

Report

5th Korean-German Energy Day

The fifth Korean-German Energy Day took place on May 26th in Bexco, Busan. This event is part of the Korean-German Energy Partnership (KGEP), founded in 2019 by the Korean Ministry of Trade, Industry and Energy (MOTIE) and the German Federal Ministry for Economic Affairs and Climate Action (BMWK). The Korean Energy Economics Institute (KEEI), The Korean Institute for Energy Technology and Planning (KETEP), the Korean-German Chamber of Commerce and Industry (KGCCI) and adelphi co-organized this year's conference where more than 130 participants from politics, business, and academia were brought together.

Over the course of three sessions, experts from Korea and Germany shared their knowledge and experience through



presentation and panel discussion, with focus on the ‘Tackling the Climate and Energy Crisis: The Role of Offshore Wind, Grid Expansion and Digitalization’.

The first session on energy policy was opened by **Mr. Young-ghil Cheon, Deputy Minister for Energy industry Office from Ministry of Trade, industry and Energy (MOTIE)** and **Mr. Peter Winkler, Deputy Head of Mission at the German embassy**. **Mr. Young-ghil Cheon** brought up key policy agendas to target carbon neutrality. According to Mr. Cheon, Korea will phase down coal generation and utilize low carbon energy sources, aiming at a feasible energy mix of



nuclear energy and renewable energy. Mr. Cheon added that Korea seeks to heighten efficiency in the industry, building and transportation sector and that energy conservation will be fostered through campaigns such as energy cashback and

Green Point. To strengthen supply chains and energy security, Mr. Cheon indicated that import sources will be diversified and that critical minerals need to be developed and produced domestically and be recycled. He added that growth of new energy industries such as nuclear power, hydrogen, solar and wind power, CCUS and ESS will also be supported by the Korean government.. Concluding his speech, Mr. Cheon emphasized the relevance of bilateral and multilateral cooperation to respond to climate change and achieve carbon neutrality and green growth. **Mr. Peter Winkler** first addressed the impact of the Russian war of aggression against Ukraine on energy supply and national security. Mr. Winkler stressed that a rapid and comprehensive energy transition needs to take place in order to reduce geopolitical and economic vulnerabilities. He added that Germany aims at reaching 200 GW of solar PV by 2030 and 70 GW of offshore wind by 2045, seeing electrification with a decarbonized electricity supply with the addition of green hydrogen production to be essential to achieving net zero. L Mr. Winkler also emphasized the importance of close cooperation and increased coordination of the global community for climate action.

Next, two industry representatives, **Mr. Minsoo Kim, Vice President of Korea Southern Power Corporation (KOSPO)** and **Mr. Sungho Hong, Country Managing Director of Siemens Energy Ltd. Korea & Siemens Gamesa Renewable Energy Korea**, shared their perspectives on the future of energy. **Mr. Minsoo Kim** indicated that Korea’s total installed electricity capacity is 133,430GW, that of KOSPO is equivalent to 8.6%(11,475GW) of the total capacity, most of which is focused on coal thermal at the moment. KOSPO aims to become carbon neutral by 2050 focusing on the energy sources solar PV, onshore and offshore wind and hydrogen. He added that KOSPO is developing 450MW of onshore wind and will increase operation efficiency of onshore wind. According to Mr. Kim, KOSPO plans large-scale projects for offshore wind, putting together a floating wind power complex in the east oceans and he believes that RWE and Siemens energy could be



great partners on the offshore wind projects. The vision of KOSPO regarding hydrogen is to construct a whole cycle ecosystem in the hydrogen industry from up-stream to down-stream. **Mr. Sungho Hong** stressed that the right policies need to be implemented and realized and that the economy and public have to work together to facilitate the energy transition. He emphasized that individual efforts will not lead to success and that local community must be involved and accept the new paradigm.

After a short coffee break and networking, Korean and German representatives from industry, academia and politics exchanged ideas and opinions in the panel discussion on “climate crisis and energy security: reconciling two distinct challenges”. **Mr. Hee Jip Kim, CEO of Eneridea** led the panel discussion as a moderator. The first speaker, **Dr. Suyi Kim, Professor of Hongik University and president of Korea Resource Economics Association** stressed that electricity needs to be produced in a carbon-neutral fashion and that nuclear energy and renewable energy are very good, cost competitive options. The generation cost of renewable energy was lower than LNG in 2022 and coal cost has also increased,



making renewable energy more competitive. To the question on how to enhance energy security, **Mr. Min Hyug Park, Director of Korea Electric Power Research Institute** mentioned that Korea is still missing

transmission lines to transmit the surplus energy to its metropolitan areas, while Germany has an integrated power grid with nine neighboring countries. Mr. Park stressed that it is therefore important for Korea to secure transmission lines to avoid energy insecurity as a result of the energy transition. **Dr. Falk Boemeke, Head of Division of general issues of bilateral climate and energy cooperation; cooperation with North America, East Asia, Oceania and Turkey, BMWK**, argued that a more flexible energy system and less dependence on fossil fuel imports can enhance energy security, when securing supply through storage system, grids, demand response and diversified imports. Dr. Boemeke also emphasized the importance of a clear policy pathway for renewable energies. In terms of technology, he mentioned that technology should be renewable and efficient. Nuclear energy, when considering costs for waste disposal, building and decommissioning, is not cost competitive with renewables. On the topic of cooperation for climate change and energy security, **Mr. Tony Ji-Yon Kim, Team Lead Green Energy of TÜV Süd Korea** states that Korea and Germany could cooperate on R&D, dual-utilizing the existing infrastructure and sharing information as well as on energy implementation projects. He also suggested, that the governments could cooperation by discussing policy and problems/solutions.



The second session focused on offshore wind expansion and the role of grids. **Ms. Jana Narita, Senior Manager of Korean-German Energy Partnership Team from adelphi** first presented a comparative analysis on renewable energy potential in Korea and Germany. Ms. Narita pointed out that Korea has a higher solar potential per m² than Germany, and Germany’s overall solar potential is only higher because of its larger surface area. While Germany has better natural prerequisites for onshore wind than Korea, Korea’s marine area

is roughly eight times taller than Germany’s with a much smaller environmental protection zone. This indicates a much higher offshore wind potential for Korea, even though, currently, the installed offshore wind capacity in Germany is almost 40 times larger than in Korea.

Subsequently, experts from Korea and Germany shared the status of and policies for offshore wind development in each country. **Dr. Jung Chul Choi, wind program director of KETEP** shared the ongoing projects including development of design technology for TLP-type floating offshore wind turbines and development of disconnectable mooring system. KETEP aims to be a first-mover in the floating wind farm market and minimize the effects on the marine ecosystem. **Mr. Anton Hufnagl, Deputy Head of Division, General issues of bilateral climate and energy cooperation, BMWK** shared



the status quo and perspectives for offshore wind in Germany. Germany plans to install 70GW of offshore wind capacity by 2045 and Mr. Hufnagl stressed that a suitable tender design and intensive dialogue with the industry and other stakeholders are important to reach offshore wind targets. He added that Germany is expanding the transmission grid and is improving grid connections to improve the grid integration of offshore wind power.

A panel discussion on how to market flexibility services and how to send required price signals for the grid integration of offshore wind energy followed the presentations and was moderated by **Dr. BumSuk Kim, Professor of wind Energy Engineering of Jeju National university**. **Mr. Deok Hwan Choe, Head of the communication department of Korea Wind energy Industry Association (KWEIA)** suggested that Korea’s special bills on offshore wind power will, if passed, not solve all problems and that there needs to be more discussions on the rights of existing operators. He added that clear signals and criteria should be communicated. On the profit model of TenneT, **Ms. Janina Habethal, Senior Advisor for Political Affairs of TenneT** explained that TenneT raises funds through private capital providers and governmental system. Ms. Habethal also stressed the importance of governance, and that shipping, fishery and windfarm all need to be involved in the planning process. **Mr. Young-soo Han, senior manager of power system planning department of KEPCO** indicated that pre-investment for joint facility investment of offshore wind power is possible if the following conditions are met: The area should be designated as cluster area and requested by the government, and the capacity needs to be



2.4GW or bigger. KEPCO is overseeing a 2.4GW project in southwestern (Honam) area where the local government takes initiative and interest groups of the local community participate. Dr. Kim then asked RWE the primary reasons for construction delays in offshore wind farms in Korea. **Mr. David Jones, head of offshore development and country manager of RWE Renewables Korea** gave three main reasons: Lack of harmonization between grid and project development, public acceptance issues and operators that have the license but lack capability and financial capacity. Mr. Jones believes that these difficulties arise from the lack of central planning. He added that the government needs to actively give KEPCO focus on where to apply more grids. According to **Mr. Choe**, the issues are that developers and system operators are faced with uncertainty and that projects are sometimes not carried out due to local complaints. He indicated that close communication between operators and KEPCO is important for the right investment and that compensations as well as support plans for the local community need to be presented. The moderator asked Ms. Habethal to how TenneT reacts to conflicts of interest concerning the grid connection. **Ms. Habethal** responded that the federal agency does maritime special planning on a regular basis to align co-use in a very close connection with all stakeholders. She added that a broad outlook of the plan is made ten years before the operation.

Mr. Jones mentioned RWE's experience in running grid systems in Germany and that RWE would be happy to cooperate closely with Korean industry. Last but not least, Mr. Choe shared that the government is still discussing and collecting ideas and opinions on the special bills on offshore wind power, trying to reflect on all perspectives.

After the lunch break, the third session of the KGED took place on the topic "Smart grids and new business models for supporting the energy transition". **Mr. Jong Cheon Son, Head International Cooperation Team of Korea Smart Grid Institute (KSGI)** and **Dr. Alexander Bogensperger, Head of digital innovation and data analytics of Ffe Muenchen** gave presentations on regulatory framework for and status of smart grids and services. **Mr. Jong Cheon Son** introduced the 3rd basic plan for smart grids, which includes five strategies to improve and expand smart grids, including digitalization of the power system and strengthening of power supply flexibility. Mr. Son explained that challenges concerning the smart grids improvement are local opposition issues, curtailment issues and increasing distributed energy share and power demand. He added that new business models and implementation of the right policies and technologies are of great significance for the successful transformation of electricity



systems. **Dr. Alexander Bogensperger** explained that the German grid is secure despite the steadily increasing number of renewables. According to Dr. Bogensperger, however, new challenges appear to the market with paradigm shifts – digitalization and innovation. He added that digitalization has been viewed as a risk for security for security of the grid, but he believes that not being digitalized is more of a risk than having a digital security threat.

Mr. Jin Sung Kim, president of ToFather, Mr. Jung Sung Park, senior researcher of KEPCO and Dr. Johanna Bronisch, Innovation technologist from Digital Hub Mobility by UnternehmerTUM shared their experience and knowledge focusing on projects and new business models. Mr. Jin Sung Kim shared his experience on the development and utilization of energy platform services. Mr. Kim stressed the importance of the AMI system, as connection is a key word for the energy platform services. His company developed a connect platform called "Myenergy", a smart metering

service which visualizes the energy consumption of individual consumption points/households. **Mr. Jung Sung Park** shared his perspective on smart grids-based energy services to increase power system flexibility. Mr. Park indicated that the size of renewable energy facilities needs to be increased from 32.8 GW to 63.8 GW by 2030 and that the proportion of renewable energy to total power generation needs to be increased to 36.7% according to the 10th basic plan for electricity supply and demand in Korea. Mr. Park added that renewable energy-based small-scale distributed energy resources are increasing, which stresses the need for distributed energy resources (DER). He explained that flexibility resources can be effectively used without additionally expanding the distribution facilities if the power system structure changes with the deployment of DER, improving the TSO-DSO coordination. **Dr. Johanna Bronisch** introduced partners and partner companies of UnternehmerTUM and projects they have carried out with corporate partners and integrated technologies they have established. For instance, if the necessary digital infrastructure is installed,, renewable energy and charging infrastructure can be integrated based on blockchain technology and the labelling of locally generated energy can be enabled through a digital platform. Another new business model is dynamic electricity pricing which can help to match local demand and supply of green energy. These technologies can serve as benefits for grid and charge point operators and EV-drivers.

Following the presentations a question was raised regarding the profit model of MyEnergy. **Mr. Jin Sung Kim** answered that the provided energy data itself does not bring much profit. Mr. Kim, however, believes that MyEnergy can contribute to saving about 100 billion won of the losses of KEPCO. If MyEnergy provides services metering for the whole apartment and gets consumers join MyEnergy, it will be able to make big profits.



The panel discussion of the third session focused on marketing flexibility services and sending required price signals, moderated by **Dr. Sungwoo Bae, professor of Hanyang University**. **Dr. Sanghak Lee, Regional president of Korea Electronics Technology Institute** explained the contribution of energy storage systems to increasing the flexibility of the grid.. **Dr. Alexander Bogensperger, Head of Digital innovation and data analytics of Ffe Muenchen** stated that Germany needs flexibility to avoid grid congestions and uses re-dispatch measures to reduce power oversupply in certain

area. **Ms. Jin-Yi Kim, General Manager of Korea Power Exchange** raised the concern that there won't be enough flexibility in the Korean system in the future, as nuclear energy generation does not provide a lot of flexibility and renewable energy does not generate enough energy on a regular basis. Ms. Kim stressed that the wholesale electricity market needs to be improved considering different regions and that the market needs to be reformed to facilitate market participation from new market participants. The size of the market needs to be expanded. She indicated that if the whole country is brought together under one virtual power plant, scattered small-scale energy sources can be effectively managed and used. **Dr. Bogensperger from Ffe Muenchen** pointed out that the flexibility market needs to be adapted for the participation of new players. Currently they need to prove that they are viable for the market they want to participate in and the cost for virtual power plants is too expensive. Dr. Bae mentioned that **Dr. Sanghak Lee**, regional president of **KETI** has run smart grid business in Korea for about 13 years and asked him about the challenges. **Dr. Lee** stated, that, in addition to providing equipment and IT technologies the mindset of people needs to change. **Dr. Lee** added that the flexibility service market will grow, as electrification in various sectors is going on and renewable energy is increasing. According to Dr. Lee, KETI has verified the effectiveness of automatic DR (demand response) and he stressed the significance of advanced technology and services and mentioned new business opportunities that come with technologies such as ESS. **Mr. Bogensperger** stated that Germany needs digitalization in any grid assets such as heat pumps and inverters and all information need a digital ID. in the longer run, all electric resources need trackable. The last question was given to Dr. Lee on the development status of technology to expand flexibility services. **Dr. Lee** mentioned that Samsung and LG are leading home appliances and there are more and more appliances such as heat pumps and heating and cooling regulators, which could be used flexibly. Simultaneously, he stressed that designing an open market is more important than developing new technologies.

The 5th Korean-German energy day conference was successfully concluded by Mr. Anton Hufnagl, , BMWK and Jung-Jin Park, Deputy Director for Energy Efficiency Division, MOTIE, who expressed their gratitude to all organizers and participants of the conference and stressed the potential of Korean-German energy cooperation.

