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Royal Academy of Engineering

Harnessing Offshore Wind: Opportunities for UK-South Korea Collaborations

Royal Academy of Engineering & National Academy of Engineering of Korea – Bilateral Offshore Wind Exchange Report

March 2024

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1. EXECUTIVE SUMMARY

Offshore wind (OSW) has emerged as a key technology in both the UK and South Korea's renewable energy landscape. Both countries have ambitious targets to make OSW a key part of their energy portfolios by 2030. The UK aims to achieve 50 gigawatts (GW) of OSW capacity and South Korea has a target to install 14.3 GW by 2030. Both nations have shown deep interest in collaborating for industry and research partnerships to accelerate progress.

To promote partnerships and facilitate mutual learning between the UK and South Korea, the Royal Academy of Engineering and the National Academy of Engineering of Korea jointly organised a three-day policy and technology exchange themed 'Net Zero: Offshore Wind' between 13 and 15 September 2023. Over three days, 10 delegates from the UK engaged in various discussions on policy, technology and industry relating to the development and deployment of OSW (see annex for delegation list and agenda).

Both the UK and South Korea possess unique advantages in OSW. The UK stands as the second-largest OSW market globally, with a notable 13.9 GW of installed OSW capacity. This achievement is primarily attributed to its advanced technological capabilities, supportive government policies and strong industry–academia collaborations that foster innovation and progress. South Korea, while still in early stages of OSW development, houses significant technical potential for OSW (about 624 GW). Drawing upon its strengths in shipbuilding, maritime infrastructure, and domestic manufacturing, South Korea is strategically positioned for exponential growth in OSW in the forthcoming decades.

However, several challenges are hindering further OSW development in both countries – many of them affecting other countries globally. High development costs fueled by inflation, supply chain disruptions, and lengthy permitting processes are affecting both countries (and all OSW players globally). Limited data analytics capabilities in simulations, modelling and digital twin systems hinder testing and efficiency improvements. Technologies for interconnectivity of different OSW farms and balancing the grid efficiently are still nascent. Moreover, there are concerns in both countries about a lack of focus on decommissioning and end-of-life planning. Environmental impact assessments, in all stages of the OSW lifecycle, are not mandated to assess several additional aspects such as the impact on marine ecology at varying depths, cumulative effects of multiple projects, impact of noise and underwater waste. Finally, pressure from Chinese manufacturers is stressing the developing of nascent domestic supply chains.

Greater collaboration between the UK and South Korea can help drive technological innovation, reduce costs, improve project development processes, enhance government support for OSW, and mitigate the environmental impact of OSW farms. To address the challenges identified above, delegates identified 10 opportunities for greater collaboration between the UK and South Korea – highlighted here in order of priority:

#1 Joint best practices codification: Conduct multi-stakeholder knowledge exchanges via workshops, seminars and joint research projects to co-develop best practices in OSW operations, components repair, sustainability, and conflict management.

#2 R&D for performance improvement and cost management: Undertake joint R&D for improving digital twin modelling, battery storage, fabrication, cable optimisation, end-of-life materials recovery, and condition monitoring.

#3 OSW end-of-life standard operating procedures: Develop standardised protocols for safe decommissioning and lifespan extension. Discuss incentives to implement effective components recycling.

#4 Learning from global leaders: Organise delegation exchanges, study tours and partnerships with Chinese OSW companies (and other major global players) to generate learnings on cost-effective OSW manufacturing.

#5 Health and safety skill development: Establish joint training and skilling initiatives focused on health and safety at OSW sites, and skilling programmes to help build local supply chains – including the development of training materials.

#6 Grid expansion and development: Collaborate to develop innovative solutions for grid integration, balancing, and expansion to enhance the OSW potential in both countries via joint research projects and pilot demonstrations.

#7 Funding consolidation: Jointly advocate for funding across various aspects of OSW development, including technological R&D, installation, operation, grid balancing and expansion, and training programmes, to strengthen the funding landscape across the value chain for both countries.

#8 Environmental impact assessment scope expansion: Conduct joint ecological studies to generate evidence on the ecological effects of wind farms across their lifecycle and in varying conditions and develop industry-level best practices for environmental mitigation.

#9 European markets unlock: Engage in knowledge exchanges to understand European market dynamics for OSW and explore partnerships for market entry.

#10 Regulations harmonisation: Conduct joint policy dialogues, sharing regulatory best practices, and coordinate with international organisations like the International Renewable Energy Agency (IRENA) and the International Energy Agency (IEA) to advocate for holistic, long-term global policies for OSW.

Driving progress on the opportunities identified above requires concerted efforts from various stakeholders, as outlined below:

Researchers can drive innovation in OSW technologies, focusing on areas such as fabrication, grid systems, and cable monitoring, and leveraging robotics, AI and machine learning for data analysis. They can also lead knowledge exchanges to explore emerging topics such as OSW for green hydrogen and floating platform technologies.

Industry players can prioritise decarbonisation efforts across the OSW value chain, emphasising environmental impact assessments and sustainable end-of-life management strategies, including life extension and recycling initiatives.

Industry, academia, and policymakers can collaborate to streamline regulatory processes and establish global centres of excellence for knowledge sharing, joint advocacy, and securing increased financial support for OSW projects.

The national academies of engineering, through their established networks and convening abilities, can bring together stakeholders from academia, industry, and government to foster specialised dialogues, knowledge exchanges, and overall partnership building in OSW. In particular, they can use this convening power to inform the direction of future funding calls for OSW, influencing the mobilisation of resources to support collaborative research, development, and deployment efforts in the OSW sector in the UK and South Korea.

In conclusion, South Korea's keen interest in international partnerships presents a significant opportunity for the UK to strengthen its OSW capabilities. South Korea can serve as a crucial strategic partner, contributing to the development of cost-effective technologies and fostering large-scale industrial collaborations. With leading South Korean companies like Hyundai Engineering and SK Oceanplant expressing profound interest in collaboration, the timing is opportune for UK stakeholders to capitalise on this enthusiasm and forge enduring partnerships focused on knowledge sharing and technological exchanges that propel the advancement of OSW initiatives. This can lead to mutual benefits and accelerate progress in the OSW sector in both countries.

2. UK–SOUTH KOREA OFFSHORE WIND LANDSCAPE

2.1. UK and South Korea governments' OSW objectives and policy support

The UK and South Korea have ambitious goals for harnessing OSW energy and have announced several policy support mechanisms for the sector.

The UK and South Korea both aim to make OSW a key part of their energy portfolios by 2030. The UK is the second largest OSW market in the world. It has an ambition to achieve up to 50 GW of OSW capacity by 2030, including 5 GW from innovative floating technology.[1] South Korea's OSW industry is rapidly evolving to support the nation's transition towards a cleaner and more sustainable energy future. South Korea aims to generate 20% of its power with renewables by 2030, and the government has a target to install 14.3 GW of OSW capacity by 2030.[2]

The OSW ambitions of both countries can reap significant economic and employment benefits. The UK's OSW targets, if achieved, can create 90,000 direct and indirect jobs, while the South Korean OSW industry presents an opportunity to create over 150,000 direct jobs by 2035 from the domestic pipeline alone.[3]

The UK aims to enhance its technical OSW capabilities, and South Korea wants to accelerate deployment and streamline its regulatory processes. The British Energy Security Strategy announced in 2022 is the UK's overarching mission to expedite progress towards achieving its 2030 OSW targets. The government has also launched initiatives to streamline the consenting process for OSW projects, aiming to reduce the approval timeline from a potential four years to just one. The UK also issued its Offshore Wind Net Zero Investment Roadmap in March 2023, detailing the government's strategic plan for achieving its OSW targets by 2035, including measures to bolster infrastructure investments, enhance capabilities within the supply chain, and foster export opportunities particularly in floating OSW technology. South Korea, on the other hand, announced its Renewable Energy 3020 Implementation Plan in 2017, and has most recently updated its OSW energy target in 2023 via the 10th Basic Plan on Electricity Supply and Demand. Under the Green New Deal, announced in 2020, the government laid out an implementation plan for promoting OSW, including an increase in government-led OSW developments, establishment of a specialised organisation to simplify permitting and licensing processes, and more.

2.2. Current OSW production in the UK and South Korea

While the UK has several operational projects, South Korea is in relatively earlier stages of development and both countries have healthy project pipelines to support their ambition.

While the UK is already a global leader in OSW production today, momentum is gradually picking up in South Korea. The UK has successfully commissioned 13.9 GW of OSW capacity with a substantial project pipeline of around 77 GW spread across 80 projects at various stages, such as construction, consented, in development, and planned for future seabed leasing auctions.[4] As of 2023, South Korea has 140 MW of installed fixed-bottom OSW capacity with six operational projects.[5] Almost the entire targeted capacity for OSW in South Korea is yet to be constructed to meet its 2030 goals. However, it has a healthy pipeline of projects to be able to do so.[6]

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[1] UK Government's Department for Business and Trade, Offshore Wind, Accessed March 2024
[2] Carbon Trust, Unlocking the potential - Challenges and opportunities for South Korean OSW supply chain, 2023
[3] Ibid.; UK Government's Department for Business and Trade, Offshore Wind, Accessed March 2024
[4] UK Government's Department for Business and Trade, Offshore Wind, Accessed March 2024
[5] Carbon Trust, Unlocking the potential - Challenges and opportunities for South Korean offshore wind supply chain, 2023
[6] Ibid.

2.3. Primary assets of the UK and South Korea for OSW development

The UK and South Korea have unique strengths in OSW development, and they stand to benefit significantly by learning from each other.

The UK boasts several strengths in policymaking, stakeholder collaboration, and skilling initiatives. Its steady market policies, most notably the Contracts for Difference (CfD) auctions, have consistently supported low-carbon electricity generation. UK government's collaborative efforts with the OSW industry, such as the Offshore Wind Sector Deal and the establishment of the Offshore Wind Acceleration Taskforce, ensures innovation and competitiveness within the UK supply chain. Moreover, streamlined planning processes, including the fast-track consenting process for Nationally Significant Infrastructure Projects, are facilitating efficient project implementation in OSW.[7] Further, the government has provided significant funding to Institutes of Technology across England, ensuring the constant development of a skilled workforce capable of meeting the demands of the OSW industry. Incentive programmes like the Offshore Wind Manufacturing Investment Scheme bolster infrastructure development in the UK, further contributing to the growth of OSW development.[8] Overall, the UK's success in OSW is rooted in fostering robust ties among industry, academia, and government stakeholders. Supergen Offshore Renewable Energy (ORE) Hub has been leading these efforts in the UK to inspire collaborative innovation and maximise societal value in OSW. Over the past five years, the Supergen ORE hub has made a significant impact, with partnerships, policy contributions, and investments in research projects, engaging with 95 UK universities. South Korean delegates showed keen interest in emulating this approach to strengthen industry–academia connections.

South Korea benefits from its unique geographical conditions and technical expertise. Its geography allows for creation of large-scale OSW farms with minimal disturbance to natural environments, because of the absence of vibrations and noise. Furthermore, the country's established reputation in shipbuilding and heavy industries has facilitated the construction and maintenance of OSW infrastructure, fostering a robust domestic supply chain. South Korea's commitment to digitalisation and data analysis offers valuable insights for optimising maintenance and efficiency in OSW projects. Additionally, South Korea demonstrates expertise in floating platform technology, showcasing advances in stability, mooring systems, and dynamic responses to waves and currents, which are crucial for successful OSW integration.

2.4. Key roadblocks to scaling OSW in the UK and South Korea

While both countries have progressed significantly in OSW development, several common challenges exist.

High development costs: OSW developers in both countries are struggling to build new projects because of a surge in costs caused by soaring inflation, supply chain disruption, high interest rates, and lengthy waiting times for permits and grid connections.[9] In the UK, turbine costs have increased by 20-40%, and molybdenum prices have skyrocketed by 285% in the past two years. The latest UK government CfD Auction in 2023 did not secure any new OSW capacity projects, indicating a high-risk perception among developers. To increase confidence in projects, South Korea is currently exploring the option of including non-price criteria in auctions.[10]

Limited data analytics capabilities: Both countries are currently in their early stages of developing simulation models and digital twins that can improve project planning, reduce

[7] HMG, Offshore Wind Net Zero Investment Roadmap, 2023
[8] Ibid.
[9] Carbon Trust, Unlocking the potential - Challenges and opportunities for South Korean offshore wind supply chain, 2023
[10] Ibid.

costs and improve the efficiency of OSW farms simultaneously.[11] The demand for robotics and AI in OSW is projected to rise. However, both countries currently have a limited focus on developing these competencies.[12] There is a need for developing technology roadmaps that can leverage the strengths of both countries, particularly to improve data analytics and digitalisation of OSW farms.

Complex and lengthy regulatory processes: OSW projects require a variety of approvals and licences before construction can begin, such as electricity business licences, lidar installation approval, and construction plan authorisation. In South Korea, the Electricity Business License is required to engage in electricity-related activities as regulated under the Electricity Utility Act. The UK has similar requirements, making the development period of OSW farms lengthy – about six to eight years.

Balancing the grid: There are shared challenges in connecting OSW farms to the onshore power grid or to other energy infrastructure. South Korea faces challenges in connecting the OSW farms on its various islands, such as Jeju, while the UK struggles with interconnectivity between England, Scotland, and Wales.[13] Additionally, curtailment of OSW energy during peak operations is also challenging in both nations due to limited energy storage capacity.

Ensuring sustainability: There is a lack of attention on the decommissioning phase of the OSW lifecycle. Delegates specifically noted the lack of focus on cable recovery and end-of-life management that does not rely on large vessels, underscoring the urgent need for innovative solutions for cable recovery. There are limited assessments to gauge threats to seabirds and benthic habitats and the impact of underwater noise. National policies for mandatory recycling and safe decommissioning are needed in both countries.

Local opposition to projects: OSW projects often face opposition from fishery unions and local communities. These conflicts lead to delays in project execution, cancellations, and significant redesigns, raising costs and investment risks. There is a need to embed stakeholder collaborations and negotiation processes in project pipelines that ensure community concerns are addressed in a timely manner.

Pressure from Chinese manufacturers: Domestic OSW developers/supply chains find themselves in stiff competition with Chinese equipment manufacturers who are producing cost-competitive OSW technologies and equipment. There is a dearth of skilled technicians to rapidly expand the domestic supply chains in the UK and South Korea. There are also concerns regarding the quality and safety standards of Chinese OSW technology, and the certification processes for using these technologies in the UK and South Korea are not robust.

Health and safety training: There is a lack of uniform, consistent and updated skilling programmes for OSW, especially focused on health and safety training. Delegates agreed that companies from both countries can benefit by collaborating and learning from players like G+, a global organisation dedicated to OSW health and safety.

The UK and South Korea are also facing unique challenges owing to their individual characteristics.

The UK is facing unique challenges in cable management, grid expansion and domestic manufacturing.[14] The monitoring of high voltage direct current (HDVC) and subsea cables in the UK is not reliable because of limited technological capacity for monitoring. There is a need

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[11] Insights from the exchange
[12] Carbon Trust, Unlocking the potential - Challenges and opportunities for South Korean offshore wind supply chain, 2023
[13] Insights from the exchange
[14] Insights from the conference

for improved modelling for installation work, and cable fatigue analysis to ensure optimal operation. Additionally, the UK is facing limitations in its grid capacity and its distribution and transmission processes. While there is a need to expand the national grid, there is a critical funding gap to support this. Finally, the UK has a target to achieve 60% domestic manufacturing for OSW components. However, given the high costs associated with the development of manufacturing centres for OSW, there is a lack of investments and private interest to support this.

South Korea is grappling with a lack of government–industry–academia collaborations, inconsistent regulatory frameworks, and limited skilling initiatives.[15] Delegates at the exchange highlighted an evident disconnect between the government, industry, and academia in South Korea in terms of priorities for OSW development. Further, policies and regulations governing OSW in South Korea have been susceptible to frequent changes, often triggered by shifts in government leadership and the absence of comprehensive legislation. Such fluctuations cause considerable uncertainty within the business landscape. Finally, South Korean OSW projects currently do not have advanced health and safety training capabilities increasing the risk of accidents and injuries on site.

2.5. Existing OSW collaborations between the UK and South Korea

The UK and South Korea are keen to deepen government-level partnerships to enable knowledge sharing and private-sector-led investments for OSW projects.

The UK and South Korea have recently begun forging partnerships for clean energy. In 2023, both countries entered a Clean Energy Partnership to boost energy security and accelerate the clean energy transition.[16] Under the agreement, the UK and South Korea will exchange knowledge and insights developed from OSW projects to support their respective ambitions. They will also collaborate to address shared barriers to deployment and explore commercial opportunities through the annual Offshore Wind Policy Dialogue. The countries have also recently signed a UK–RoK (Republic of Korea) Offshore Wind Memorandum of Understanding to collaborate and accelerate OSW deployment.[17] In 2024, the UK also announced the UK–South Korea CR&D (collaborative research and development) 2024 funding competition, where UK-registered businesses can apply for a share of up to £6 million of funding if they are developing innovative clean energy proposals with South Korean partners.[18]

There are several investment commitments from UK and South Korean companies for cross-border projects. South Korean company SeAH Wind Ltd is investing £650 million to construct a new factory in Teesside, aimed at manufacturing OSW monopiles. This initiative is projected to generate up to 750 jobs by the year 2030.[19] UK-based OSW developer, Corio Generation is expanding its OSW operations, with a particular focus on South Korea. [20] BP made its entry into the South Korean OSW market by establishing a joint venture with Deep Wind Offshore to set up four projects across the Korean peninsula with a potential generating capacity of up to 6 GW.[21] Hyundai Engineering has existing partnerships with several UK companies, including Arup, for design and development solutions including cable and substation design, as well as The Coffey Group.[22]

[15] Insights from the conference
[16] Government of the UK, Press release - New UK and Republic of Korea clean energy partnership to accelerate net zero transition, 2023
[17] Ibid.
[18] Government of the UK, Funding competition - UK-South Korea CR&D, 2024
[19] Government of the UK, Press release - New UK and Republic of Korea clean energy partnership to accelerate net zero transition, 2023
[20] Ibid.
[21] Ibid.
[22] Insights from the conference

3. KEY EXCHANGE FINDINGS

3.1. Exchange objectives

The UK–South Korea policy and technology exchange on OSW was convened to provide a platform for researchers, industry leaders and policymakers to discuss opportunities for accelerating OSW deployment in both countries.

The Royal Academy of Engineering and the National Academy of Engineering of Korea jointly organised a three-day policy and technology exchange themed 'Net Zero: Offshore Wind' between 13 and 15 September 2023. The goal of the exchange was to drive policy partnerships and international leadership in OSW, fostering UK–South Korea cooperation, nurturing market connections, and facilitating mutual learning on OSW technologies between the two countries.

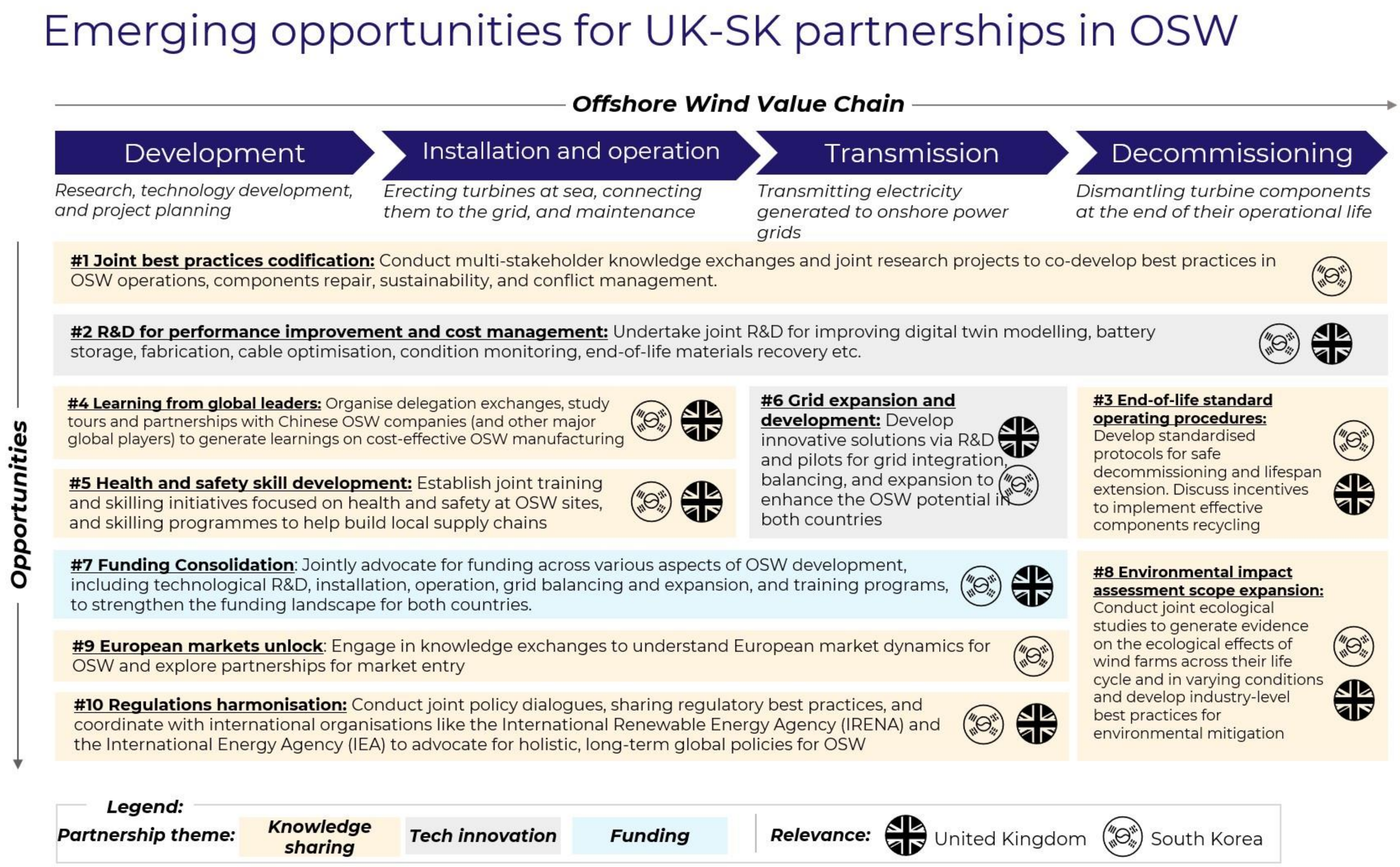
The exchange hosted delegates from both countries who engaged in panel discussions, networking sessions, and various one-on-one meetings exploring collaboration opportunities relating to the development and deployment of OSW. Closed meetings between the UK delegation and South Korean organisations such as the Korean Energy Agency and Hyundai Engineering allowed for in-depth discussions on shared challenges and collaboration opportunities (see full list in annex).

3.2. Major opportunities for collaboration

Several opportunities across the OSW value chain were discussed at the exchange to leverage the complementary strengths of both the UK and South Korea.

To provide a comprehensive overview of the opportunities within the OSW value chain, the following illustration presents a condensed summary of the major collaborative avenues identified during the exchange. The opportunities are arranged based on the identified level of priority of next steps in both countries. Each opportunity box contains icons depicting the relevance of the opportunity to each country, indicating who is best positioned to lead engagements and benefit from potential outcomes.

Figure 1: Illustrated collaboration opportunities across the OSW value chain



Complementing the view presented in the illustration above, the following table offers a breakdown of collaboration opportunities across each segment of the OSW value chain. This analysis aims to provide deeper insights into specific areas for collaboration, ranging from development to installation and beyond.

Figure 2: Detailed collaboration opportunities across the OSW value chain

Opportunities in development:	Collaborations that enable holistic long-term planning for OSW farms, and joint research and technology development for improved data analysis, battery storage, digital twin modelling, cable optimisation, end-of-life materials recovery, and condition monitoring are key opportunities in the development stage of the value chain. Both countries can also benefit from collaborating to create learnings from the successes of China and other global players in the OSW sector.
Opportunities in installation and operation:	Partnerships aimed at sharing best practices in site selection, permitting, procurement, and project management to streamline the development process and optimise efficiency of OSW farms is a key opportunity. Joint ventures, strategic alliances, or technology transfer agreements to enhance local manufacturing capabilities and reduce reliance on imports can also benefit both countries. Additionally, South Korea can collaborate with the UK to learn from its expertise in health and safety training for OSW workers to encourage the use of global best safety practices.
Opportunities in transmission:	Collaborative efforts for developing innovative solutions for grid integration, balancing and management can improve the stability, reliability, and efficiency of OSW energy. Additionally, exploring avenues for grid expansion, improved interconnectivity between OSW farms and infrastructure development, including HVDC technology and smart grid solutions, can enhance transmission capacity, reduce transmission losses, and optimise network management.
Opportunities in decommissioning:	Partnerships that develop best practices in safe dismantling and recycling methods can help mitigate the environmental impact of OSW components, and maximise economic benefits associated with decommissioning activities. Joint programmes that test mitigation measures to minimise disturbances to marine ecosystems and restore affected areas to their natural state post-decommissioning can create learnings for OSW companies in both countries.
Opportunities in funding:	Collaborating to consolidate financial support for various aspects of OSW development, including technological research and development, grid balancing and expansion, as well as training and skilling initiatives can accelerate progress towards OSW. This collaboration can involve advocacy with government agencies, engaging private investors, and pursuing international funding opportunities to support critical areas of OSW development and maximise the impact of available resources.

3.3. Next steps and recommendations

The exchange emphasised the need for collaborative partnerships across three key themes to effectively address the identified challenges and opportunities. Multiple stakeholders can lead these initiatives.

The following illustration outlines the key next steps identified during the deliberations at the exchange – namely technology improvement, enhancing regulatory support and prioritising sustainability. Under each step, multiple collaboration initiatives have been outlined, as voiced in various discussions at the exchange. The illustration also highlights which country has a need for and can potentially benefit from leading/driving these engagements.

Figure 3: Next steps identified during the exchange and the countries that can lead these initiatives to drive progress

Researchers can lead technology improvement missions

Conduct pre-competitive scientific studies: Improve existing technologies such as fabrication, grid systems, cable monitoring, installation modelling, and cable fatigue analysis, among others

Explore the potential of OSW-powered green hydrogen: Exchange learnings on low-carbon hydrogen's use cases and how OSW can unlock the hydrogen economy in South Korea

Fast track digital twin development and data analysis: Accelerate the development of digital twin models to reduce costs, and explore the role of robotics, AI and ML in data analysis

Advocacy with policymakers can expand regulatory support for OSW

Convene multi-stakeholder working groups to encourage collaboration: Engage with industry, academia and policy stakeholders to align efforts for OSW development

Establish a centre of excellence for OSW: Establish a platform to create learnings across OSW development, skilling and regulatory advocacy for the global OSW community

Advocate for increased government funding for joint R&D: Establish a working group to seek targeted funding from both governments for joint research and development of new tech

Industry can prioritise end-of-life planning and decarbonise the value chain

Identify best practices in decommissioning and integrate them into planning and monitoring activities: Develop standardised procedures and best practices for the safe decommissioning of OSW farms. These practices should also elevate the role of strategic long-term planning in the development phase of the value chain for end-of-life management of OSW farms. Codify learnings and share widely.

Environmental impact assessments across the value chain: Evaluate the ecological effects of OSW in all stages of development, and in varying geographies and ocean depths

Legend:

Partnership theme: *Knowledge sharing* | *Tech innovation* | *Funding*

Relevance: United Kingdom | South Korea

Technology improvement: The UK and South Korea have unique technical strengths in OSW and researchers from both countries can drive innovation by conducting pre-competitive scientific studies related to fabrication, grid systems, cable monitoring, and installation modelling. They can also collaborate to fast-track digital twin development and leverage AI and machine learning in data analysis to optimise OSW operations. Further, South Korea can draw learnings from the UK's experience of harnessing OSW to advance green hydrogen and unlock the associated economic benefits, while the UK can benefit from South Korea's experience in building floating platforms.

Expanding regulatory support: Delegates from both countries were aligned that government support in terms of streamlined policies and funding is critical to catalyse progress in OSW. To enhance existing government support, collaborative efforts such as convening multi-stakeholder working groups focused on identifying regulatory bottlenecks can help streamline processes for OSW. Further, both countries showed interest in establishing a global centre of excellence for OSW to act as a platform for creating shared learnings, conducting joint regulatory advocacy, and enhancing overall awareness and support for OSW. Additionally, advocating for increased government funding for joint R&D through targeted initiatives can further incentivise support for driving innovation and sustainability in the OSW sector. Industry and academia stakeholders can jointly lead these initiatives.

Prioritising sustainability: There is a lack of focus on ensuring the sustainability of OSW across the value chain in both the UK and South Korea. Collaborative efforts to identify best practices and developing standardised procedures for safe decommissioning of OSW farms can help improve end-of-life management and recycling. Furthermore, conducting environmental impact assessments in varying geographies and ocean depths can holistically evaluate ecological effects of upcoming OSW farms, and help drive data-driven mitigation measures such as deploying technologies for reducing noise. Codifying these learnings and sharing them widely can facilitate the adoption of sustainable practices across the OSW industry, promoting environmental stewardship and long-term sustainability globally. OSW companies and industry bodies can play a key role in leading these initiatives.

3.4 Conclusion

The exchange reinforced the importance of collaboration between the UK and South Korea in advancing OSW initiatives. Both countries showed a shared enthusiasm for leveraging emerging opportunities to drive progress in OSW deployment. The exchange facilitated valuable networking opportunities, enabling the UK delegates to connect with South Korean OSW companies. Encouragingly, the interest expressed by delegates at the exchange has spurred various follow-up discussions. ORE Catapult and LS Cables & Systems, for instance, are in talks to jointly develop AI-based cable inspection technologies and are exploring partnerships with South Korean universities as well. Thus, this exchange sets a promising precedent for similar collaborations and underscores the potential for impactful innovation in the realm of OSW energy.

4. Annex

4.1. Details of the exchange

Korea–UK forum event: The forum provided a platform to reaffirm the partnership between the UK and South Korea. Delegates explored national strategies, followed by three focused sessions delving into policy, technology, and industry aspects pertinent to the development and deployment of OSW.

Closed meetings: The UK delegation engaged in closed-door meetings with esteemed organisations including the Korean Energy Agency, Hyundai Engineering, LS Cable & Systems, KEPCO, SK Oceanplant, and the Energy Transition Forum. These sessions facilitated candid discussions, allowing delegates to delve deeper into shared challenges and identify concrete opportunities for collaborative action.

Networking activities: In addition to formal sessions, the agenda featured networking activities such as dinners, lunches, and breaks designed to foster informal interactions and relationship-building among delegates.

4.2. List of attendees

Delegates from the UK:

Professor Deborah Greaves, OBE FREng (Exchange technical lead), Professor of Ocean Engineering, University of Plymouth

Lorna Bennet, Project Engineer, Offshore Renewable Energy Catapult

Professor James Gilbert, Professor of Engineering, University of Hull

Professor Lars Johanning, Deputy Head of Engineering and Professor of Ocean Technology, University of Exeter

Hyunjoo Lee, Head of Turbine systems, Offshore Renewable Energy Catapult

Dr Simone Stuart-Cole, Senior Product Manager, Offshore Renewable Energy Catapult

Barnaby Wharton, Director of Future Electricity Systems, Renewable UK

Royal Academy of Engineering staff

Ben McAlinden, Interim Head of International Partnerships

Alaka Bhatt, Manager, International Partnerships

Taylor Huson, Programme Officer, International Partnerships

Additional contributors:

Baroness Brown DBE FREng FRS, Chair, Climate Change Committee

Professor Paul Monks FRSE, Chief Scientific Advisor, Department for Energy Security and Net Zero

Ivan Savitsky, Manager, Carbon Trust

Kalyani Basu, Senior Associate, Carbon Trust

Delegates from South Korea:

Dr Jeongcheol Choi, Program Director, Korea Institute of Energy Technology Evaluation and Planning (KETEP)

Jeonghoon Lee, Doosan Enerbility

Taeseung Yoo, CEO of Copenhagen Offshore Partners Korea (COP)

Dr Jihye Gwak, Chief of Photovoltaics Research, Department, Korea Institute of Energy Research (KIER)

Dr Jong-Jin Jung, Senior Vice President, Hyundai Heavy Industries

Dr Byung-Ki Cheong, Principal Researcher, Korea Institute of Science and Technology (KIST)

Dr Booki Kim, Principal Researcher, Department of Naval Architecture and Ocean Engineering, Seoul National University

Professor Chinho Park, Vice-President, Korea Institute of Energy Technology

National Academy of Engineering of Korea staff

Dr Kinam Kim, President

Professor Inkyu Lee, Chair of the International Relations Committee

Dr Jung-Hee Song, Vice President

Seon-Ah Hwang, Head of Program and Membership Management

Chanmi Lee, Program Officer

Shinhye Kim, Program Officer

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