



Task Force 02

SUSTAINABLE CLIMATE ACTION AND INCLUSIVE JUST ENERGY TRANSITIONS

Powering G20 Power Grid via Inclusive and Transparent Energy Governance

Ja Hyun Kim, Policy Analyst, Solutions for Our Climate (Republic of Korea)

Mariano Birlain Escalante, Project Manager, Iniciativa Climática de México (Mexico)



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Abstract

The COP28 has reinforced the determination of the G20 to pursue efforts to triple renewable energy capacity and double down on efficiency globally by 2030. Recently underlined by the International Energy Agency, well-designed policies and a conducive market environment are crucial to achieving these collective goals of the G20. In pursuit of global goals, inclusive and transparent governance of power systems is key to laying the foundation for climate-compatible energy policy and market regulations. However, the urgent transition to renewables often faces global challenges due to the lack of inclusiveness and transparency within existing power systems.

In this context, this policy brief will address the need for the G20 countries to systematically transform their power systems to facilitate inclusive decision-making processes for diverse stakeholders, and the adverse impact of energy governance that is “unfair” to renewables and its stakeholders – notably local renewable businesses and workers, by highlighting key cases within the G20 representing both the Global North and South. Lastly, this brief will suggest actionable policies to increase transparency in the power sector by transforming energy governance into a renewable-friendly environment.

The G20 can show leadership in driving such change by 1) preventing conflict of interest between major entities within the power systems and 2) Strengthening the independence of an energy-related regulatory body that monitors unfair and uncertain practices in the market, while 3) ensuring all stakeholders of the market – existing and new players of energy transition –to participate in the equitable decision-making process to support renewable expansion. This will allow for accurate risk assessment of new businesses, resulting in more reliable project financing for emerging businesses with a potential to support the expansion of solar and wind at scale.

Diagnosis of the issue

At COP28, a significant global commitment was made by leaders from the majority of G20 countries, to triple renewable capacity and double energy efficiency by 2030. This collective pledge underscores the urgent need for concerted efforts of the G20 member countries to meet the global target and establish funds to ensure a just, equitable, and inclusive energy transition. However, several G20 countries are encountering systemic obstacles hindering their transition to renewable energy. This brief aims to highlight the challenges faced by two G20 member countries – each from Global North and South in this regard, and propose actionable policy recommendations applicable to similar contexts within the broader G20.

Mexico's energy transition has been notably slow, with the most significant advancements occurring between 2014 and 2018. During this period, the country underwent substantial changes in its power industry, spurred by the 2013 constitutional reform. This reform introduced the Energy Transition Law and the Electricity Industry Law, which sought to modernize the sector, open private participation, facilitate the transition to renewable energy sources and regulate and bring transparency to the sector's activities.

Transforming Mexico's state-owned utility, Comisión Federal de Electricidad (CFE) into a productive company was another significant change. Additionally, developing auction mechanisms and an electricity market provided certainty and a stable framework for the industry, fostering renewable energy, through increased private participation. However, the reconfiguration of energy policy post-2018 has raised several problems across sectors. This has significantly slowed down the implementation of large-scale

renewable energy projects, affecting Mexico's compliance with international commitments to mitigate emissions.

On the other side of the globe, Republic of Korea (henceforth Korea)'s attempt to reform its power market in the late 1990s failed due to a lack of social consensus, resulting in a continuation of a vertically integrated electricity market since 2001. The state-owned utility, Korea Electric Power Corporation (KEPCO), divided its power generation sector into six subsidiaries while retaining ownership of transmission, distribution grids, and the retail market. Despite the separation of management rights, KEPCO maintains 100% ownership of these subsidiaries, directly impacting its accounting books through their sales. These subsidiaries currently produce approximately 65% of the nation's electricity, with 78% generated from fossil fuels, and only 3% from renewable sources.

As privately owned renewable energy businesses expand, the revenue of KEPCO's subsidiaries, and consequently KEPCO itself, decreases due to their vertically integrated structure, which results in a counter-climate zero-sum game. Renewable energy, notably solar and wind, struggle for representation in major decision-making processes. For example, they are excluded from the board of the Korea Power Exchange (KPX), the country's system and market operator, reserved for KEPCO and its subsidiaries. Furthermore, KPX's major sub-committees reviewing policies and regulations often consist of experts financially tied to KEPCO and its subsidiaries through research funding.

Recommendations

- **Preventing conflict of interest between major entities within the power systems**

As the number of stakeholders in the electricity market increases amid the energy transition, it is imperative to ensure effective governance to prevent market manipulation and fair market entry. Countries like Korea and Mexico within the G20, however, lack robust energy governance, hindering fair competition.

In Korea, despite separating the power generation sector in 2001, KEPCO is still financially connected to the six generation companies, leading to conflicts of interest. The de facto monopoly (Figure 1) extends to all sectors in the market, while the governance of KPX, remains under KEPCO's influence as well.

Similarly, Mexico's energy transition has been affected by the current political context. Initial progress was made following the 2013 reform, which saw the wind and solar share increase from 1.1% in 2013 to 11.62% in 2022. However, through a presidential decree stipulated in March 2021, the structure of the country's electricity industry has been modified (Figure 2), giving the state-owned utility, CFE, priority in dispatching electricity over private companies, disrupting the transition and facing legal challenges. To prevent such a conflict of interest within the electricity system, unbundling - particularly accounting unbundling - can be one of the prerequisites. Accounting unbundling involves separating financial accounts for each sector, mitigating conflicts of interest, and enhancing market transparency.

In Mexico, it is crucial for the power industry to prioritize independence from political influence to advance carbon neutrality and ensure the sustainability of large-scale renewable energy projects linked with international funding.

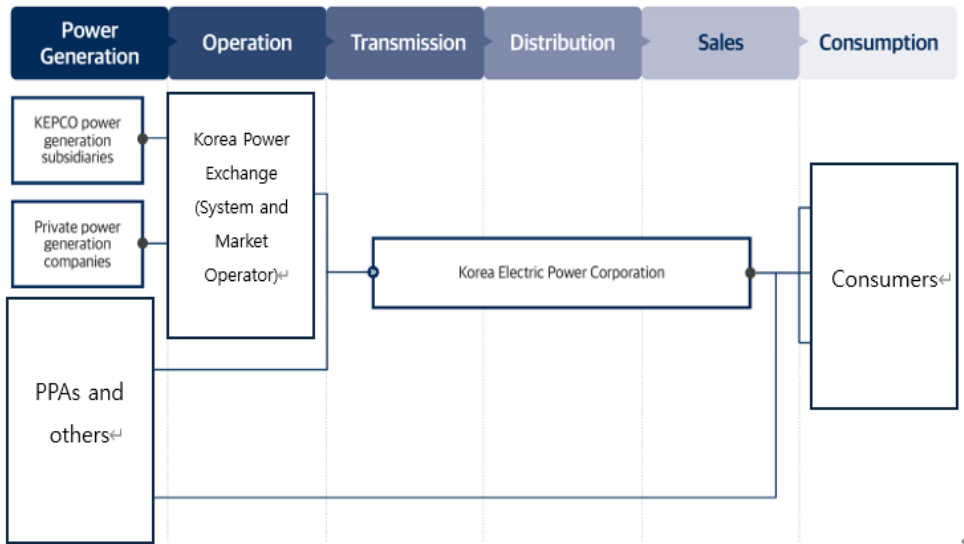


FIGURE 1. Structure of Korean Power System

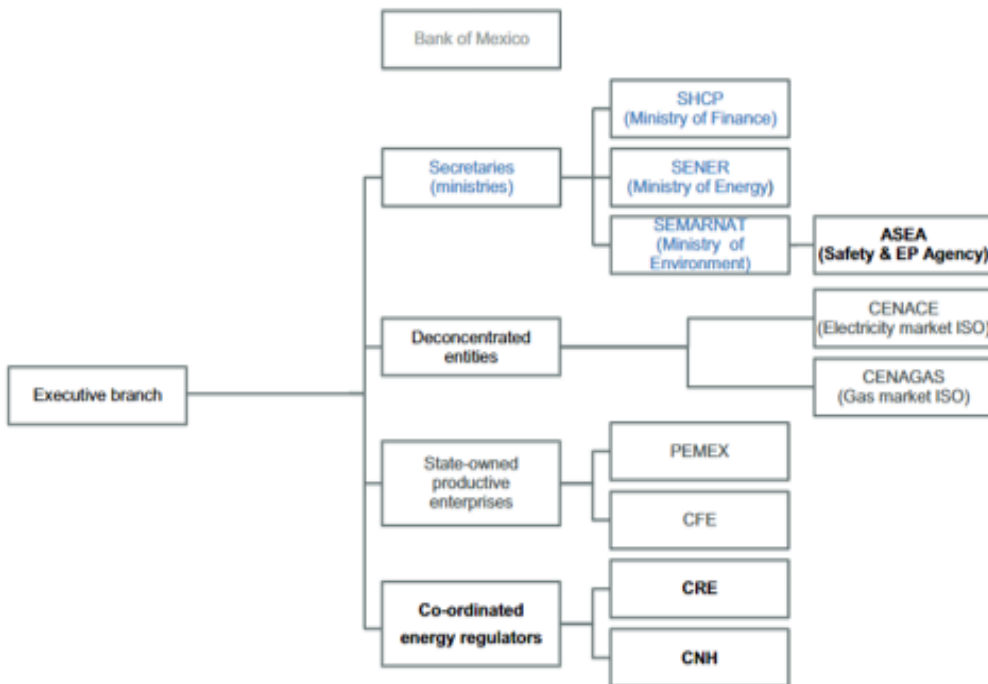


FIGURE 2. Structure of Mexican Power System

- **Strengthening the independence of an energy-related regulatory body that monitors unfair and uncertain practices in the market**

G20 countries should enhance energy governance by establishing and/or strengthening the independence and transparency of energy regulatory bodies. These bodies must operate autonomously, both financially and politically to ensure fair competition between renewables and fossil fuels, both in the market and the grid.

The roles of these independent regulatory bodies vary based on each country's governance, But the majority of the energy regulatory agencies of G20 countries (Table 1) that have unbundled markets prioritize the basic principle of fair market competition. As small-scale distributed renewable energy grows, regulatory bodies must maintain strong independence to prevent favoritism towards traditional incumbents and ensure fair market practices.

The table below details the share of solar and wind power generation in G20 member countries, while categorizing the roles of their independent regulatory authorities, and the measures of ensuring their independence. It shows a general correlation: countries with more independent regulatory agencies playing all key roles, tend to have a higher renewable penetration.

Mexico's renewable expansion is closely linked with the role of an independent regulatory body, the Energy Regulatory Commission (ERC), which plays a pivotal role in regulating and supervising its competence under free competition. It also leads issuing tariff regulations for transmission and distribution, as well as contracts for the interconnection of generation plants, which motivate project implementation. This demonstrates how an independent regulatory body fosters renewable energy growth through its regulatory oversight and policy contributions.

TABLE 1. G20 Member Countries' Energy Regulatory Agencies

G20 Member Countries (Independent Regulatory body)	Solar + Wind (Generation, %)	① Retail market regulation, Consumer protection	② Monitor, permit, and/or license new projects and/or fair access to the grid	③ Wholesale market regulation	Notes
Germany (Bundesnetzagentur, BNetzA)	32.68	O	△ *Extra-high voltage network only	O	Amendment of Germany Energy Act (Nov 2023) <ul style="list-style-type: none"> ● Based on the ruling of the European Court of Justice in 2021
United Kingdom (Office of Gas and Electricity Markets, Ofgem)	28.88	O	△ *License energy and gas companies only, Fair access to the grid is monitored by National Grid ESO	O	Gas and Electricity Markets Authority (GEMA) <ul style="list-style-type: none"> ● Governing body of Ofgem ● Members appointed by the Secretary of State at the Department for Energy Security and Net Zero
Australia (Australian Energy Regulator, AER)	25.77	O	O	O	West Australia only, Other regions' electricity market regulation governance varies
European Union (European Union Agency for the Cooperation of Energy Regulators, ACER)	22.71	X *Do not have any control over the retail (customer) price	O	O	
Italy (Autorità di Regolazione per Energia Reti e Ambiente, ARERA)	17.28	O	O	O	

Brazil (National Electricity Energy Agency, ANEEL)	16.5	O	O *By delegation from the Federal Government	O	Linked to the Ministry of Mines and Energy, Collegiate Board appointed by the President and approved by the Federal Senate
Türkiye (Energy Market Regulatory Authority, EMRA)	15.55	O	O	O	
United States of America (Federal Energy Regulatory Commission, FERC)	14.91	X *Does not regulate retail sales to customers	△ *Reviews siting applications for transmission projects under limited circumstances	O	
China (National Electricity Commission)	13.45	X	X	X	Controlled by National Development and Reform Commission and National Electricity Administration
France (French Energy Regulatory Commission, CRE)	12.4	O	O	O	
Mexico (Energy Regulatory Commission, CRE)	11.62	O	O	O	<ul style="list-style-type: none"> ● Electricity Industry Law ● Law on Coordinated Regulatory Bodies in Energy Matters ● Wholesale Electricity Market Bases
Argentina (National Electricity Regulatory Agency, ENRE)	11.34	O	O	O	
Japan (Electricity and Gas Market)	10.7	O	O	O	Reports directly to Minister of Economy, Trade and Industry

Surveillance Commission, EGC)					
India (Central Electricity Regulatory Commission)	8.89	O	O	O	Chairperson appointed by the Ministry of Power
South Africa (National Energy Regulator of South Africa, NERSA)	8.3	O	O	O	Four full-time and five part-time members appointed by the Minister of Minerals and Energy.
Canada (Canada Energy Regulator, CER)	6.6	X	O	X	CEO appointed by the Governor in Council on the recommendation of the Minister following consultation with the Board of Directors.
Republic of Korea (Electricity Regulatory Commission, ERC)	4.89	X *No control over retail price	O	X	
Russia	0.57	Controlled directly by the Ministry of Energy (Federal Anti-Monopoly Service)			
Indonesia	0.24	Controlled directly by the Ministry of Energy and Mineral Resource			
Saudi Arabia (Electricity & Co-Generation Regulatory Authority, ECRA)	0.21	O	O	O	
African Union (African Energy Commission, AEC)	N/A	Do not deliver any regulatory roles among the member states			

Ensuring all stakeholders of the market to participate in the equitable decision-making process

To foster an inclusive and efficient energy transition, G20 countries must prioritize equitable decision-making processes involving all stakeholders, both existing players and

newcomers in the energy transition. Failure to do so can have detrimental effects, as evidenced by recent cases in Mexico and Korea.

In Mexico, the energy transition slowed down as the new administration prioritized state-owned utility's assets and halted new private renewable energy projects.

Similarly, in Korea, renewable businesses are systematically excluded from key decision-making bodies like KPX, as well as innovative technologies such as battery storage and demand response resources which are crucial for integrating more renewables into the grid.

To address this, G20 should conduct a thorough review of their power system governance, ensuring the representation of renewable energy and related innovative technologies in decision-making bodies. By promoting inclusivity and diversity in governance, countries can accelerate the transition to renewable energy and its integration into the grid while mitigating the risks associated with overreliance on fossil fuels.

The table below highlights the lack of involvement of renewables and related technologies in each country's power system governance.

TABLE 2. Korea and Mexico’s power system decision-making process and the representation of renewables and innovative technologies

Renewable energy and related technologies	Participation in the power system decision-making process		Notes
	Korea	Mexico	
Solar PV	x	x	(Korea) Three major subcommittees of KPX- Rule Revision Committee, the Cost Evaluation Committee, and the System Evaluation Committee (Mexico) Ministry of Energy, Energy Regulatory Commission, and National Energy Control Centre
Wind power	x	x	
Storage	x	x	
Demand Response, etc.	x	x	

Scenario of Outcomes

Continuing current actions in the next federal administration may entail eliminating the Wholesale Electricity Market through regulatory changes favoring CFE at the expense of private producers. This has repercussions on public finances, the environment, and consumers by raising electricity costs and hindering prospects for cheap and clean generation. It is also inconsistent with the Constitution and international trade agreements, specifically the US-Mexico-Canada Agreement (T-MEC). It would also undermine Mexico's transition to clean energy, by promoting non-compliance with the Paris Agreement and Energy Transition Law.

Korea may also fall into a limbo of unfair competition between renewables and fossil fuels if it maintains the current fossil-fuel-centered monopoly and fails to adopt accounting unbundling and open and fair decision-making processes. Not only Korea but also other G20 member countries that have not yet unbundled their electricity market will be highly likely faced with similar impediments along the energy transition. To achieve a systematic shift towards a just and equitable net-zero community, G20 must, therefore, prioritize establishing independent and transparent regulatory frameworks.

References

- Australian Energy Regulator. “[About the AER](#),” n.d.
- Bank, Asian Development. “[How Better Regulation Can Shape the Future of Indonesia’s Electricity Sector](#)”, 2020.
- Choi, Seoyoon. “[Current Issues in KPX’s Governance and Policy Proposal for Sustainable Change](#).” Solutions for Our Climate. November 22, 2023.
- Choi, Seoyoon. “[Current Issues in KPX’s Governance and Policy Proposal for Sustainable Change](#).” Solutions for Our Climate. November 22, 2023.
- COP28 UAE, Global Renewables and Energy Efficiency Pledge, (2023). November, 2023.
- CRE, Comisión Reguladora de Energía, REGLAMENTO Interno de la Comisión Reguladora de Energía. Ciudad de México, April 28, 2017.
- CRE. “[Who Are We ?](#),” n.d.
- DOF, Diario Oficial de la Federación, DECRETO por el que se reforman y adicionan diversas disposiciones de la Ley de la Industria Eléctrica. Ciudad de México, March 9, 2021.
- DOF, Diario Oficial de la Federación, DECRETO por el que se reforman y adicionan diversas disposiciones de la Ley de la Industria Eléctrica. Ciudad de México, March 9, 2021.
- DOF, Diario Oficial de la Federación, Ley de la Comisión Federal de Electricidad. Ciudad de México, August 11, 2014.; DOF, Diario Oficial de la Federación, Ley de Órganos Reguladores Coordinados en Materia de Energética. Ciudad de México, August 11, 2014.; DOF, Diario Oficial de la Federación, ACUERDO por el que se emite el Manual para el Desarrollo de las Reglas del Mercado. Ciudad de México, December 19, 2017.

DOF, Diario Oficial de la Federación, Ley de Transición Energética,. Ciudad de México, December 24, 2015.; DOF, Diario Oficial de la Federación, Ley de la Industria Eléctrica . Ciudad de México, August 11, 2014.

ERRA. “[Energy Market Regulatory Authority \(EMRA\) - ERRA](#),” September 19, 2022.

European Union Agency for the Cooperation of Energy Regulators. “[About ACER](#),” n.d.

Federal Energy Regulatory Commission. “[What FERC Does](#),” n.d.

Fulghum, Nicolas. “[Yearly Electricity Data | Ember](#).” Ember, March 11, 2024.

Kim, Ja Hyun. “[How to Unlock the Energy Transition: Policy Recommendations for expanding flexibility resources to accelerate renewable energy in South Korea](#).”

February 21, 2023.

Kim, Ja Hyun. “[How to Unlock the Energy Transition: Policy Recommendations for expanding flexibility resources to accelerate renewable energy in South Korea](#).”

February 21, 2023.

Kim, Jieun. “[Renewables ‘Go To Jail’ in Monopoly: How South Korea’s Electricity Governance Is Stifling Its Energy Transition](#).” Solutions for Our Climate. November 2020.

Korea Electricity Power Company. [Korea Electricity Statistics 2022](#). May 31, 2023.

Kurmayer, Nikolaus J., and Nikolaus J. Kurmayer. “[Germany Boosts the Independence of Its Electricity Grid Regulator](#).”, November 10, 2023.

Lee, Byoung-Hoon, and Ahn Hyeon-Hyo. “[Electricity Industry Restructuring Revisited: The Case of Korea](#).” Energy Policy, July 1, 2006.

Lim, Sanho. Korea Energy Economy Institute. [Saudi Arabia’s Energy Sector and Policy](#). World Energy Market Insight Weekly. December 6, 2013.

Ministry of Economy, Trade, and Industry. [Electricity and Gas Market Surveillance Commission](#). September 2017.

Ministry of Trade, Industry and Energy. “[전기위원회](#),” n.d.

OECD. “[Driving Performance at Brazil’s Electricity Regulatory Agency](#).” October, 2017.

OECD. “[The Governance of Regulators: Driving Performance of Mexico’s Energy Regulators](#).” 2017.

OECD. “[The Governance of Regulators: Driving Performance of Mexico’s Energy Regulators](#).” 2017.

Ofgem. “[About Us](#),” n.d.

PiiDigital. “[About Us: Our Profile | Nersa](#).” NERSA, April 25, 2023.

Renewable Energy Institute. “[South Korea Low Renewable Energy Ambitions Result in High Nuclear and Fossil Power Dependencies](#).” November, 2023.

SENER, Secretaría de Energía, Balance Nacional de Energía 2013, (2014). ; SENER, Secretaría de Energía, Balance Nacional de Energía 2022. 2023.

U.S. Agency for International Development. “[Strengthening Utilities and Promoting Energy Reform \(SUPER\) | Basic Page | U.S. Agency for International Development](#),” 2020.

UN, United Nations, [Division for Sustainable Development Goals, Department of Economic and Social Affairs, Ensuring Universal Energy Access and Advancing Just, Inclusive and Equitable Energy Transitions](#), 2023.

Xu, Jun, and Xuelu Cao. “[Regulatory Institutional Reform of the Power Sector in China](#).” Energy and Climate Change 3 (December 2022): 100082.

“[Arera EN: Structure and Role](#),” n.d.

“[Bundesnetzagentur - About Us](#),” n.d.

[“CER – The Role of the Regulator and the Utility Providers,”](#) February 1, 2021.

[Central Electricity Regulatory Commission.](#) n.d.

[National Electricity Regulatory Agency.](#) n.d.

[“Overview | AFREC,”](#) n.d.

[“UNDERSTANDING THE RUSSIAN ELECTRICITY MARKET - KWM,”](#) n.d.



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