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Toward a Strategic Economic Partnership

*Deepening and Expanding the EU–ROK
Economic Relationship*



I.

Introductory Remarks

Why the EU and Korea Need to Strengthen Economic Relations

The Republic of Korea (ROK) and the European Union (EU) stand at a pivotal moment in their economic partnership. Their 2011 Free Trade Agreement (FTA) — the first concluded by the EU with an Asian country and a flagship of the EU’s post-2006 “new trade policy” — laid a strong foundation for deepening bilateral ties. Since then, trade has expanded by over 66%, reaching €118 billion in goods and

€25 billion in services by 2023. However, today’s rapidly shifting global landscape demands more than continuity; it calls for a bold recalibration of the partnership to address new challenges and seize emerging opportunities.

Amid rising global economic fragmentation, accelerating climate crises, and intensifying competition over critical technologies, Korea and the EU must forge a qualitatively deeper and more strategic partnership. This imperative becomes even more pressing as the world is now facing the “Trump 2.0” era, characterized by renewed tariff assertiveness of United States (U.S.), diminishing American commitment to carbon neutrality, and a retreat from global leadership. In this uncertain environment, the two sides must take extraordinary steps to drive innovation, expand markets, and anchor prosperity through trusted cooperation.

The EU — representing 450 million people and 17.5% of global Gross Domestic Product (GDP) in 2024 — is undergoing a profound transformation through initiatives such as the Green Deal, the Digital Decade, and the Net-Zero Industry Act. These ambitions unfold even as the Union contends with external pressures: mounting U.S. demands for increased defense spending, a shifting transatlantic climate agenda, and the existential threat posed by an increasingly assertive Russia.

Meanwhile, Korea, the world’s 13th-largest economy and a Group of Twenty (G20) member, is recalibrating its diplomatic and economic strategy to assume the role of a proactive middle power under the new administration. This evolution is unfolding despite significant domestic turbulence — including dramatic swings between democratic

backsliding and civic resistance, policy missteps over the past three years, and a deepening sense of urgency driven by declining potential growth.

Korea and the EU, as open and like-minded economies, confront a common set of structural challenges: demographic aging, technological sovereignty, and secure access

to key raw materials. Both are striving for resilient supply chains, successful green transitions, and the preservation of a rules-based trading order. These converging priorities provide a powerful rationale for institutionalized and forward-looking cooperation.

Recent geopolitical shifts — including Russia’s invasion of Ukraine, China’s growing assertiveness, and the weaponization of economic interdependence — further highlight the need for “de-risking” through reliable, trust-based partnerships. In this context, a reinforced Korea–EU economic relationship is not merely an option but a strategic necessity.

The proposals herein reflect a range of illustrative avenues for collaboration. Though not exhaustive, they underscore the strategic logic of a reimagined partnership. To sustain momentum and institutionalize long-term collaboration, a permanent platform — such as a Korea–EU Strategic Partnership Centre — should be established to generate ideas, support joint initiatives, and explore emerging areas of mutual interest. The proposal to establish such a center is, last but not least, a defining initiative — one that embodies the shared vision and institutional resolve required to anchor a deeper and more enduring partnership.

II.

Strategic Cooperation Agenda and Priority Areas

1. Green Value Chain Integration: Toward a Joint Carbon-Neutral Economy

The EU is responsible for approximately 6.1% of global CO₂ emissions in 2023 while Korea, about 1.47%. Both aim to reach net-zero by 2050, yet face structural obstacles in energy and industry. Korea imports over 90% of its energy, while the EU faces de-carbonization challenges in sectors such as steel, cement, and chemicals.

Proposals

- Co-develop low-carbon hydrogen supply chains: Korea leads in clean hydrogen policies, while the EU is diversifying its hydrogen import sources. The EU's introduction of Carbon Border Adjustment Mechanism (CBAM) is accelerating demand for low-carbon hydrogen. Korea is pursuing green ammonia projects in Malaysia and Australia.
 - ▶ The two sides could develop a joint certification system to measure and verify the carbon intensity of hydrogen; German utility RWE and Korea's Korea Electric Power Corporation (KEPCO) could partner in green ammonia projects in Australia or Chile; Pohang Iron and Steel Company (POSCO) and ENGIE could co-develop an Asia-Europe hydrogen corridor by creating joint investment in hydrogen pipeline and maritime transport infrastructure.
- Launch an EU-Korea Green Taxonomy Forum to harmonize standards and prevent regulatory divergence.
 - ▶ The two sides could establish a joint working group to align definitions of green activities, exclusion criteria, and Do No Significant Harm (DNSH) principles; The two sides could introduce mutual recognition of green bonds issued between the EU and Korea to enhance investor confidence and capital flows.
- Joint investment in carbon capture and storage (CCS) infrastructure in North Sea and East Asian waters. Korea is conducting CCS pilot projects utilizing offshore reservoirs such as the Donghae Gas Field, while the EU

is establishing CCS hubs around the North Sea. The two sides are keen on scaling technology and securing geological storage.

- ▶ Joint Research and Development (R&D) on CCS technology — for example, collaboration between Korea's Daelim Engineering & Construction (DL E&C) and Royal Dutch Shell in developing post-combustion capture solutions; The two sides could establish cross-border CO₂ transport agreements to enable maritime shipping between the two under International Maritime Organization (IMO) and International Energy Agency (IEA) guidelines.
- Creating Common Clean Steel Certification: Hyundai Steel is piloting hydrogen-based direct reduced iron (DRI) in Korea. Germany's Salzgitter and Sweden's SSAB are deploying similar models. An EU-ROK alliance could standardize clean steel certification, and develop a joint EU-ROK 'Green Steel Label' to certify hydrogen-based DRI and expand market access. The two sides could introduce shared demand-generation mechanisms — such as preferential procurement in EU public tenders and Korea's industrial supply chains.

2. Securing Critical Raw Materials and Industrial Supply Chains

The EU imports 98% of its rare earth elements from China, while the EU's Critical Raw Materials Act (CRMA) limits dependency on any single country (notably China) to less than 65%. Korea sources over 60% of key battery materials from China. Both regions rely on fragile chokepoints.

Proposals

- Create an EU-Korea Critical Raw Materials Partnership (CRMP), modeled on the US-led Minerals Security Partnership (MSP).
 - ▶ Joint Environmental, Social, and Governance (ESG) Certification Scheme: Introduce a co-developed EU-Korea ESG standard for certified minerals to strengthen

¹ Korea Mine Rehabilitation and Mineral Resources Corporation. It is Korea's public agency for mineral resource development and mine rehabilitation.

global market access; Integrated Early Warning System by connecting Korea's KOMIR¹ system with the EU's Raw Materials Information System (RMIS) platform to enable real-time risk monitoring; Small and Medium-sized Enterprises (SME) Resilience Module to build support mechanisms for small and medium enterprises, such as financing tools, tech transfers, and risk hedging policies.

- Co-invest in lithium and cobalt mining and refining in Argentina, Namibia, and Indonesia.
 - ▶ Create Joint ESG Due Diligence Protocols by co-conducting ESG and sustainability assessments for overseas mining projects; Trilateral Cooperation Frameworks to establish EU–Korea–host-country platforms for joint investment, tech sharing, and talent development; Bilateral R&D Centers to set up local research institutes focused on extraction innovation and local value creation; POSCO and France's Eramet have explored joint ventures in nickel refining in Indonesia. A trilateral framework involving EU, ROK, and Indonesia could ensure ESG compliance and reduce Chinese dependency.
- Launch a joint Strategic Stockpile Mechanism for rare earths and battery precursors.
 - ▶ Co-managed Stockpile Infrastructure in order to develop standards for joint procurement, storage protocols, and release mechanisms; ESG-linked Procurement Policy for ensuring that all stockpiled resources are sourced from ESG-certified suppliers; Circular Economy Integration to include recovered critical materials from battery recycling in joint reserves.

3. Digital Sovereignty, AI Governance, and Data Flow Agreements

The digital economy represents approximately 35% of Korea's GDP and over 20% of the EU's, underscoring its centrality to both regions' economic competitiveness. Despite this, Korea and the EU do not yet have a comprehensive digital trade agreement, and cross-border data flows remain constrained due to regulatory divergence and privacy concerns.

Proposals

- A Korea–EU Digital Governance Dialogue: The two sides could launch a structured, high-level dialogue to align digital policy frameworks, building on the existing ROK–EU Digital Partnership Council and expanding its scope to include digital trade, platform regulation, and emerging technologies
- Collaborate on safe and ethical Artificial Intelligence

(AI): link Korea's AI Ethics Charter with the EU AI Act to promote shared standards for trustworthy AI. This includes joint work on risk classification, transparency obligations, and oversight mechanisms.

- Explore adequacy status under General Data Protection Regulation (GDPR) to allow free data flows. The two sides should now establish a joint monitoring mechanism to maintain adequacy alignment. The two sides promote interoperability of data governance frameworks, including onward transfer protocols and redress mechanisms.
- International cooperative initiatives: Estonia and Korea have both developed advanced e-government platforms. A Korea–Baltic Digital Innovation Hub could facilitate co-development of GovTech solutions, including digital identity, e-residency, and citizen services, advance joint cybersecurity tools and AI-powered public sector applications, and support talent exchange and startup incubation in digital public infrastructure.

4. Co-Innovation in Strategic Technologies

Korea ranks #1 in the Bloomberg Innovation Index, while the EU boasts five of the top ten countries in R&D intensity, reflecting a shared commitment to technological leadership. The EU's flagship research program, Horizon Europe (2021–2027), allocates €95.5 billion to science and innovation, with Korea participating as a third country associate under Pillar II from 2025. This opens new avenues for joint research consortia, co-funding mechanisms, and cross-border innovation ecosystems.

Proposals

- Prioritize collaborative research (joint R&D) in quantum computing, next-generation semiconductors, and green mobility, leveraging Korea's strengths in advanced manufacturing and the EU's excellence in foundational science.
 - ▶ Build on the EU–Korea Quantum Research Forum and the Korea–Europe Quantum Science Technology Cooperation Center in Brussels; Align with the EU Chips Joint Undertaking and Korea's national semiconductor strategy
- Establish an EU–Korea Innovation Fund for Deep Tech Startups: The two sides could create a co-financing mechanism to support early-stage ventures in AI, biotech, quantum, and clean energy, with matched contributions from Horizon Europe and Korea's National Research Foundation. This project could include mobility schemes, incubation support, and access to testbeds across both regions. The two sides could promote joint

Intellectual Property (IP) commercialization and scale-up pathways for global markets.

- Expand Joint Calls under Horizon Europe in Climate Tech and Health Tech: The two sides could utilize Korea's new association status to increase joint calls in areas of mutual strategic interest such as Climate Tech and Health Tech. Climate Tech includes battery innovation, hydrogen ecosystems, carbon capture, and circular economy solutions, while Health Tech encompasses digital therapeutics, AI-enabled diagnostics, and pandemic preparedness. Balanced participation from EU and Korean entities needs to be encouraged with shared leadership and funding access.
- IMEC–ETRI Collaboration on Next-Gen Chip Architecture: Belgium's Interuniversity Microelectronics Centre (IMEC), a global leader in nano-electronics, and Korea's Electronics and Telecommunications Research Institute (ETRI) are jointly developing reconfigurable chip architectures for AI and neuromorphic computing. This partnership integrates modular supercell design, 3D stacking, and energy-efficient AI hardware, addressing the scalability and sustainability challenges of future computing. The model demonstrates how cross-border R&D can accelerate innovation while safeguarding technological sovereignty.
 - ▶ Scaling the Model Replicate the IMEC–ETRI framework across other strategic domains such as quantum sensing and communication, green mobility platforms and battery ecosystems, AI-powered health diagnostics and bioinformatics, and cybersecurity and trusted digital infrastructure

5. Climate-Aligned Trade and Industrial Policy Harmonization

The EU's Carbon Border Adjustment Mechanism (CBAM) entered its transitional phase in 2023, requiring quarterly emissions reporting for key sectors. Korea's K-ETS (Emissions Trading System), one of Asia's most advanced carbon markets, offers a robust MRV (Measurement, Reporting, Verification) infrastructure. However, exporters still face compliance uncertainty due to methodological gaps and lack of mutual recognition. Linking the EU ETS and Korea's K-ETS could enable credit recognition and reduce trade friction.

Proposals

- Set up a CBAM–K-ETS Joint Committee to align MRV standards, in the areas of product-level emissions accounting and third-party verification protocols.

- Provide joint technical assistance and capacity-building to ASEAN exporters, especially SMEs, to meet CBAM-aligned green trade requirements.
- Develop a mutual recognition mechanism for carbon-adjusted product labeling, enabling low-carbon products to be certified and traded across jurisdictions.
- Launch bilateral pilot programs for low-carbon verification in steel facilities operated by POSCO and ArcelorMittal, with EU-Korea co-validation of embedded emissions data.
- Explore Article 6-compatible carbon credit exchanges between Korea and the EU, leveraging digital MRV platforms and blockchain-based registries to ensure transparency and traceability.
- Promote regional carbon market interoperability through ASEAN+3 dialogues, aligning methodologies with the ASEAN Common Carbon Framework and supporting registry integration.

6. Mobility, Talent, and Demographic Resilience

Korea's working-age population is projected to decline by 35% by 2050, posing long-term risks to productivity and fiscal sustainability. Meanwhile, the EU faces acute labor shortages in healthcare, digital, and green sectors, exacerbated by demographic aging and skills mismatches. In this context, cross-border talent mobility offers a strategic lever to enhance workforce resilience, accelerate green and digital transitions, and foster inclusive growth.

By aligning migration pathways with labor market needs and educational standards, Korea and the EU can jointly address demographic headwinds while enhancing competitiveness. Circular migration models reduce brain drain risks and promote knowledge transfer. Mutual recognition and joint training initiatives lower barriers to mobility and foster trust between institutions.

Proposals

- Sign a Korea–EU Skills Mobility Partnership, modeled on the EU's Talent Partnerships framework, to enable structured pathways for skilled migration, training, and return mobility.
- Establish a mutual recognition mechanism for professional degrees and certifications in engineering, Information and Communication Technology (ICT), and green technologies, aligned with EU Directive 2005/36/EC and Korea's licensure standards

- Co-develop green and digital training curricula, leveraging the Korea–EU Digital Partnership Council and Erasmus+ mobility programs.
- Link Germany’s “Make it in Germany” and Korea’s “K-Move” programs to facilitate circular migration of young professionals, enabling skill acquisition abroad and reintegration at home.
- Launch pilot exchange programs in priority sectors (e.g. renewable energy, cybersecurity, eldercare), with joint funding and industry participation.
- Create a Korea–EU Talent Pool Platform, allowing employers to access verified candidate profiles and enabling transparent matching of skills to labor market needs.

7. EU–Korea GENOME 2.0 Alliance: Accelerating Healthy Longevity through AI-Integrated Multi-Omics²

With aging populations across both the EU and Korea, the need for innovations in healthy longevity has become urgent. Korea offers extensive Korean reference multi-omics datasets, including over 10,000 pangenomes and advanced AI-driven bioinformatics platforms. The EU contributes world-leading biobanks (e.g., UK Biobank, FinnGen), a strong regulatory framework in ethical AI, and deep public health expertise.

Proposals

- Launch a Korea–EU GENOME 2.0 Alliance to integrate multi-omics (genomics, transcriptomics, proteomics, metabolomics, epigenomics) with AI to identify aging biomarkers and therapeutic pathways.
- Build privacy-sensitive data-sharing mechanisms for cross-population analysis, inspired by Finland’s FinGen model.
- Explore joint application of Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) and omics profiling in stem cell lines with researchers in Lithuania.
- Collaborate on mental health biomarker discovery, leveraging Korea and Lithuania’s shared challenge of high suicide rates through AI-powered multi-omics research.
- Include Hungary and Estonia as partners with linguistic and cultural ties to Korea and rising genomic investments.

Case Study: Korea’s Ulsan National Institute of Science and Technology (UNIST) and Lithuania’s Life Sciences Center are positioned to jointly pilot comparative suicide genomics research, establishing a cross-continental mental health multi-omics cohort. Hungary’s National Laboratory of Health Security and Estonia’s personalized medicine initiatives provide scalable genomic platforms.

Collaboration Pillars

1. Establish an EU–Korea AI–Genomics Joint Research Institute for data sharing, algorithm development, and talent exchange.
2. Launch a public–private partnership model where governments define vision and the private sector and academia execute.
3. Create a Global GENOME 2.0 Consortium including Finland, Estonia, Lithuania, Latvia, Hungary, Germany, and the UK.
4. Joint deliverables include:
 - An AI-powered cross-population Geroscience biomarker atlas
 - Harmonized EU–Korea multi-omics data standards and pipelines
 - Joint funding proposals under Horizon Europe and Korean R&D programs
 - Regular scientific events, researcher mobility, and bilateral exchanges

Next Steps (2025–2026):

- Form a Korea–EU GENOME 2.0 Task Force
- Hold an inaugural EU–Korea AI–Genomics Workshop in Seoul or Brussels
- Draft and sign a Memorandum of Understanding (MoU) for a joint institute and roadmap for consortium expansion

² This section is based on the insights and recommendations provided by Professor Jonghwa Park of UNIST. For correspondence: jong.bhak@gmail.com

8. Trilateral and Multilateral Cooperation Platforms

The EU and Korea are among the most active development partners in Africa and Southeast Asia, with shared commitments to inclusive infrastructure, digital connectivity, and climate-aligned finance. Both actors emphasize rules-based multilateralism, and increasingly seek to align their external strategies—such as the EU’s Global Gateway and Korea’s Global South Strategy — to support sustainable development and regional stability.

Proposals

- Launch Korea–EU–ASEAN digital and infrastructure partnership (modeled after Global Gateway), to co-finance high-impact projects in smart infrastructure, digital public goods, and green energy systems. This could include joint support for AI-enabled public services, cross-border fiber networks, and climate-resilient transport corridors. The initiative would complement Korea’s Digital Innovation Flagship Project with ASEAN and the EU’s Indo-Pacific Strategy.
- Coordinate funding via European Investment Bank (EIB) and Export-Import Bank of Korea (Eximbank), leveraging their respective instruments such as the EIB’s Global Climate Facility and Korea’s Economic Development Cooperation Fund (EDCF). Joint financing could target energy access, urban resilience, and clean mobility in emerging economies. A shared pipeline of bankable projects could be developed through

a Joint Investment Screening Platform.

- Promote global governance reforms at WTO, G20, and International Monetary Fund (IMF) through joint advocacy, focusing on green trade facilitation and carbon-adjusted product standards, debt sustainability frameworks and climate finance access for vulnerable countries, and digital governance norms, including AI ethics and cross-border data flows.
- The EU’s Team Europe and Korea’s K-New Deal Global Strategy³ could jointly fund solar electrification projects in East Africa, targeting off-grid communities and health facilities. This could be scaled through a Korea–EU–Africa trilateral platform, integrating local capacity-building and workforce training, joint procurement and technology transfer for solar mini-grids, and monitoring frameworks aligned with SDG 7 and climate adaptation goals.
- Establish a Korea–EU Multilateral Cooperation Forum, convening annually to align development priorities across Africa, ASEAN, and the Indo-Pacific.
- Co-host regional stakeholder dialogues with civil society, Mitglieder des Bundestags (MDBs), and private sector actors to ensure inclusive project design and implementation.
- Explore co-financing with other likeminded partners, such as Canada, Japan, Australia, and the Nordic countries, to expand the reach of trilateral initiatives.

III.

Conclusion: A Strategic Partnership for the 21st Century

The future of EU–Korea economic cooperation must transcend transactional ties and evolve into a truly strategic partnership. Built upon shared democratic values, sustained through joint innovation, and projected globally via trilateral engagements in the Indo-Pacific, Africa, and Latin America, this relationship holds profound potential to shape a more resilient and inclusive global economy.

Establishing an annual Korea–EU Strategic Economic Dialogue at the ministerial level would provide an enduring in-

stitutional anchor—enabling policy alignment, trust-building, and long-term agenda setting across sectors.

In an era defined by volatility and systemic transformation, Korea and the EU stand poised to demonstrate that open, human-centric, and climate-conscious economic governance is not only viable, but visionary.

The moment demands boldness—and together, we must lead.

³ Korea’s K-New Deal Global Strategy was introduced under President Moon Jae-in’s administration in 2020 as an international extension of the domestic Green and Digital New Deal. It promotes sustainable development and digital transformation by expanding Korea’s climate action, innovation capacity, and inclusive growth through global cooperation. While the strategy originated with Moon’s government, its objectives remain relevant under subsequent administrations, including efforts to align Korea’s energy, technology, and development diplomacy with evolving global standards such as the EU’s Green Deal and digital partnerships.

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