that needs to be improved in the incidental expenses system for PPAs presented by KEPCO Energy Marketplace is the base rate component of the network cost. Through the simulation for expenses that are incidental to trilateral PPAs, KEPCO presents a sum to the participants that includes the base rate portion of the network cost, and it is this that amounts to a double charge from the position of a company that is purchasing renewable energy.

Companies that are taking part in K-RE100 in practice are using renewable energy instead of the electricity they were using in their business establishments through PPAs rather than operating new business establishments. Therefore, the actual electricity consumption before and after the entry into the PPA for renewable energy is the same. In other words, even if companies were to enter into PPAs for renewable energy, their energy consumption would not increase and, for this reason, at a basic level there should not be any change in the base rate. However, if it is the case that – as is being proposed by KEPCO at the moment – companies must pay the base rate component of the network cost pursuant to their entry into PPAs for renewable energy, both in addition to and

13. Korea Energy Agency, New and Renewable Energy Dissemination Statistics for 2020

separately from KEPCO's electricity tariff, this would amount to a double charge that bears no relation to actual electricity consumption.

As a reference, when we look at the standard contract<sup>14</sup> proposed by KEPCO for electricity users under the trilateral PPA, which is set out below, although Article 18 (2) 1 contains an explanation about the base rate, there is nothing on exemption from duplication of the existing base rate that is being paid. The base rate that is double charged under the current charging system ultimately leads to a rise in incidental expenses and, in turn, undermines companies' wish to take part in PPAs.

- ② The charge under Article 17, subparagraph 2 of this Agreement shall be calculated on the basis of the relevant terms and conditions by reference to the electricity consumption determined under Article 14 of this Agreement and peak demand, by adding together items such as the base rate, electricity consumption rate, and power factor rate, and the detailed calculation bases are as follows.
1. The base rate shall be applied in accordance with Article 68 (Determination of Chargeable Electricity) of the Terms and Conditions.
  2. The electricity consumption rate shall be charged by reference to electricity consumption determined under Article 14 of this Agreement by multiplying the rate for the type in question, and if the electricity trading volume exceeds consumption for the relevant time period, then, pursuant to Article 6 (1) of the Guidance, the customer shall be deemed to have purchased the entire amount of electricity generated by the power generation company and the electricity consumption rate shall be calculated as "KRW 0."
  3. The power factor rate shall be charged by reference to the overall electricity consumption registered on the customer's electricity meter and the overall amount of reactive power.

**Table 3.** Provision on Base Rate under KEPCO's Standard Trilateral PPA

Under the current charging system, the base rate component of the network cost is levied in respect of each of the following: transmission charge on the generation side, transmission charge on the demand side, and distribution facility usage charge. The results of simulation carried out earlier show that, when the three types of base rates are added together, the base rate component of the network cost reaches KRW 18-22/kWh in the case of photovoltaic power generation, which in turn amounts to approximately 50% of incidental expenses as a whole. What is more, according

<sup>14</sup>. KEPCO's Energy Marketplace, (<https://en-ter.co.kr/ft/ppa/thpty/fee/simulation.do>)



to KEPCO's current logic for calculating incidental expenses, the additional charge for the Electric Power Industry Base Fund is also set according to the base rate. As a result, electricity consumers are being burdened with an unreasonable pricing structure.

## **(2) Opaque basis for calculating incidental expenses**

In addition to the base rate component of the network cost, detailed calculation bases also need to be presented in respect of the usage rate, as well as the uplift. The usage rate component of the network cost is proportionate to the amount of electricity supplied through the PPA for renewable energy. Under Article 15 (1) of the Electric Utility Act, Article 6 (2) of the Enforcement Decree of the same Act, and the Transmission Facility Usage Charge Calculation Basis and the Distribution Facility Usage Charge Calculation Basis issued under the same Enforcement Decree, transmission and distribution companies are required to obtain the approval of the Electricity Regulatory Commission and authorization from the Minister of Trade, Industry and Energy for the current level of the usage rate.

The problem lies with the fact that the details of the calculation is not made public. Without such non-transparency, it is impossible for electricity consumers to have a clear picture of whether the cost is a reasonable one. In order for PPAs for renewable energy to expand going forward, the rights of all users to access the electricity network in a fair manner must be guaranteed, and from this perspective, all usage charges must be disclosed transparently.<sup>15</sup>

The uplift that is included in incidental expenses is a concept that charges electricity consumers the costs arising from constrained-ON generation and constrained-OFF generation when adjusting the difference between the day-ahead market and the actual amount of electricity generated, which is done to ensure that there is stable demand for and supply of electricity. Given the characteristic of the electric power system where the demand for and supply of electricity must match at all times, it may be necessary to include an uplift in the network cost that is payable under the PPA for renewable energy and, in fact, electricity charges borne by the final consumer in other countries also include an expense that corresponds to such an uplift.<sup>16</sup>

<sup>15</sup>. Korean Law Information Center, under Article 15 (1) of the Electric Utility Act, Article 6 (2) of the Enforcement Decree of the same Act, and the Transmission Facility Usage Charge Calculation Basis and the Distribution Facility Usage Charge Calculation Basis issued under the same Enforcement Decree, the relevant charge must be calculated so that it is reasonable and interested parties must be able to dispute the reasonableness.

<sup>16</sup>. KEPCO Economy & Management Research Institute, 2021, Current Status of Transmission and Distribution Network cost Levy Regimes in Major Countries and Implications

However, one must be reminded that the uplift is also based on an outdated trading system in the electricity market which is currently running on a single market – the day-ahead market. In the case of advanced electricity markets in the United States and Europe, various markets, such as the intra-day market and real-time market, are operated in addition to the day-ahead market and, through these, the electricity markets operate an efficient electricity supply and demand system that can minimize the difference between the amount of electricity that is actually generated and the planned amount. In order to attain carbon neutrality, the government is also aware that the outdated electricity market system needs to be restructured and is preparing a proposal to amend the system, but the details have yet to be revealed.

A policy decision is also needed on whether the additional charge corresponding to the Electric Power Industry Base Fund, which is included in the general electricity tariff, is to be levied on PPAs for renewable energy in the same way. Given that the accumulated reserve in the Electric Power Industry Base Fund currently exceeds KRW 5tn,<sup>18</sup> and at least 60% of the Fund's entire budget for 2022 is being allocated to renewable energy-related areas, charging electricity consumers, who are contributing to invigoration of renewable energy, for the Electric Power Industry Base Fund in the same way requires reconsideration. An active effort needs to be made to refer to the example where fees for charging electric vehicles were drastically discounted to boost the dissemination of electric vehicles, which contributed to the formation of the market in its early stages.

#### 4. Guidance on Trilateral PPAs Which Applies to Participants' Disadvantage

Following the establishment of the K-RE100 scheme by the government, in June the Ministry of Trade, Industry and Energy issued its guidance on trilateral PPAs in a public notice.<sup>19</sup> The notice, which was issued under Article 19 (1) 3 and Article 19 (3) of the Enforcement Decree of the Electric Utility Act, describes in detail the subject matter, method, and procedures for electricity trading for the power generation companies and electricity users that wish to take part in trilateral PPAs. Since trilateral PPAs involve KEPCO, the sales company, positioned between the parties and acting as an intermediary on the transaction, rather than a direct PPA method where the renewable electricity generation company and the electricity user enter into an agreement, the trilateral PPAs are structured so that each of the power generation company and the

18. The Korea Economic Daily, 2020.04 (<https://www.hankyung.com/economy/article/202004135249i>)

19. Ministry of Trade, Industry and Energy, 「Guidance on Trilateral Electricity Trading Agreements for Electricity Generated from New and Renewable Energy Sources」

electricity user enters into an agreement with KEPCO.

However, contrary to the government’s initial expectations, the trilateral PPA – involving intermediation by KEPCO – has resulted in no agreements to date. This stems not only from the high level of network cost and incidental expenses, but also from the detailed provisions of the guidance which cannot but be applied to the disadvantage of participants in the trilateral PPA scheme.

**(1) Issue of obligation to purchase the entire amount of electricity generated when entering into the PPA**

The biggest issue with the guidance is that, in a trilateral PPA, the company as the electricity user must purchase the entire amount of renewable electricity that has been produced. As Article 6 of the guidance provides that “the electricity user shall purchase the entire amount of electricity generated and produced by the power generation company,” the structure has been designed in such a deformed way that the electricity consumer cannot purchase renewable energy in the amount it wants.

In other words, assuming that the electricity required by the electricity consumer is 100, if the amount generated by the renewable electricity generation company exceeds 100, the consumer must purchase excess electricity even if it is not needed. Since companies must purchase electricity that they do not use even on routine suspension of operations or closures at weekends or public holidays, from the companies’ position this results in a structure where additional costs are paid through trilateral PPAs.

If a company operates its business establishment only on two out of seven days, approximately 30% of the electricity purchased under the PPA for renewable energy that has been entered into would not be supplied to the company in question. The result is that this would inevitably be supplied to another electricity user through KEPCO, giving rise to a structure where profits generated in this process from the sale of renewable energy vest in KEPCO.

<p>Article 6 (Subject Matter and Unit Price) ① The electricity user shall purchase the entire amount of electricity generated and produced by the power generation company.</p> <p>② The unit price for the purposes of paragraph 1 shall be agreed between the power generation company and the electricity user and entered in [Form 1].</p>
--

**Table 4.** Provisions on Purchasing Electricity under Guidance on Trilateral PPAs

Ultimately, it is inevitable that a situation would arise where the electricity user is obliged to purchase electricity which it does not need to purchase. Currently, a detailed plan as to how such excess electricity is to be dealt with is inadequate. Although Article 11 of the guidance provides for the trading of excess electricity generated by the power generation company, this does not allow the power generation company to trade such excess electricity separately in the electricity market outside cases where the electricity user is unable to perform its obligation to pay for electricity under the PPA, such as a case where the electricity consumer goes bankrupt. Under the current system, where the profits arising from the sale of excess electricity automatically vest in KEPCO, invigoration of the system is bound to be difficult. Therefore, it is essential that the guidance is amended to enable any excess electricity that has been generated to be traded on the electricity market.

Article 11 (Trading of Excess Electricity Generated by Power Generation Company) Notwithstanding Article 6 (1), in the event that, for reasons outside the control of the electricity user, including a declaration of bankruptcy under the Debtor Rehabilitation and Bankruptcy Act, the electricity user is unable to purchase the entire amount of electricity that has been generated and produced by the power generation company, the power generation company may trade on the electricity market any electricity that remains after the electricity user has made its purchase, and the procedures and methods, etc. applicable to such trading shall be governed by the Rules on Operating the Electricity Market.

**Table 5.** Provisions on Trading of Excess Electricity under Guidance on Trilateral PPAs

## **(2) Limits on conclusion of PPAs arising from the obligation to purchase the entire amount**

Secondly, since under Article 6 of the guidance the electricity user must purchase the entire amount of electricity generated and produced by the power generation company, there is the issue whereby a single power plant cannot enter into PPAs with several electricity users. In particular, in the case of communications providers or distributors who use electricity in small business establishments, such as communication base stations and large supermarkets, though the amount they consume is very large on a national scale, it is difficult to find power generation companies of an appropriate size because the amount consumed in individual business establishments is small. This gives rise to an issue where it is impossible to enter into a PPA in practice. There is also an aspect for large renewable electricity generation companies where, because of the large size of their power plants, it is difficult for a single business establishment to use up all renewable electricity that has been generated. Ultimately, this constitutes an issue that arises because KEPCO is prescribing the

means of transacting in a very restrictive manner as it acts as an intermediary on trilateral PPAs. The decision about to which consumer a product that has been produced is to be sold, and in what amount, is entirely an issue for the parties to the transaction, but since this suffers from the issue where the decision is constrained by a distribution intermediary like KEPCO, it is essential that the guidance is amended in this regard.

### **(3) Ambiguity in penalty provisions relating to power generation shortfall**

The third issue concerns provisions under Article 10 of the guidance on the trading of electricity in the event of a shortfall in power generation relative to consumption. Under the guidance currently in force, in the event that the electricity user does not have sufficient electricity despite being supplied with electricity by the renewable electricity generation company, KEPCO is required to make up for the shortfall by directly supplying the electricity consumer with electricity.

The issue is that, under Article 10 (2) of the guidance, in cases where KEPCO is of the opinion that there has been willful misconduct or gross negligence on the part of the renewable electricity generation company, it may impose a penalty on the renewable electricity generation company that amounts to 1.3 times the difference between the system marginal price (SMP), which is the wholesale price, and the electricity consumption rate for the light load hours.

From a legal perspective, the provision in question is problematic in several respects. Firstly, in cases other than the one prescribed in Article 9 (2) 1 of the guidance, namely that “the power generation company has traded electricity in an unjust manner by remodeling, falsifying, damaging, or manipulating electrical installations,” it is difficult to predict in advance a case that would constitute willful misconduct or gross negligence on the part of the renewable electricity generation company. There is also the risk that, because the guidance does not set out a clear standard on whether something constitutes willful misconduct or gross negligence, those concepts may be unfairly expanded entirely according to KEPCO’s judgment and interpretation. Since all of these factors are risks from the position of renewable electricity generation companies, they in turn become the main cause of their reluctance to take part in trilateral PPAs.

In addition, through the payment of the base rate to KEPCO, the electricity consumer is already paying for the supply of electricity whenever there is a power generation shortfall, a judgment needs to be made on whether it would be appropriate for KEPCO to impose a penalty on renewable electricity generation companies. Of course, by having KEPCO, which is responsible for electricity

supply and demand, impose penalties on power generation companies, the aim may partly lie in preventing power generation companies from deliberately failing to generate electricity. However, this still amounts to an excessive penalty provision in that, unless the renewable electricity generation company supplies electricity, it gives rise to immediate lost revenue.

Article 10 (Trading of Electricity by Electricity User in Event of Power Generation Shortfall) ① In the event that the electricity user does not have sufficient electricity to meet its demand despite being supplied with electricity by the generation company under Article 6 (1) and requires additional electricity as a result, the electricity sales company shall be deemed to have supplied the electricity user with electricity by purchasing it on the electricity market in its place under Article 31 of the Electric Utility Act.

② In the event of paragraph 1, in respect of the amount of electricity that could not be supplied as a result of the power generation company's willful misconduct or gross negligence, such as the ground under Article 9 (2) 1, the electricity sales company shall impose on the power generation company a sum derived by taking the difference between the system marginal price for the relevant time period and the electricity consumption rate applicable in the electricity user's light load hours under the terms and conditions, and multiplying it by 130/100.

③ In the event of paragraph 1, the tariff under the electricity sales company's terms and conditions shall be applied in respect of any electricity that has been purchased by the electricity sales company instead and supplied to the electricity user.

④ In the event that the power generation company fails to supply sufficient electricity under paragraph 1 and, as a result, the electricity user incurs a loss in relation to the renewable energy usage certificate, etc. under the Regulations on Support, etc. for New and Renewable Energy Facilities, the electricity user may claim damages from the power generation company in respect of such loss.

**Table 6.** Provisions on Trading of Electricity in Event of Power Generation Shortfall under Guidance on Trilateral PPAs

#### **(4) Unilateral restriction on transmission and reception of renewable energy under the standard contract**

There are also issues with the standard contract that is being proposed by KEPCO under the above guidance to power generation companies that wish to enter into trilateral PPAs. Under Article 21 of the standard contract, KEPCO may unilaterally suspend or restrict the transmission and reception of renewable electricity, which includes controlling output. Such a provision may clearly infringe on the rights of renewable electricity generation companies.

In particular, even though subparagraphs 6 to 9 of Article 21 of the standard contract constitute reasons attributable to KEPCO, which is responsible for electricity supply and demand, rather than the renewable electricity generation company, the substantive means of compensating renewable electricity generation companies are completely non-existent. Even in a case where a ground for restricting transmission and reception of renewable energy arises at the level of operation of the electric power system such that it is unavoidable, KEPCO needs to provide a guarantee to the maximum extent possible from the perspective of a distributor, so as to avoid an infringement on the rights of renewable electricity generation companies. However, the current version of the standard contract does not include anything to this effect. Ultimately, this means that KEPCO will take no responsibility as a sales company that distributes renewable electricity and acts as an intermediary on transactions, which is no different from just shifting that responsibility to the power generation companies participating in the trilateral PPA scheme.

<p>Article 21 (Suspension, etc. of Supply and Receipt of Electricity) In the event of any of the following, KEPCO may suspend or restrict transmission and reception of electricity by the electricity supplier (this includes controlling output on power generators using new and renewable energy sources) and, in this case, KEPCO shall notify the electricity supplier in advance; provided that, in case of an emergency or where it is unavoidable, the notification may be given after effecting the suspension or restriction.</p> <ol style="list-style-type: none"><li>1. If electricity has been supplied or received in an unjust manner by remodeling, falsifying, damaging, or manipulating electrical installations;</li><li>2. If, as a result of willful misconduct or gross negligence, the supply of electricity by KEPCO is disrupted or there is concern of such disruption;</li><li>3. If the adjustment mechanism or harm prevention mechanism under the provisions of Article 9 (Installation of Harm Prevention Mechanism, etc.) has not been installed;</li><li>4. If access by KEPCO's employee is refused without a legitimate reason;</li><li>5. If requested by the Minister of Trade, Industry and Energy or the head of another administrative agency pursuant to legislation;</li><li>6. If it is unavoidable due to adjustment to electricity supply and demand;</li><li>7. If KEPCO's electrical installations malfunction or there is concern of such malfunction;</li><li>8. If it is unavoidable due works such as repairs or changes to KEPCO's electrical installations; or</li><li>9. If a serious imbalance or fluctuation arises in the voltage or frequency or there is concern of such imbalance or fluctuation.</li></ol>
---

Table 7. Provisions on Restriction of Transmission and Reception of Renewable Energy under Standard Trilateral PPA

### **(5) Provisions on exemption from liability for damages that are favorable to KEPCO**

Finally, the clauses of the Standard Trilateral PPA on exemption from liability for damages and liability for contravention of the law, which are one-sided in favor of KEPCO, must also be improved. Under the current standard contract, in contracting with the power generation company and the electricity user, KEPCO benefits from extensive exemption from liability, whereas the power generation company or the electricity user is fully liable under civil and criminal law in disputes related to contravention of the law. This takes no account of the responsibility of KEPCO, which is in charge of distribution and sale of renewable energy, and, in view of the current trend where improvements are being made to unreasonable contracting practices in the government's public procurement contracts, this is something that needs to be improved.

**Article 26 (Exemption from Liability for Damages)** KEPCO shall not be liable to the customer in respect of any losses incurred by the customer as a result of the following:

1. If the trilateral electricity trading agreement is terminated by agreement between the customer and the electricity supplier;
2. If, for a reason other than KEPCO's willful misconduct or gross negligence, transmission or reception of electricity does not take place;
3. If a short circuit or other accident occurs due to a cause that falls outside KEPCO's responsibility; or
4. If, for a reason attributable to the electricity supplier, trilateral electricity trading is restricted or suspended.

**Article 27 (Liability for Contravention of Law)** In the event that, in connection with this Agreement, the customer contravenes the relevant legislation, such as the Electric Utility Act and the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy, it shall be fully liable in civil and criminal law in respect of any dispute that arises as a result of such contravention.

**Table 8.** Provisions on Exemption from Liability for Damages under Standard Trilateral PPA



### III. Summary and Conclusion

---

Companies that are taking part in the RE100 initiative in an effort to fulfill the Paris Agreement and attain carbon neutrality are on the rise globally. This is the result not only of the increasing pressure from carbon regulation but also of leveled cost of renewable energy, which is falling rapidly, and companies' needs as they seek to comply with regulation in a cost effective manner through a stable supply of electricity.

In order to respond to global pressures demanding participation in RE100, Korea has put in place the K-RE100 scheme, which is currently in operation. However, due to structural factors such as the fundamentally outdated structure of the electricity market, greenhouse gas regulation that is of a low standard, and a wholesale market that does not properly reflect environmental costs, participation is currently at a low level.

In particular, in view of the intention behind the RE100 – expansion of renewable energy, that is – it is desirable that, rather than the Green Premium or purchase of RECs, the PPA, which can directly and substantively contribute to the expansion of renewable energy, becomes active. However, as of now, no company is participating in a trilateral PPA.

Boosting the trilateral PPA is difficult due to (1) high incidental expenses such as the network cost; and (2) various limitations under the related guidance and standard contract. In the case of the network cost in particular, there are issues in that the charge includes the base rate portion of the network cost, which amounts to double-charging, and transparent disclosure of information is not taking place in relation to the usage rate and other incidental expenses. In order to boost participation in trilateral PPAs by companies, the government must give out a signal that, in the medium to long term, incidental expenses, including the network cost, will be charged at a level that is both stable and reasonable, but this is not happening in real life.

The various limitations dotted around the guidance on trilateral PPAs and the standard contract must also be resolved. The current contracting structure, in which KEPCO acts as an intermediary, not only infringes on the rights of power generation companies and consumers to contract freely, but it also operates as several risk factors in the actual performance of the PPA. In the guidance, guidelines, and standard contract on direct PPAs, which are due to come into force at a later date, such unreasonable terms will need to be addressed in full.

# SFO°C

Solutions for Our Climate

Solutions for Our Climate Solutions for Our Climate (SFOC) is a Korea-based non-profit established in 2016 that advocates for stronger climate and air policies. SFOC is led by legal, economic, financial, and environmental experts with experience in energy and climate policy and works closely with domestic and overseas nonprofit organizations.

