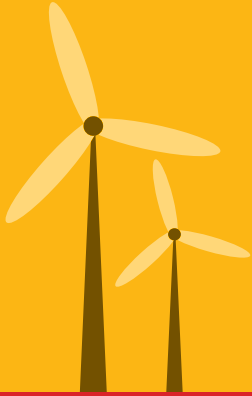


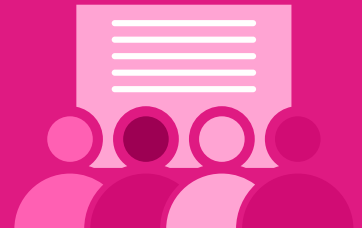
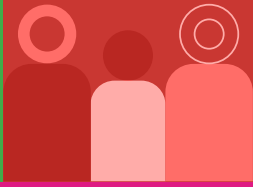


**KNU** KYUNGPOOK  
NATIONAL UNIVERSITY













# ADVANCING THE SUSTAINABLE DEVELOPMENT GOALS

2023 REPORT



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<b>SUSTAINABLE DEVELOPMENT GOALS</b>						<b>SUSTAINABLE DEVELOPMENT GOALS</b>					
<b>What are the United Nations Sustainable Development Goals (UN SDGs)?</b>						<b>17</b>					
17 worldwide objectives designed to change the world, the UN SDGs are part of the UN 2030 Agenda for Sustainable Development and were created as a “blueprint to achieve a better and more sustainable future for all.” 193 nations agreed to them in September 2015. According to the UN, the SDGs aim to “protect the planet and improve the lives and prospects of everyone, everywhere.”						<b>16</b>					
The SDGs offer global guidelines for achieving each of these objectives. Most countries are facing SDG-related crises, which can only be resolved if we work together.						<b>15</b>					
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						<b>13</b>					
<b>17</b> PARTNERSHIPS FOR THE GOALS  Pg 38	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS  Pg 36	<b>15</b> LIFE ON LAND  Pg 34	<b>14</b> LIFE BELOW WATER  Pg 32	<b>13</b> CLIMATE ACTION  Pg 30							



# Kyungpook and the SDGs

Kyungpook National University (KNU) was established with local support as a regional education hub and quickly built a solid reputation as the top institution south of Seoul. The university continuously develops solutions to the numerous global problems of climate change, economic disparity, and access to learning. Innovation, sustainability, and the urge to create a global impact drive KNU's development. To transform the world and spread innovation, KNU strives to implement programs and projects that are in accordance with the guidelines laid out by the SDGs. KNU will continue to be a knowledge-based institution with a global focus.

## How is KNU enabling SDG implementation?

[Read more online](#)



**Government Funding**

**KRW 860 Million**  
for Research & Education

**KRW 73.3 Billion**  
for New Facilities

**KRW 331.6 Billion**  
for Regional Innovation Strategy



**#13 in the world**  
**#1 in Korea**

2022 Times Higher Education (THE) University Impact Rankings



**8<sup>th</sup> in the University Brand Reputation (2022)**

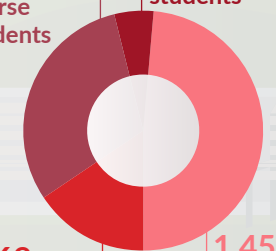


**901 patents** registered/applied for

**Student exchange with overseas universities (2018-2022)**

**918** intensive course students

**154** double degree students



**469** interns

**1,455** exchange students



**KRW 3.2 Billion**

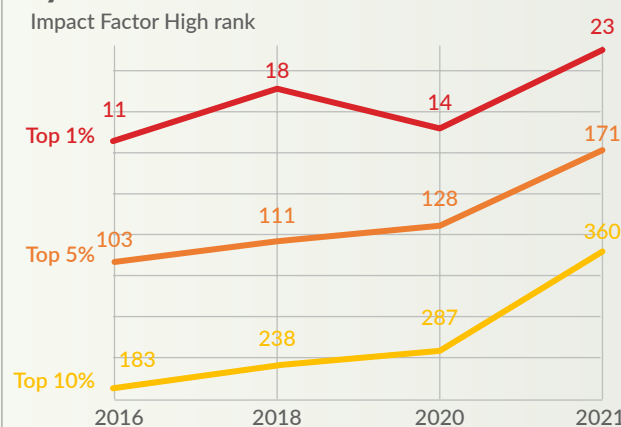
in Technology Transfer of patents/technology



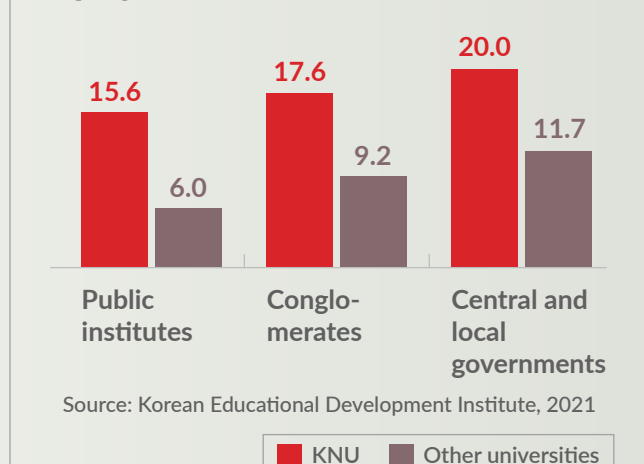
**33,284**

Students (63.8%) awarded scholarships

### Number of Excellent Research Papers by KNU Professors



### Employment Fields of 2020 Graduates



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic



# Empowering Dreams at KNU

We believe that every student deserves the opportunity to rise above their circumstances. Economic hardship must not be a deterrent for committed learners. Therefore, the University has strategic training and outreach programs that strive to provide equitable learning opportunities for all students. KNU has a policy of sharing both tangible and intangible resources with the community and devising innovative solutions to local community problems.



“

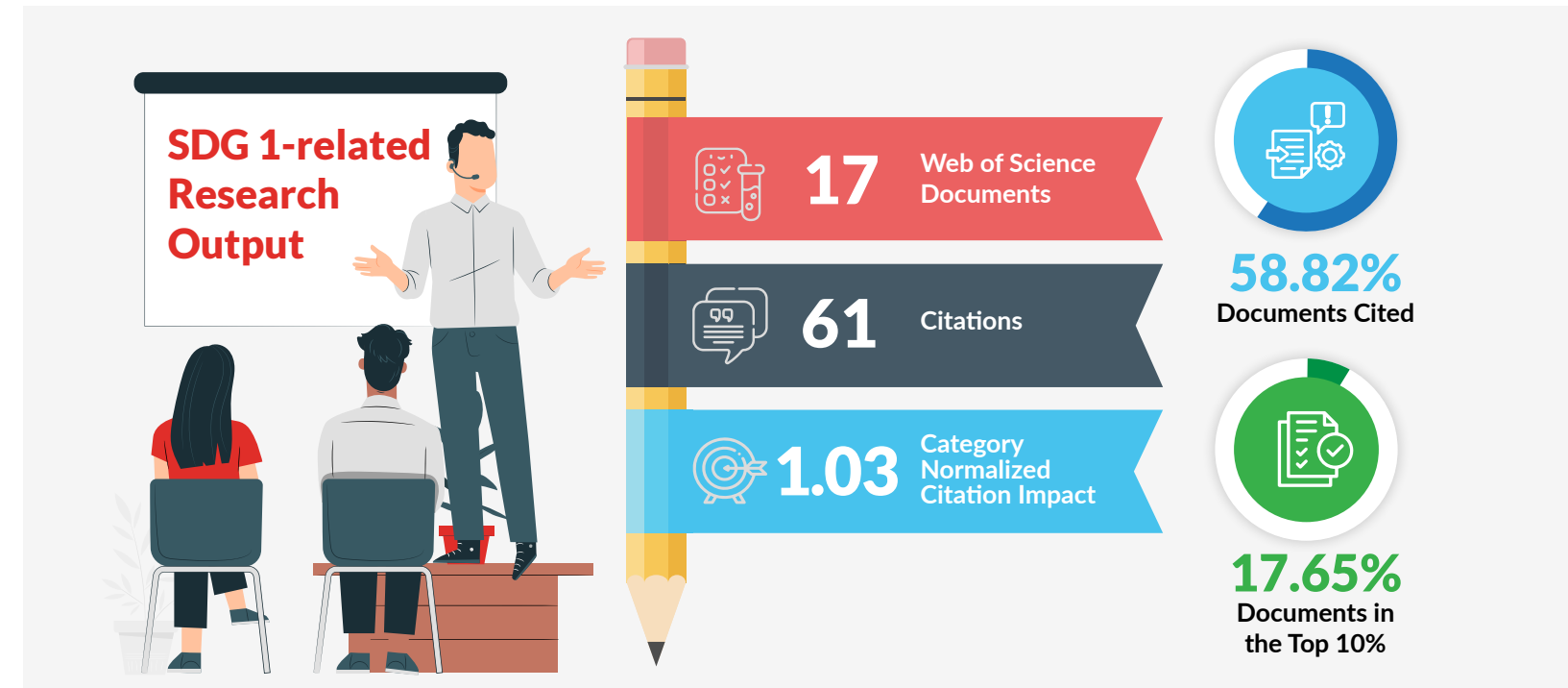
So far, we have had 230 graduates, who later returned to their home countries, applied the knowledge they learned at KNU to what people actually did on the ground, and even took the initiative in disseminating knowledge by offering university lectures and special talks for government officials.

**Hwa-seok Hwang**  
Managing Director,  
KNU Institute of International Research & Development”

”

## Academic Training Programs

KNU Institute of International Research & Development has been chosen for two programs sponsored by the Korea International Cooperation Agency (KOICA): the Agricultural Productivity Master's and Ph.D. Degree Program and the Agricultural Engineering Capacity Building Master's Degree Program. The programs aim to transfer Korea's agricultural and rural development experiences and advanced technologies to developing countries, helping to establish sustainable agricultural production environments. Over the next 4 years, KNU will receive KRW 5 billion in funding from KOICA to train 93 participants.

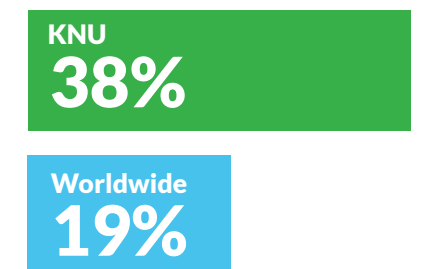


## Outreach

Students taking "Manufacturing Computer" one of the first social-liberal arts courses launched by the Liberal Arts Education Center of KNU, assembled and donated computers to child welfare institutions, and trained their recipients in basic troubleshooting for these computers.



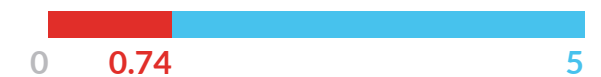
## Proportion of Students Receiving Financial Aid



## KNU



## Worldwide



Publications co-authored with low-income countries FWCI Publications





# Harvesting Excellence at KNU

KNU has the best education and research facilities in the nation when it comes to plant pests. By educating highly skilled professionals, the university will support global food security and the preservation of agricultural ecosystems.



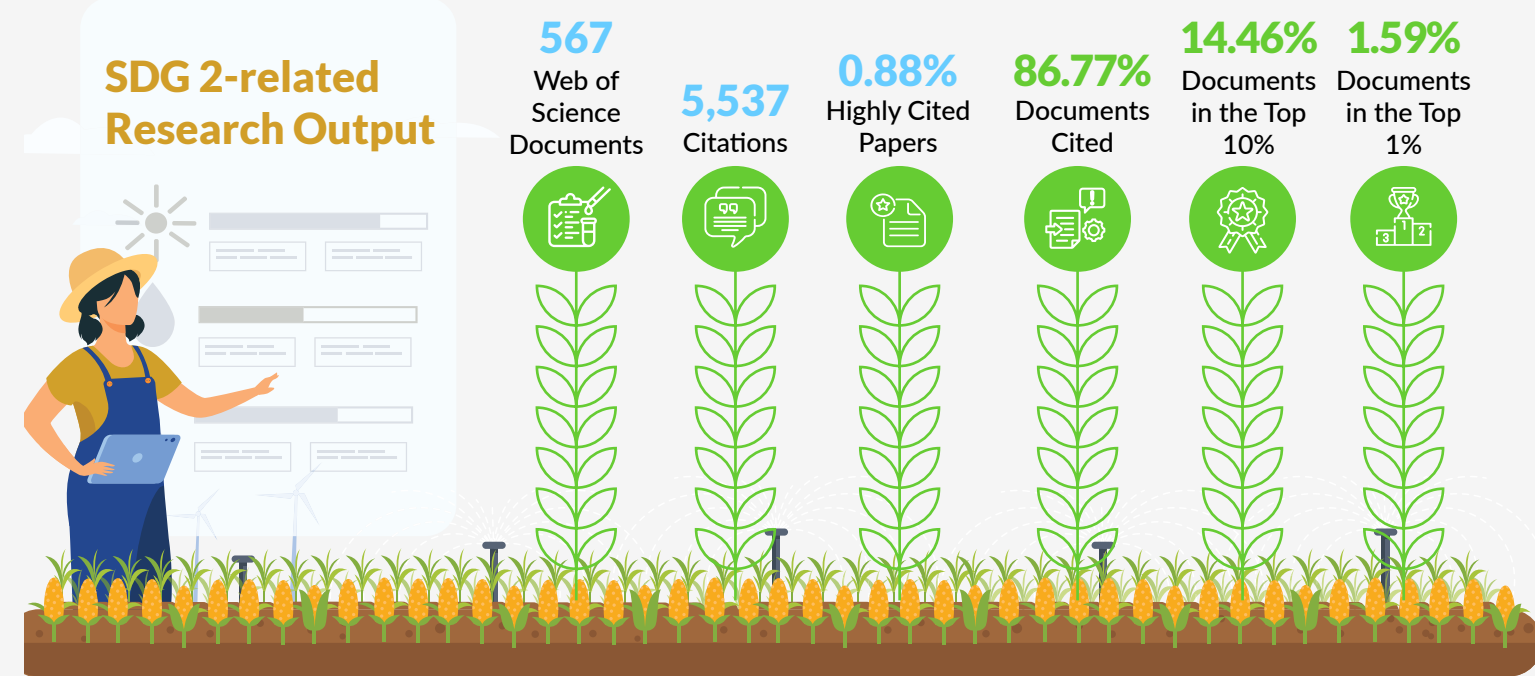
“As Hongseong County is the first and largest special organic farming zone in the country, and has shown its strength in traditional eco-friendly agriculture, there are various elements for developing agricultural technology models unique to our region. Through this agreement with KNU, we will do our best to supplement a genuine eco-friendly agricultural technology system, utilizing various locational elements.”

**Seung-bok Lee**  
Director,  
Agricultural Technology Center  
Hongseong County

## Agricultural Competitions

The Contest for Plant Pest Search, Identification, and Classification, organized by the Animal and Plant Quarantine Agency in Gimcheon, North Gyeongsang Province, was previously exclusive to quarantine entities. This year, it extended its participation to agricultural university students to increase public interest in plant pests, support early cultivation of expertise on pests among university students, and to raise awareness about nonindigenous pests.

The grand prize and the excellence award were won by two KNU students, Dongmin Kim (Master's) and Chang-Wook Eun (Ph.D. candidate), from the School of Applied Biosciences.



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic

A memorandum of understanding (MOU) was signed by Hongseong County in South Chungcheong Province, the nation's first special organic farming zone, and the **Sustainable Agriculture Research Centre** of KNU, to advance the use of natural enemy insect technology in agriculture. Both organizations made a commitment to ongoing collaboration in knowledge exchange, skill enhancement, and commercialization efforts, particularly for the production of natural enemy insects by local farmers.

Key participants in the agreement ceremony included Seung-bok Lee, Director of the Agricultural Technology Center of Hongseong County, Gyeong-yeol Lee, Professor at KNU, and 20 interested farmers from the region.

KNU's Sustainable Agriculture Research Center, located in Gunwi County, has strong expertise in applied biology and technologies, which was evident from the recent successful research in cultivating indigenous natural enemy insects, notably *Hypoaspis aculeifer*, and their effective application in the field.



# Holistic Healthcare at KNU

With an endeavor to provide quality healthcare information and services, KNU has invested in research on new medicine for geriatric cognitive conditions as well as the development of palliative care services for terminally ill pediatric patients. These interventions are intended to provide patients and their family members with information about advance care planning and medical care for life prolongation decisions, and can actively support end-of-life care services by coordinating with home healthcare services for critically ill children.

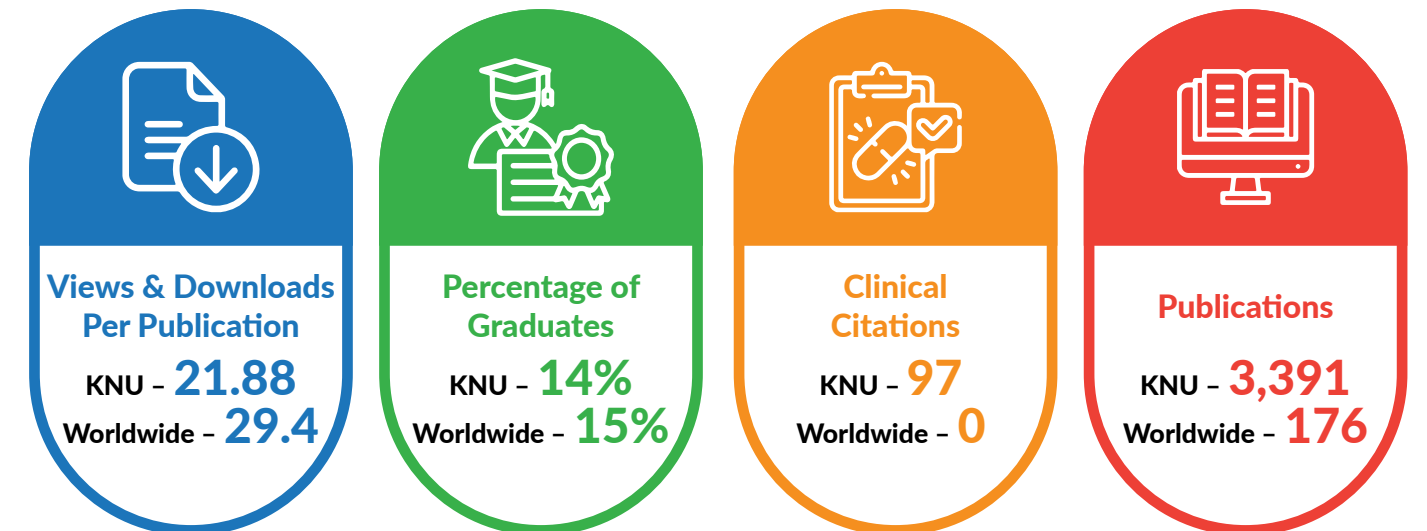
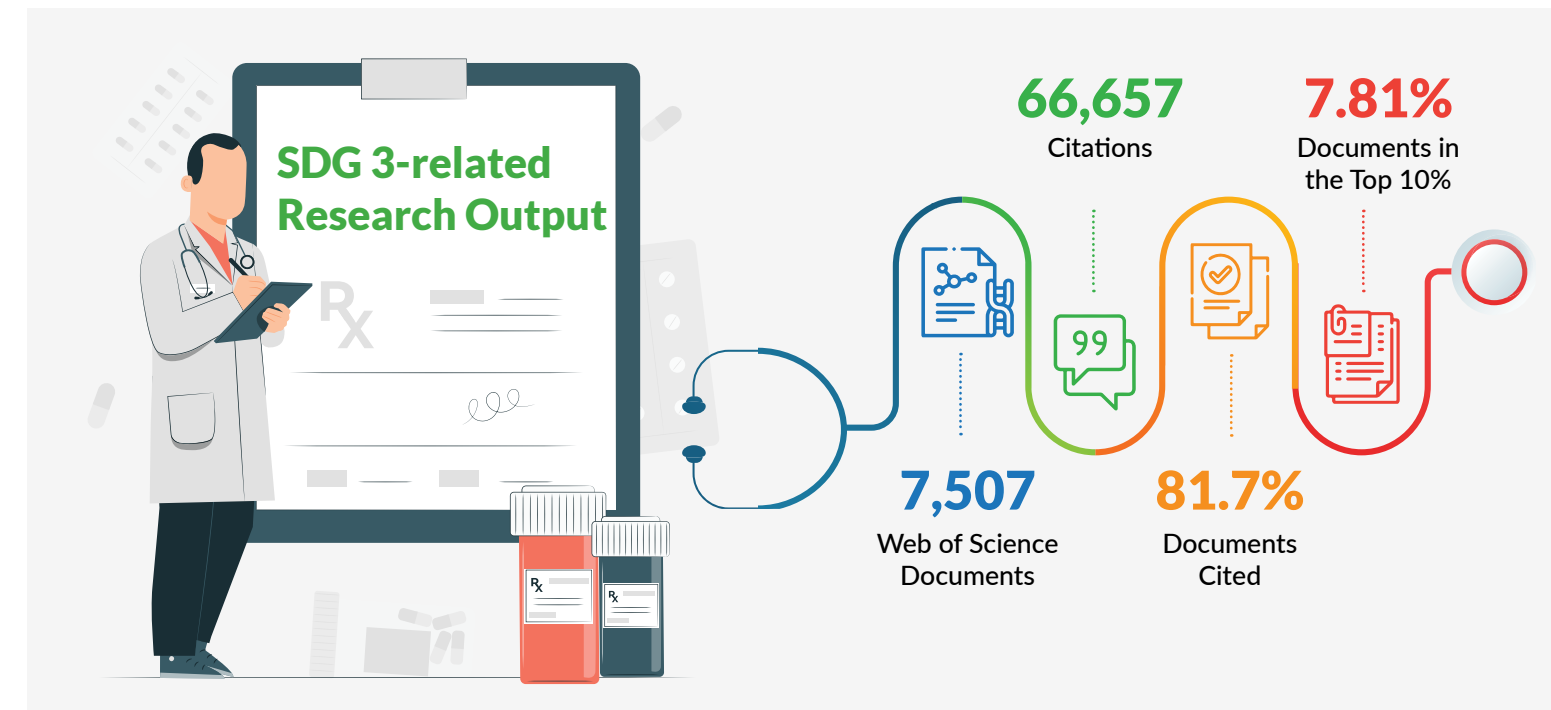


“It is necessary to give social attention to pediatric palliative care and home healthcare services for critically ill children. Based on the previous four-year experiences, we will try to provide patients and their family members with good-quality information and services.”

Professor Yeohyang Kim  
Department of Pediatrics

## New Medicine for Alzheimer's

KNU signed a contract with ISU Abxis for the transfer of technology related to a new medicine for Alzheimer's disease on the ASM antibody. This contract gives ISU Abxis the exclusive license to produce and sell products based on this first-in-class technology that it co-developed along with Professor Jae-sung Bae (School of Medicine), and the team led by Professor Jin Heekyung (College of Veterinary Medicine).



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic

## Improvements in Palliative Care

The pediatric palliative care team of KNU Children's Hospital won the grand prize in research presentation at 'The 2022 Korean Society for Hospice and Palliative Care Summer Conference' held at KT Daejeon Human Resource Development Institute, for a presentation on 'Changes in the end-of-life process of patients with life-threatening diseases after the intervention of the pediatric palliative care team.'





# Encouraging Learning among Locals at KNU

KNU prides itself on its commitment to volunteering and community building for bridging knowledge and resource gaps.



“As COVID-19 has led to the acceleration of widening digital, information, and education gaps, literacy—comprehending, analyzing, and evaluating online and offline information—has become invaluable. The Department of Library and Information Science planned this program based on its strength in cultivating knowledge among professionals. We will try to contribute to closing digital, information, and education gaps in local communities by developing practical and useful programs.”

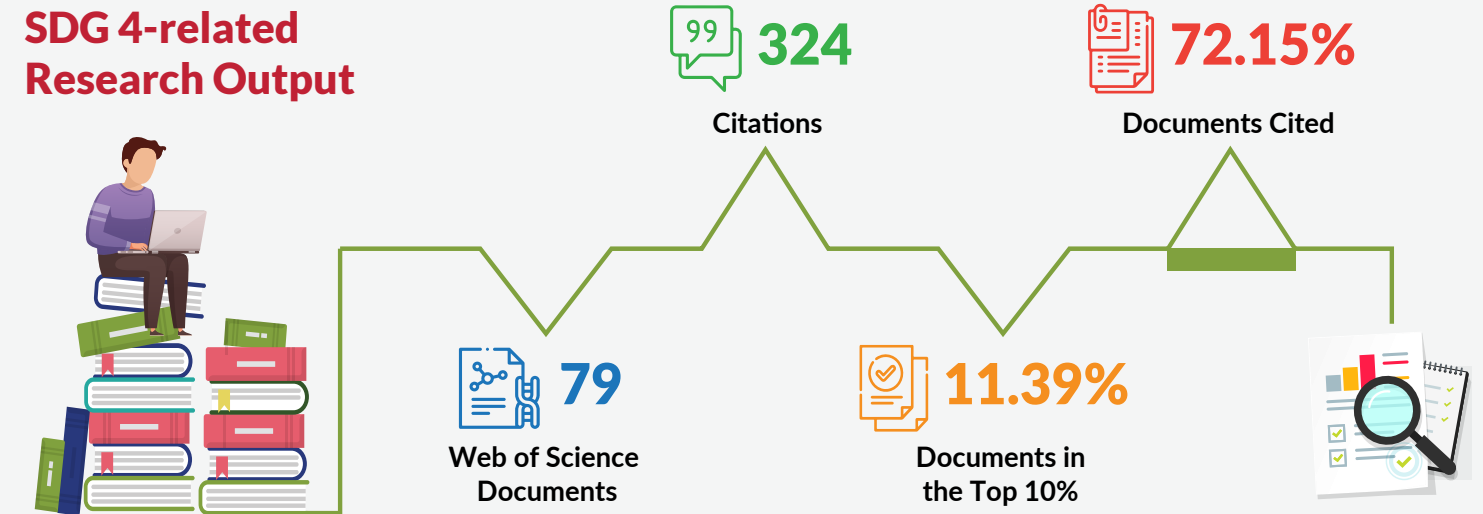
**Jongwook Lee**   
Head of the BK21 Project Team



## Sustainability Management For Businesses

To address the growing interest in environmental, social and governance (ESG) frameworks globally, KNU's **Community Contribution Center** organized a forum to generate opportunities for local businesses to incorporate ESG into their management practices. The theme of this forum was “ESG and the Future for Local Businesses.” It was open to the university, local businesses, and residents and aimed at helping businesses prepare ESG management strategies in line with diverse corporate features within regions and create the foundation for achieving ESG goals.

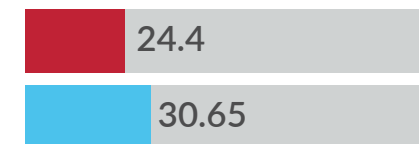
### SDG 4-related Research Output



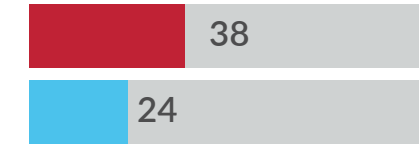
## Volunteering for Literacy Programs

To aid locals in enhancing their literacy, the BK21 Project Team of the Department of Library and Information Science at KNU organised a volunteer work program, “Night at the Library,” on August 4 and 11. The volunteer work team comprised graduate students, researchers, and ten professors who offered three literacy programs with subjects specifically tailored for residents of different ages. They received enthusiastic responses from the locals.

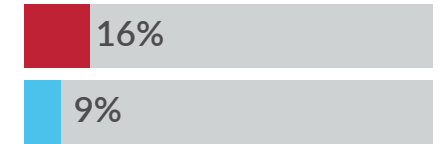
### Views & Downloads Per Publication



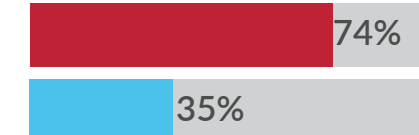
### Total Publications



### Publications in Top Journals



### First-generation Students



### Graduate Ratio





# KNU for an Egalitarian Society

We are constantly striving to create a safe and equitable learning and working environment for our students and staff at KNU. We have been actively incorporating feedback from students with disabilities into our campus facilities planning and support systems.

## First Female President of Korea Commercial Law Association

Professor Hyoshin Kim of the Graduate School of Law at KNU has been inaugurated as the 32<sup>nd</sup> President of the Korea Commercial Law Association, the highest authority in the field of commercial law in Korea.



*I propose a better future that breaks away from traditional regulations through specialized interdisciplinary research in IT technology and the business field. The Association will take the lead in revitalizing domestic and international academic exchanges that have become stagnant due to COVID-19, and will work to achieve a strong sense of unity among our members.*

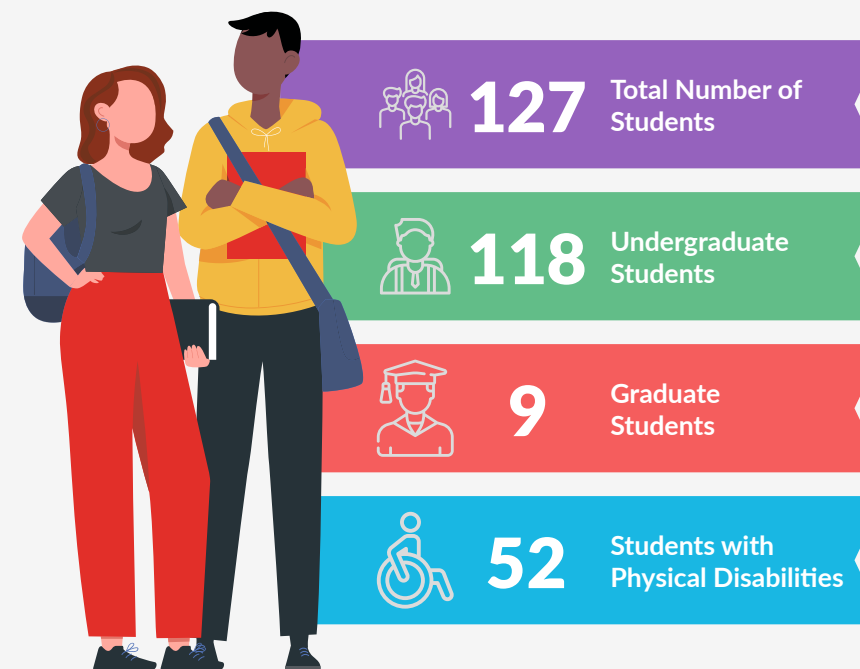
**Hyoshin Kim**  
President,  
Korea Commercial Law Association

## Ensuring the Right to Mobility at KNU

Currently, 90% of KNU facilities have installed elevators. In situations where there are no elevators, there are alternative measures provided. In response to an official document from the **Able Center**, KNU facilities office is planning renovations such as the installation of electrical ports at wheelchair stations for wheelchairs that need charging, improvement of crosswalks installation of precast pavers for the visually impaired, etc.

Moreover, KNU has been actively engaging with the Able Center to ensure that students with disabilities also enjoy smooth interpersonal relationships and professional and social life via various support programs. It has an 'educational support personnel program' where one can volunteer to assist differently-abled students with their academic and daily life activities.

### SDG 5-related Research Output



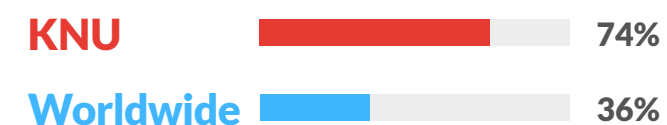
**286**  
Web of Science Documents

**1,155**  
Citations

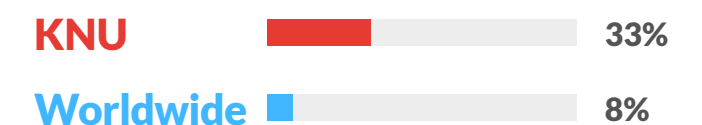
**68.53%**  
Documents Cited

**5.24%**  
Documents in the Top 10%

### Percentage of Female First Generation Students



### Publications in Top Journals



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic





# Clean Energy Solutions at KNU



Amid growing concerns over the dwindling of freshwater resources due to climate change, exploration of alternative hydrogen production technologies such as seawater electrolysis has become imperative. The world-class research teams at KNU have successfully developed a system to produce pure green hydrogen through seawater electrolysis. The purification and recycling of wastewater from facilities is also a key focus area in keeping with the SDGs. The fundamental technology to do this has been developed by another research team at KNU while creating a nanocomposite material in an experiment to remove pollutants from construction materials.



“The seawater electrolysis catalytic system developed presents a new idea about industrial-scale hydrogen production, which is expected to significantly contribute to the actualization of offshore hydrogen production and transportation.”

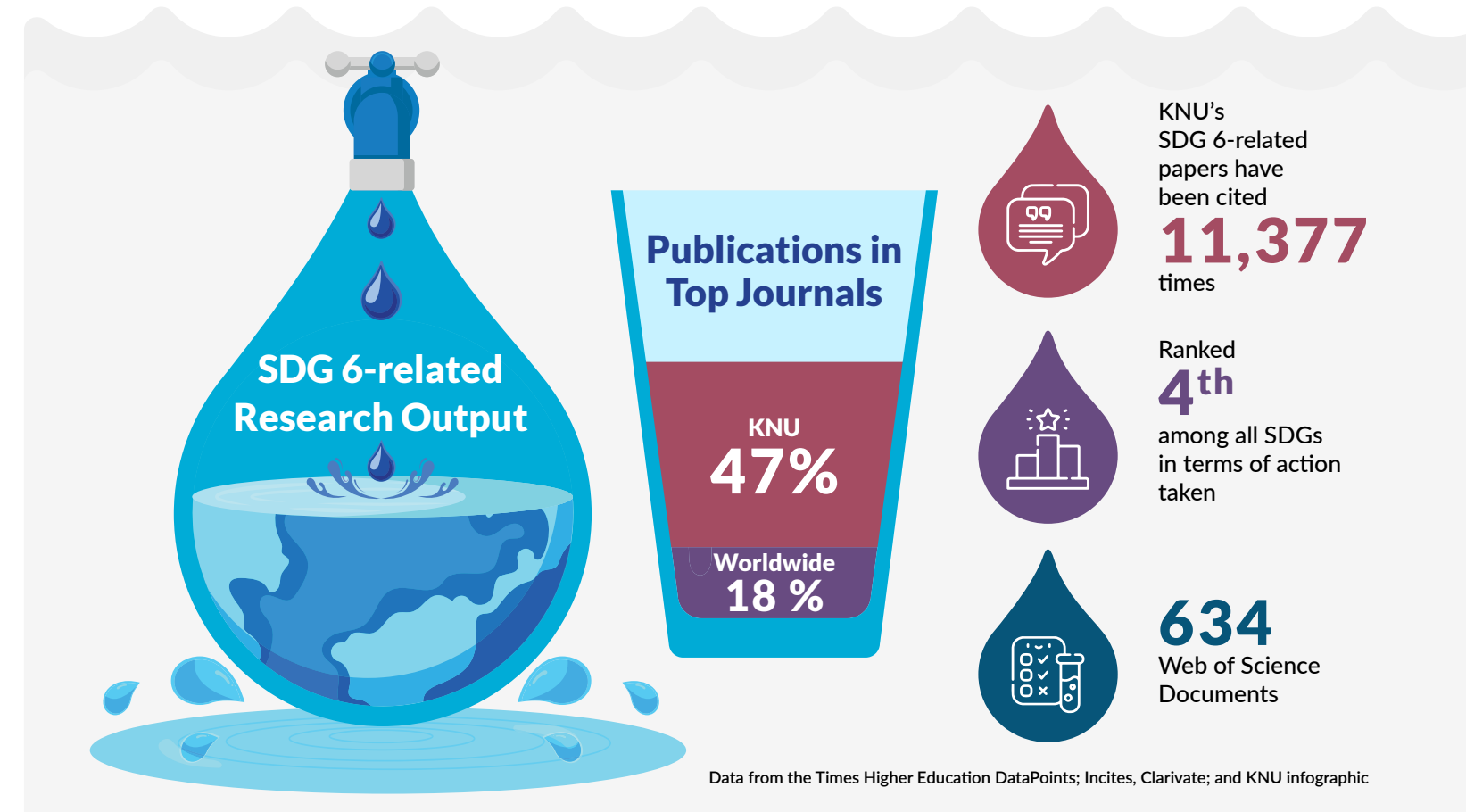
Professor Hyunwoong Park Department of Energy Engineering

## Hydrogen from Seawater

Hydrogen is garnering interest as a fuel owing to its unique characteristic of emitting no carbon dioxide upon combustion. A research team at KNU, led by Professor Park Hyunwoong, developed a membrane-free catalytic system to efficiently produce green hydrogen from seawater, via electrolysis.

The team's triple-catalyst setup could generate 100% pure hydrogen, offering a cost-effective and practical solution for large-scale offshore hydrogen production.

The research results were published in the journal *Applied Catalysis B: Environmental*. This study was conducted with the Mid-Career Researcher Program of the Korea Research Foundation and research funds from the Qatar Government.



## Wastewater Purification Technology

Prof. Lee Dongeun (Architecture), Prof. Cho Wangeun (Intelligent Construction Automation Research Center), and Dr. Shrenda, in collaboration with Dr. Kasala Prabhakar Reddy (University of South Carolina, USA) and Dr. Satyanarayana (Vellore Institute of Technology, India), established a method to manufacture a porous nanocomposite material with exceptional charge transfer and photocatalytic performance. The technique involves making porous polymeric carbon nitride sheets and WO<sub>3</sub> nanorods with a 3D heterostructure and special crystal facets to efficiently remove pollutants from construction materials under low-energy visible light exposure. This material holds promise for wastewater purification and recycling. Their research was published in the journal *Applied Surface Science*.





# Developing Sustainable Energy Sources at KNU



Our research targets sustainable energy sources and materials. Two teams at KNU have developed landmark research projects, which provide valuable insights for the enhancement of the affordable and clean energy sector.



“Our team proved the maximized polling efficiency of piezoelectric composites using the interfacial effects of organic and inorganic materials. This research is significant because it can provide low-energy consumption methods for developing highly efficient flexible piezoelectric elements.”

Professor Kwi-il Park  
School of Materials Science and Engineering

”

## Bolstering the Electric Power of Piezo-electrics

Researchers from the School of Materials Science and Engineering at KNU developed highly efficient flexible piezoelectric elements using the interfacial effects of organic-inorganic composites. The developed piezoelectric element can generate enough electric power to charge a commercial capacitor from the minuscule force of a water droplet.

The team found that the dipoles on the interface of organic-inorganic composites consisting of piezoelectric polymer and barium titanate were more rapidly reoriented at a lower voltage than those on the piezoelectric polymer. Based on this improved polling efficiency, the team developed the piezoelectric element, maximizing the performance at half the electric field, compared to the existing piezoelectric polymer-based piezoelectric element.

**This research** was funded by the National Research Foundation of Korea (Mid-Career Researcher Program and Basic Research Laboratory) and was published in the online edition of *Nano Energy*, a reputed journal of nanomaterials and energy, on April 8.

### SDG 7-related Research Output



1,082  
Web of Science Documents



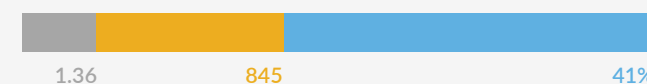
84.47%  
SDG 7-related Documents Cited



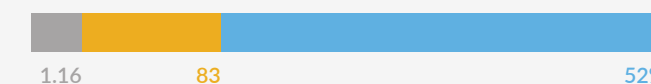
12,268  
Citations

7.67%  
Documents in the Top 10%

#### KNU



#### Worldwide



■ FWCI ■ Publications ■ Publications in top journals

Sources: Times Higher Education DataPoints; Incites, Clarivate; and KNU Infographic

### Breakthrough in Photohydrogen Production Efficiency

A research team at KNU has developed a technology that can almost double photohydrogen production efficiency by controlling spatial oxygen vacancy. The team found that the efficiency of photo electrolysis differed when the concentrations of oxygen vacancies on the surface and inside of tungsten trioxide nanomaterials varied.

They confirmed that the photo electrolysis efficiency was higher when the oxygen vacancy concentration on the surface was higher than that inside the nanomaterials.

**These findings** were published in the online edition of *Advanced Functional Materials*, a prestigious international journal, on July 5.



# Emboldening the Entrepreneurial Spirit at KNU

We, at KNU, not only seek to invigorate the local entrepreneurial spirit, but also intend to organically mobilize the financial framework within the country. The Entrepreneurship Center and Business Incubation Center at KNU are key organizations in the university's ecosystem that consistently achieve tangible outcomes within their projects.



*The Center will systematically support startups in contribution to local employment and economic vitalization with the use of KNU's excellent infrastructure and networks.*

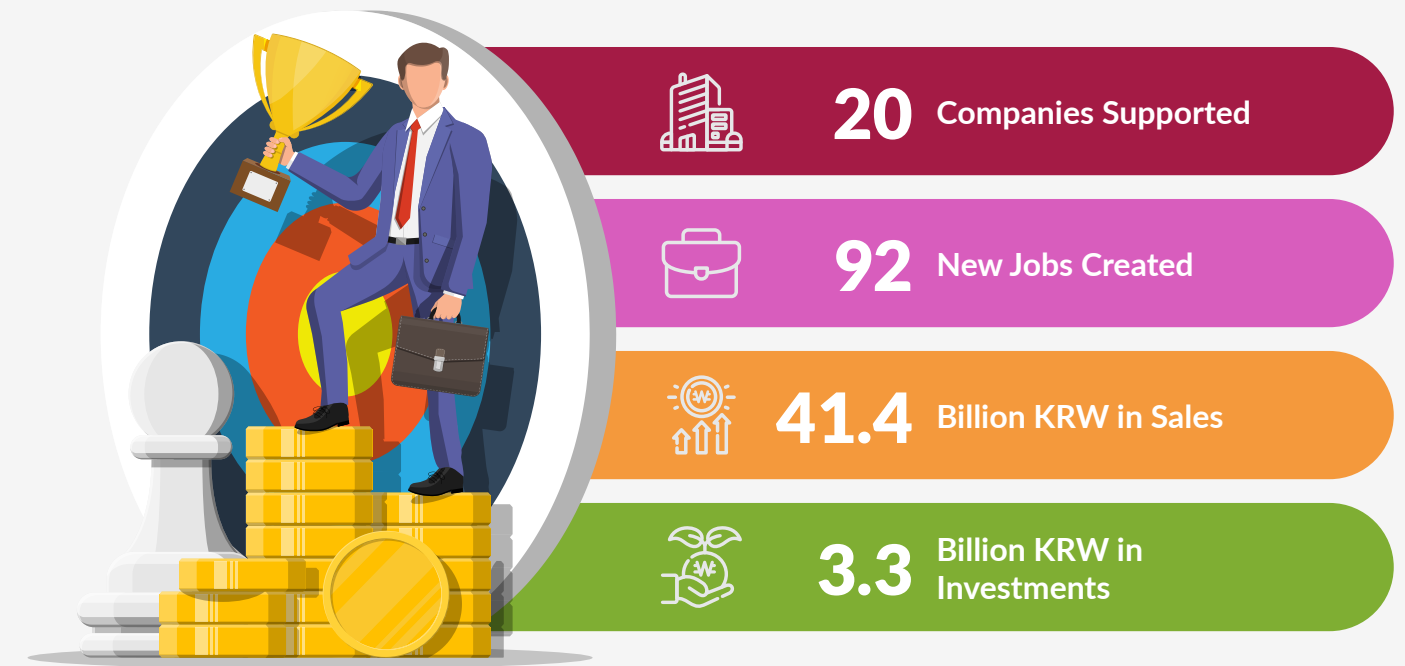
**Kyoung-Chol Jung**  
President,  
Business Incubation Center, KNU

## KNU's Entrepreneurship Center

The Entrepreneurship Center at KNU has been selected as an excellent (A-grade) management organization in the performance evaluation of the Early-Stage Startup Package, which is conducted by the Ministry of SMEs and Startups, to assist in the growth and stabilization of promising startups that are younger than 3 years.

The Center operates various specialized programs in efforts to vitalize the local entrepreneurial spirit, such as support for contactless marketing, support for domestic and international investment attraction, and one-stop consultation for startups.

### KNU Entrepreneurship Center: Tally for 2022

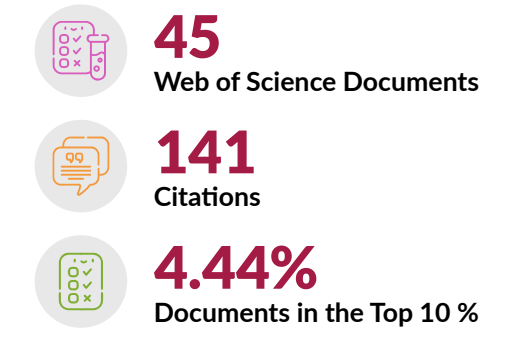


### Business Incubation at KNU

The Business Incubation Center at KNU received top S-rating in the "2022 Business Incubation Center Management Evaluation" by the Ministry of SMEs and Startups, for the 18<sup>th</sup> year in a row. About 260 Business Incubation Centers across Korea are assessed annually by the Ministry to inspect the stable management activity support, management performance, and achievements of SMEs in their early stages.



### SDG 8-related Research Output



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic







# An Ecosystem for Innovation at KNU

We, at KNU, believe that an organically thriving innovation ecosystem is built upon the constant flow of dialogue and information exchange between its different stakeholders. To achieve it, we are consistently trying to understand stakeholder-specific requirements to bridge all gaps and create an environment that fosters innovation.



“Strong university education innovation nurtures innovative talents and creates an ecosystem of growth for developing leading technologies in the core areas of electronic information devices and future vehicle conversion parts. A system for awarding regional talent will also drive regional innovation and growth.”

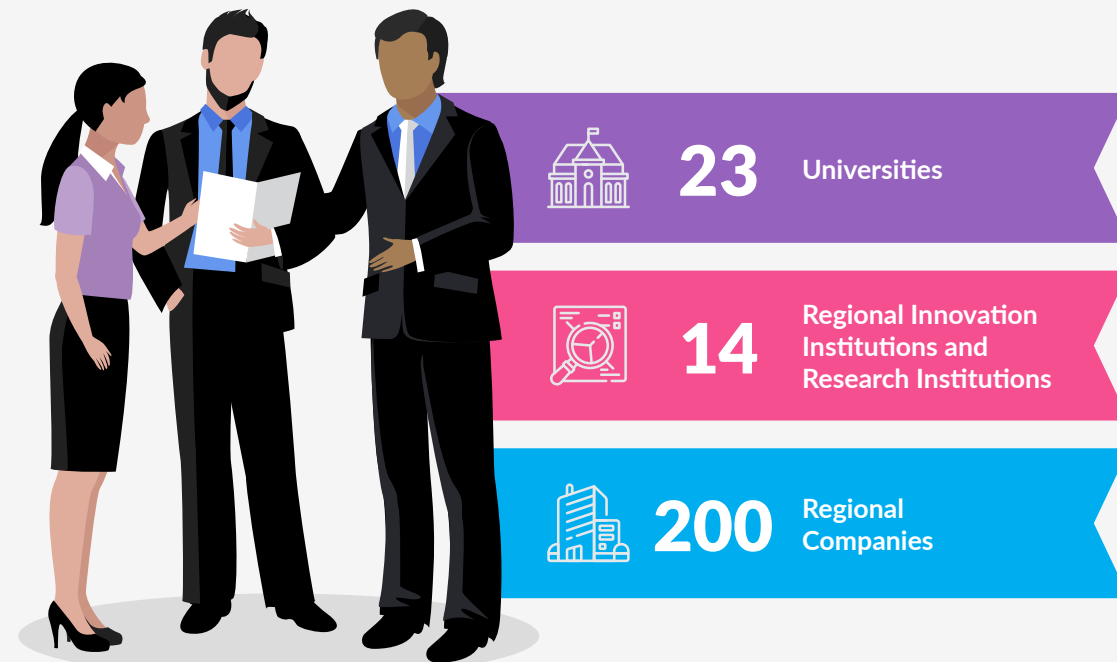
Won-hwa Hong  
President,  
Kyungpook National University

## Regional Innovation

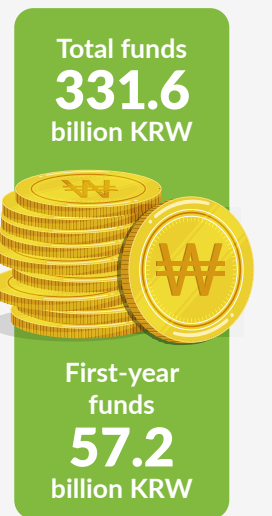
The “Daegu-Gyeongbuk Regional Innovation Platform” is a pluralistic platform that includes the participation of Daegu city and Gyeongbuk province, with the aim of fostering talent and creating a virtuous cycle of growth engines in these regions. The platform is managed overall by KNU and has been selected as a “Regional Innovation Strategy project.”

The project will use its investment to promote education system reforms and collaborative tasks with regional innovation institutions, with a focus on the core areas of electronic information devices and future vehicle conversion parts.

### Daegu-Gyeongbuk Regional Innovation Platform



### Investment



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic

### Star Companies of KNU Technopark

KNU Technopark selected five companies as star companies for 2022, among more than 190 resident and support companies, based on excellent sales, excellent performance in the employment sector, and great growth in investment attraction and R&D.



Intelos



KSMARTPIA

Ksmartpia



Blossom Cloud



Taewon Innovation



CGF





# KNU's Commitment to Inclusivity

As the central national institution of Korea, KNU boasts excellent infrastructure and expert human resources. It runs a number of initiatives to aid entrepreneurs, through which it is gaining expertise in corporate growth and development. The University also seeks to provide support to its large community of multicultural students to build a truly Global Korea.



“

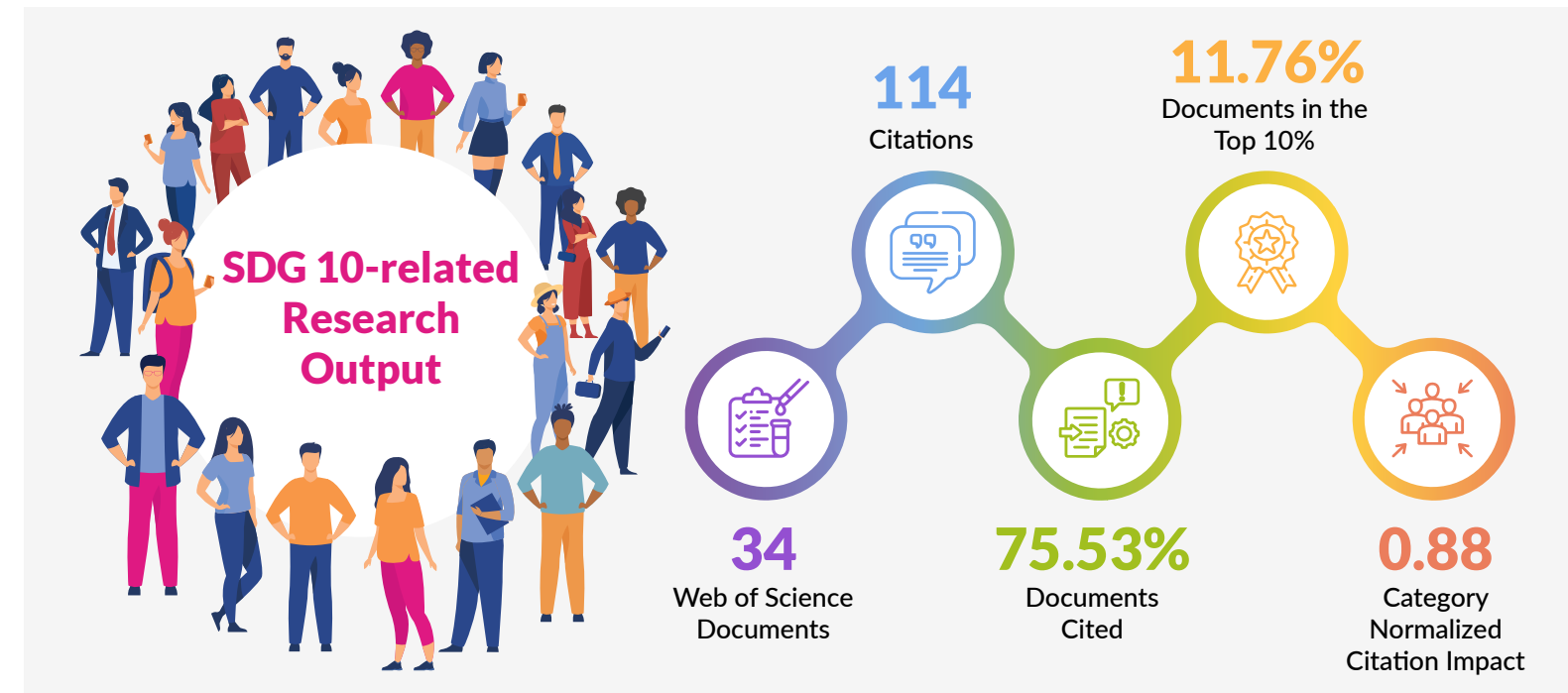
A multicultural community is the reality today, which is why discourse based on the multiculturalism of our society is necessary. Also, research from a diverse perspective is also needed, such as regarding multicultural education not only as a concept of welfare, but also from the perspective of cultivating key talents.

Youngsup Hyun  
Director, SEI

”

## Multicultural Forum

KNU GTU and the Secondary Institute of Education (SEI), together with the education platform Snowball, will conduct the Global Multicultural HR Forum in December 2023 at the KNU College of Education's Future Education Center. During the forum, Park Sungkyung, Director of Daegu Talent Development Institute and member of the Daegu Youth Cultivation Committee, will be presenting his opinions on "Obstacles in providing career guidance to multicultural students and career counseling methods," and Park Hyejin, Head of the Competency Development Team at APEC Learning Community Builders, will be presenting on the topic of "Global Korea, together with Married Migrant Women." This roundtable will be moderated by Youngsup Hyun, Director of SEI.

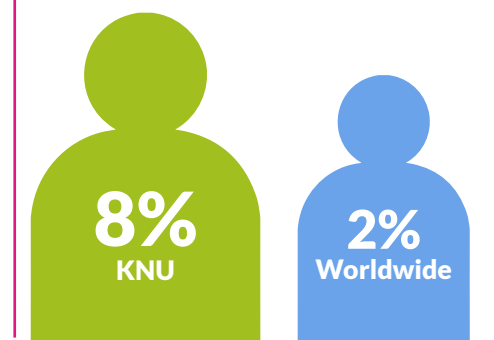


## Startup Initiative

KNU's Industry-Academic Cooperation Foundation was selected to oversee the "2022 Second Chance Startup Package-General," a Ministry of SMEs and Startups initiative. The package supports individuals and businesses that have experienced previous challenges but are committed to restarting or are less than seven years old. A total of nine institutions, six general and three educational, were selected in the year 2023. As the sole supervising institution in the Yeongnam region, KNU's specialized programs, such as technology innovation, diagnosis of management, market exploration, product improvement, and investment attraction, will be implemented to help the businesses rebound.



## Students from Developing Countries



■ Percentage of employees with disabilities ■ Percentage of students with disabilities



# Fostering Cultural Diversity at KNU

The Museum, Art Museum, and Natural History Museum at KNU are simple exhibition venues that have the support of the University's strong cultural roots and top-notch facilities. They present various perspectives and new visions while engaging with the culture of the local communities. With the establishment of a cultural platform that combines exhibitions, education, and performances, KNU aims to create a new paradigm for the cultural development of not only the local community but the entire country.



“

To be selected as the best institution in the project that included art museums for the first time is a great achievement. 'Whatever Happens' was a significant exhibition in that the entire process of the program, from planning and operation to content and consumption, actively involved the local residents and university students and staff. The KNU Art Museum will continue to actively utilize KNU's physical and human resources to faithfully fulfill the role of an art museum as a local cultural platform.

Kyoung Yong Lee  
Director, KNU Art Museum

”



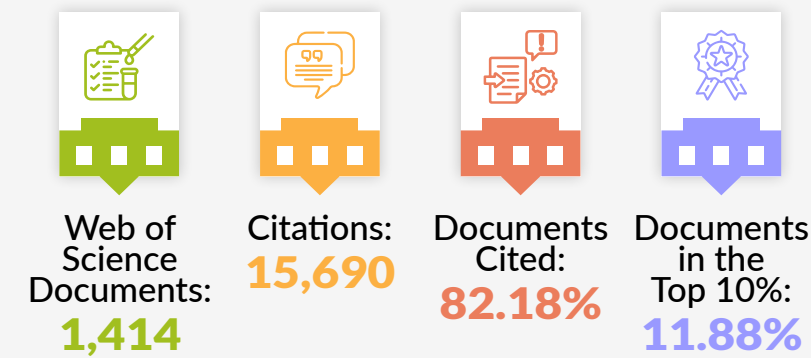
## Cultural Fiesta at KNU

KNU Museum will hold a special exhibition titled "2000 Years of Korea—China Cultural Exchange" in commemoration of the 30<sup>th</sup> anniversary of the establishment of diplomatic ties between Korea and China.

KNU Art Museum was selected as the top institution in this project for its exhibition titled "Whatever Happens," which is a combination of theater and art.

The KNU Natural History Museum has planned various programs under the theme "Korean Tiger" that will be open from July.

### SDG 11-related Research Output



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic

### 2022 KNU Spring Culture Week

KNU held the "2022 KNU Spring Culture Week" in various locations around campus in May 2022. Under the theme "Awake the Campus," KNU organized various exhibitions, experiences, and performance programs on campus in the hope of bringing vitality back into the daily lives of university students, staff, and local residents post-pandemic.



# Encouraging Resource Efficiency at KNU

KNU's Department of Chemistry and School of Materials Science and Engineering collaborated with Columbia University and the University of California to develop a new catalyst that is about 11 times more efficient than the currently used high-cost platinum catalyst. The research findings were published in the *Proceedings of the National Academy of Sciences*, a prestigious international journal published by the National Academy of Sciences, USA.



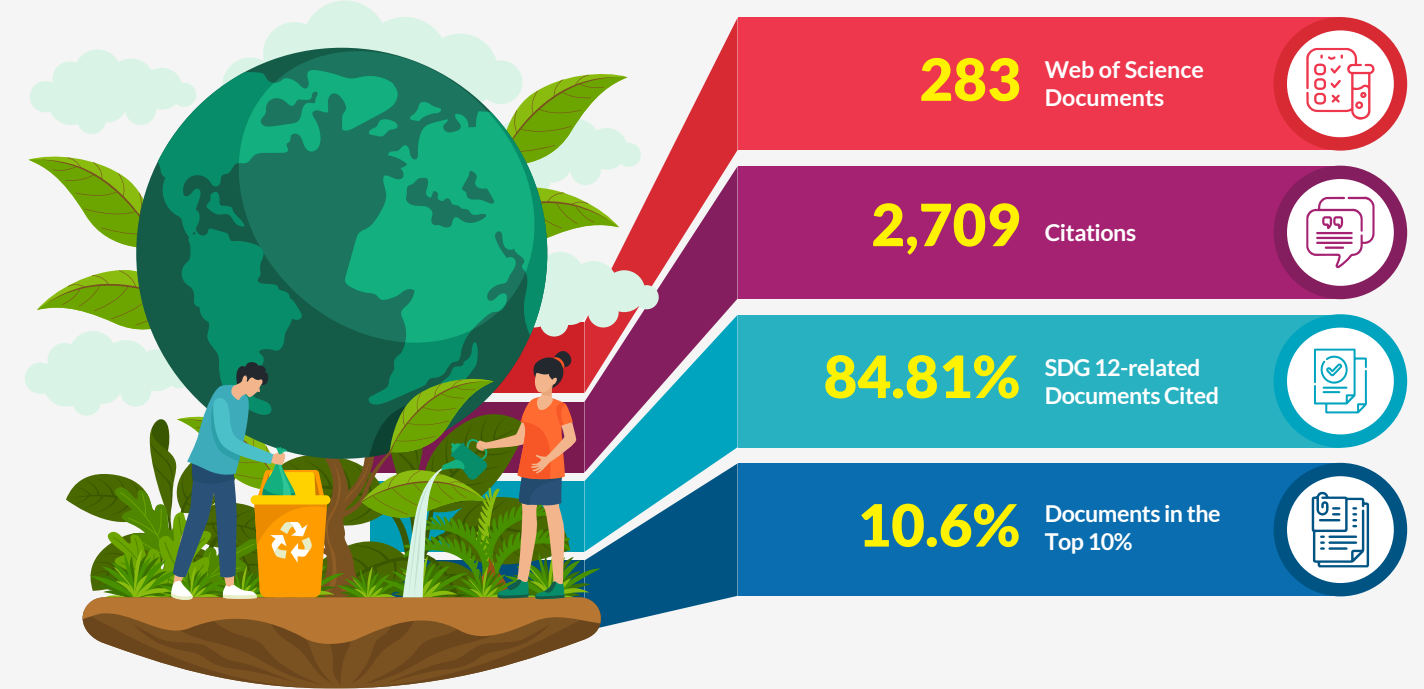
“ This new catalyst can significantly improve the performance of existing ethanol fuel cells and provide a basis for developing single-atom catalysts with new concepts and understanding relevant reaction mechanisms. ”

+ Professor Sang-Il Choi Department of Chemistry

## Novel Eco-Friendly Thermoelectric Material

KNU's School of Materials Science and Engineering, in collaboration with the Korea Institute of Materials Science, developed an eco-friendly, flexible, highly durable, and paper-thin thermoelectric material to assist in achieving carbon neutrality. The research team, led by Professor Kwi-il Park, identified the material's potential application in energy-generating devices. The research was published in the online edition of *Nano Energy*, a prestigious journal in nanomaterials and energy.

### SDG 12-related Research Output



### Breakthrough in Semiconductor Patterning Technology

KNU's School of Electronics Engineering has achieved a breakthrough in semiconductor patterning by applying a minimal four-step process that uses pure water, resulting in minimal defects within semiconductors and the creation of high-performance, uniform oxide devices for displays, even at low temperatures. This study, led by Professor Bae Jinhyeok, was published in the *Chemical Engineering Journal*.



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic





# KNU for Environmental Sustainability

KNU has been a part of an international research team, alongside Korea Polar Research Institute and Seoul National University that continuously observes changes in Antarctica, to understand melting mechanisms and make future sea-level predictions. Research teams at KNU are also accelerating their efforts at finding solutions to reduce the carbon footprint on the planet.



*“We expect that this finding would greatly contribute to future studies of electrochemical CO<sub>2</sub> reduction processes since it suggested an idea for the design of a single-atom catalyst material that was clearly controlled at the atomic level, and a catalyst material with high cost-competitiveness without using precious metals.”*

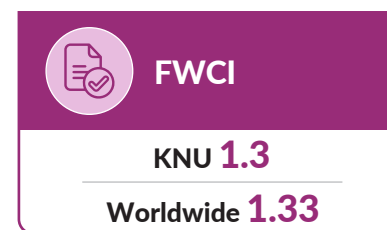
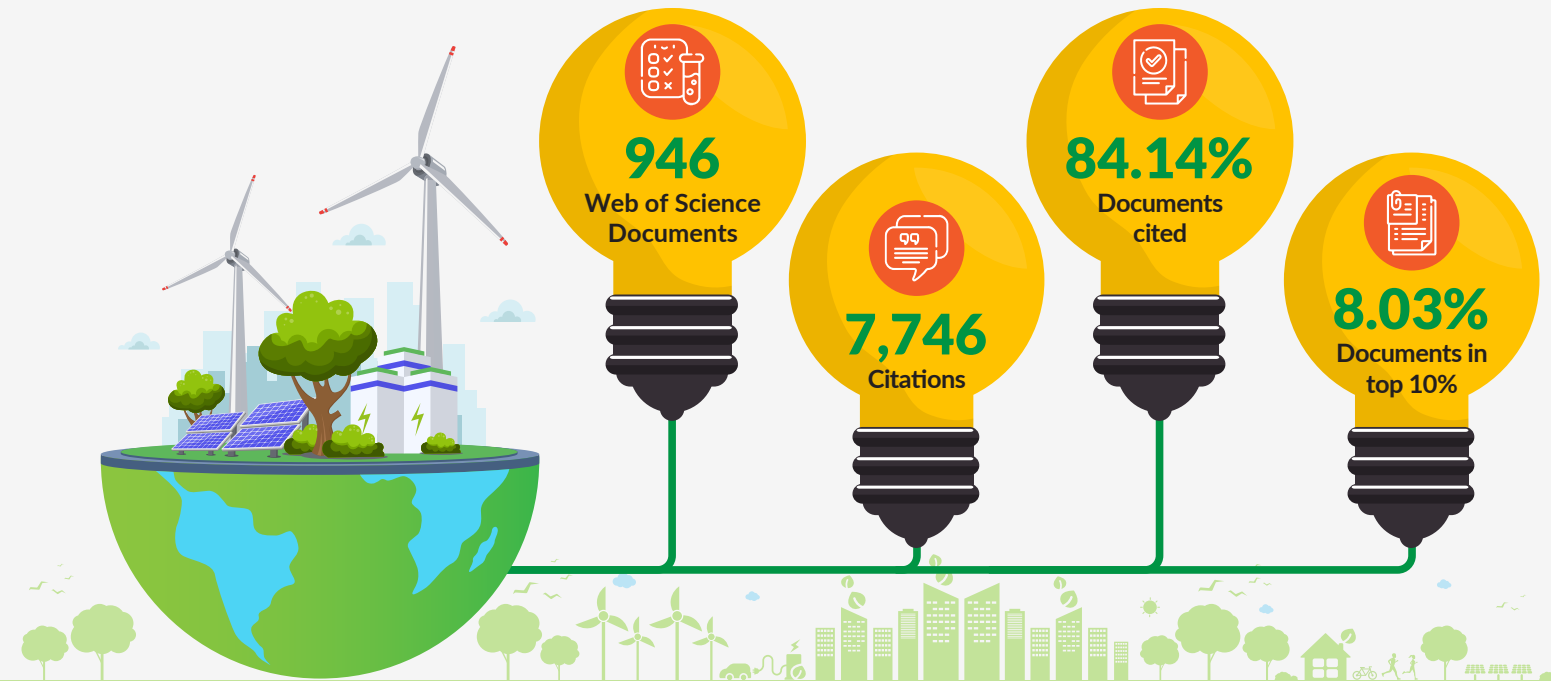
Professor Ji Hoon Lee  
School of Materials Science and Engineering

## Catalyzing Carbon Neutrality

The development of catalytic materials can help convert carbon dioxide, a greenhouse gas, into useful compounds, such as carbon monoxide, formic acid, and hydrocarbon, to help achieve carbon neutrality. However, there are challenges in designing new catalyst materials due to a lack of understanding of the CO<sub>2</sub> reduction reaction process in the catalytic active site.

Researchers at the School of Materials Science and Engineering, KNU, developed a core design technology of a single-atom catalyst to increase CO<sub>2</sub> conversion efficiency. **These results** were published in the *Journal of the American Chemical Society*, a prestigious journal of chemistry. The research was supported by the Young Researcher Program and the New Young Researcher Support Program of the National Research Foundation of Korea.

### SDG 13-related Research Output

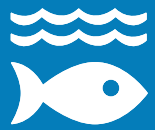


Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic

A research team from the School of Earth System Science at KNU in collaboration with the researchers from Korea Polar Research Institute, Seoul National University, University of Houston, and the British Antarctic Survey, identified “a self-defense mechanism” in the waters near Thwaites ice shelves in West Antarctica, where the glacier meltwater lowers the melting of ice shelves. **The research** was funded by the research project of the Ministry of Oceans and Fisheries, and published in the online edition of the renowned journal—*Nature Communications*.







# Marine Sustainability Partnerships at KNU



KNU actively seeks out collaborations and agreements that can facilitate change within the realm of environmental protection. Through its synergistic alliances, the University seeks to actively discover and develop new projects with the Environment, Social, Governance (ESG) perspective.



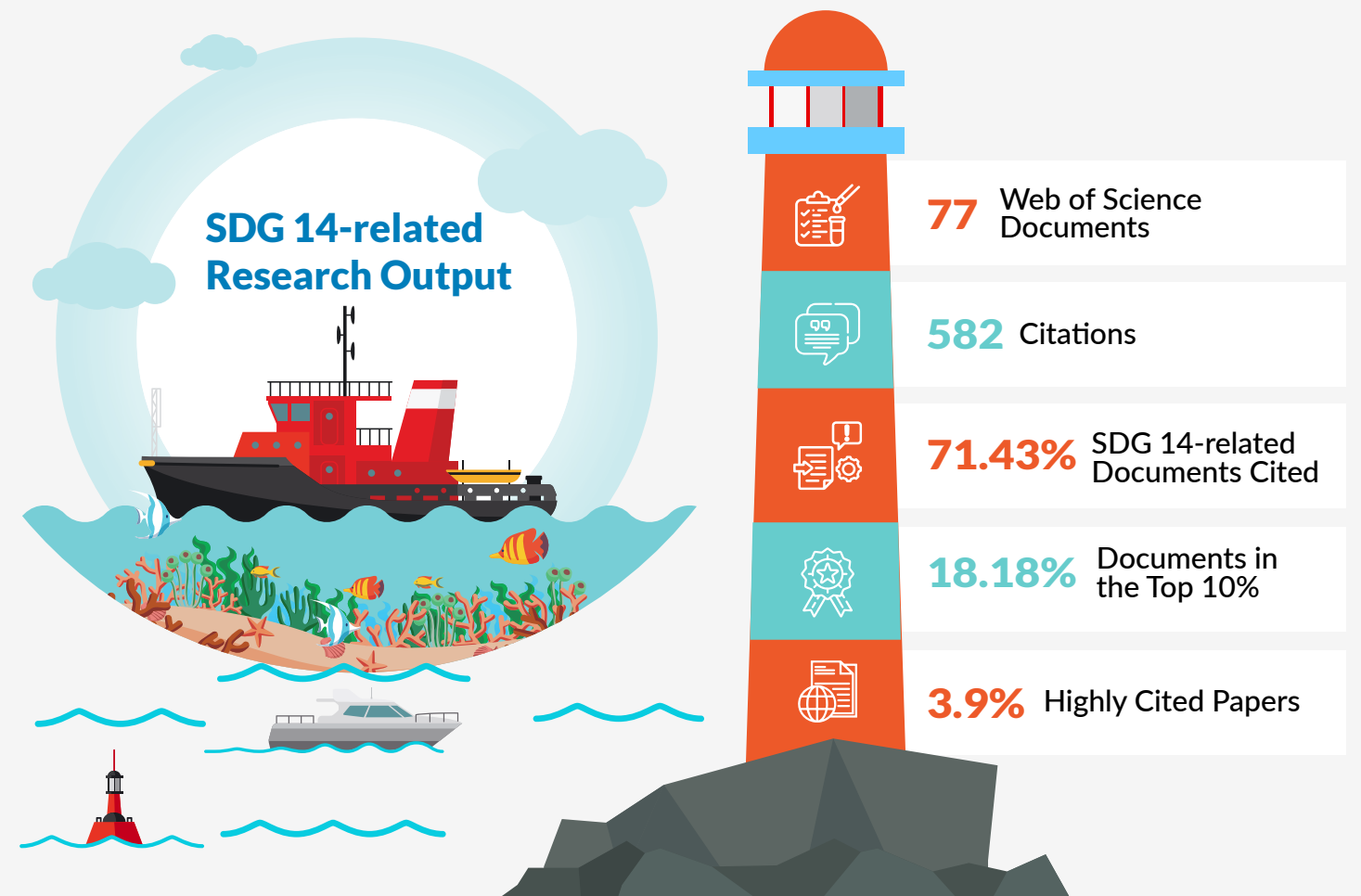
“ Unlike the Yellow Sea and the South Sea, as the East Sea allows facile accesses to deep water, it is the optimal location for researching blue carbon studies regarding marine algae with high carbon sequestration. If the blue carbon center in Korean East Sea Rim is established, it will play a role as a hub for blue carbon-related research, education, and policies within the East Coast region. We will also actively cooperate to cultivate young marine talents and develop the East Sea areas.

Won-hwa Hong  
President,  
Kyungpook National University



## Blue Carbon Center

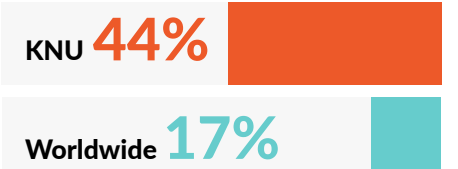
Pohang City, North Gyeongsang Province has collaborated with KNU to achieve carbon neutrality by creating a marine blue carbon center in Korean East Sea Rim. To this end, KNU is planning to establish the Donghae Campus in Pohang. Marine blue carbon refers to the carbon absorbed by salt plants (plants that grow in high-salinity areas) such as beach silvertop. It is a huge carbon sink in the marine ecosystem. This center will aid in achieving sustainable carbon neutrality in line with global climate goals, promoting synergy with ongoing research projects.



## Research Partnership

KNU and CJ Cheiljedan are collaborating to develop and commercialize a PET plastic biodegradation enzyme; while KNU and Zyen Co., Ltd. will produce and improve the enzymes, CJ Cheiljedang will develop technologies for their mass production by utilizing their world-class microbial fermentation technology and R&D infrastructure. The "biological recycling" technique, promoted under this agreement, is eco-friendly during the decomposition process, consumes less energy, and produces high-quality recycled materials.

## Publications in Top Journals



## FWCI



## Publications



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic



# KNU's Efforts to Preserve Terrestrial Ecosystems



KNU is committed to its role in urban tree conservation. The University believes that the study of tree anatomy is the basis for optimum tree care, just as anatomy is the basis for medicine. KNU also believes in sharing diverse diagnosis cases using state-of-art equipment and deriving scientific tree management plans.



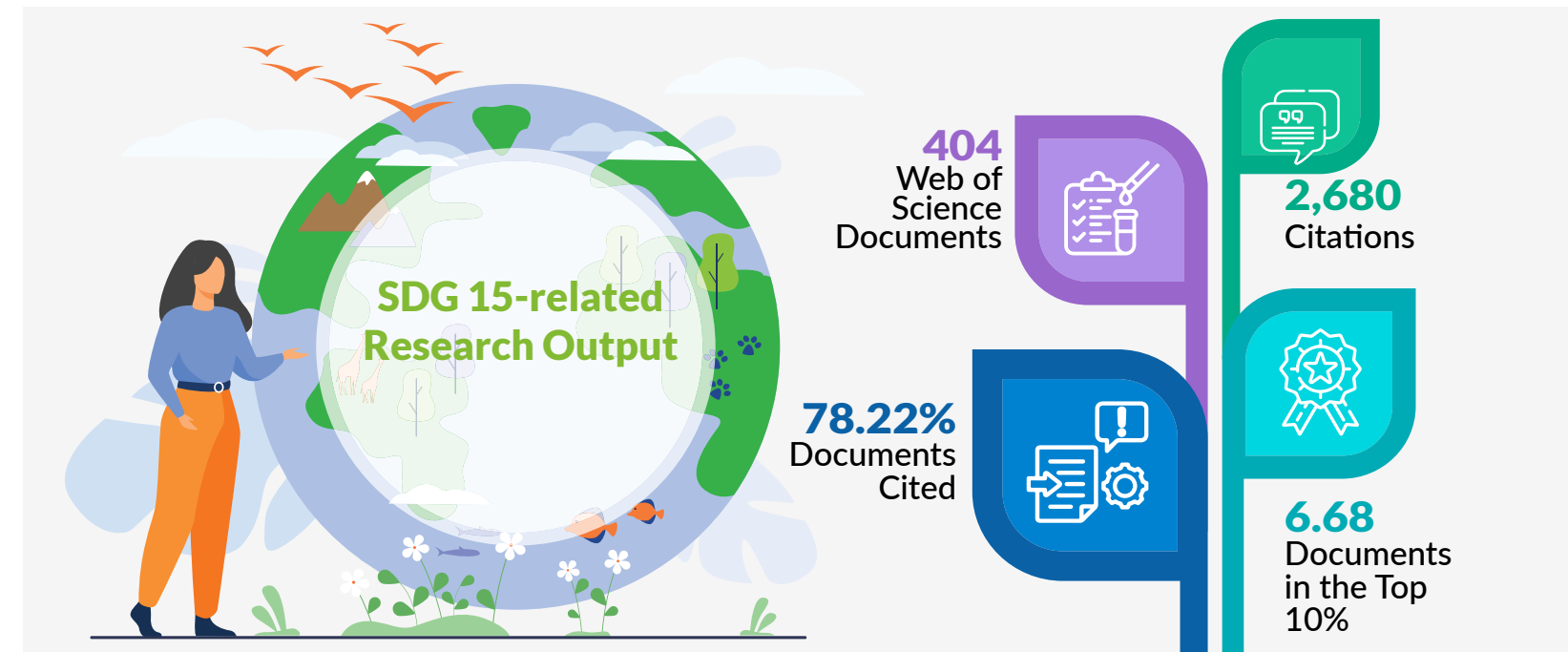
Public tree hospitals have been established in major cities and provinces in Korea since 2012, to diagnose tree damage within living zones. With the increased presence of certified tree doctors since 2019, it is necessary to collect various opinions on the future roles and management of such hospitals, and derive development plans.

**Ki Woo Kim**  
Center Director,  
Tree Diagnostic Center

## The Public Tree Care System

KNU's **Tree Diagnostic Center**, established in 2014, is an integral part of the public tree care system, serving to diagnose urban tree damage in the Daegu and Gyeongsangbuk-do regions designated by the Korea Forest Service. Recently, they partnered with the National Tree Hospital to organize a comprehensive workshop titled "Anatomy Course for Tree Care" at KNU's Sangju Campus. The workshop featured informative lectures on topics like "Basic Anatomy of Trees Within Main Living Areas" and "Cases of Electrical Resistance Tomography of Heartwood and Sapwood." Participants also actively engaged in practical exercises, focusing on the microscopic observation of cross-sections from key urban tree species within primary living zones.

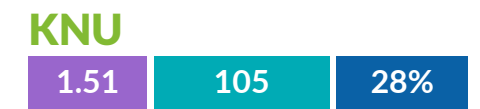
Furthermore, these institutions jointly hosted a seminar titled "Role and Future of Public Tree Hospitals" at KNU's Apple Research Center in the College of Agriculture and Life Sciences. The seminar comprised presentations covering "Tree Care System and Public Tree Hospitals," "Present and Future of Public Tree Hospitals," and "The Role of Public Tree Hospitals and Suggestions for Future Directions."



## Preservation of Dokdo Island's Drinking Water Source

KNU's **Research Institute for Dokdo and Ulleungdo**, along with National Assembly member Mr. Kim Byung-wook, co-hosted an academic conference at the National Assembly Building, titled "Restoration Project of Mulgol, the Spring of Life on Dokdo Island." The event focused on discussing Dokdo Island's history, natural environment, and the significance of preserving "Mulgol," its sole drinking water source. The conference was organized by the Dokdo Volunteer Garrison Commemoration Service Society and the Gyeongsangbuk-do office, with sponsorship from various government organizations, including the Ministry of Patriots and Veterans Affairs, the Cultural Heritage Administration, the National Research Foundation, and the Dokdo Foundation. Its goal is to share research findings about Dokdo Island and Mulgol and address future challenges like preservation and sustainable use.

## More SDG 15-related Data



- FWCI
- Total number of publications
- Percentage of publications in the top journals

Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic





# KNU For World Peace

KNU seeks to promote public discourse on unification through discussions on ways to enhance exchanges and cooperation with North Korea. The University is also supporting its Muslim student population against growing “Islamophobia,” working tirelessly towards diversity and inclusion.



“

*For our society and university to thrive sustainably, embracing diversity is not an option but an absolute necessity. Excluding Muslims, who represent approximately one-fourth of the global population, inhibits our ability to achieve true cultural diversity and social integration.*

”

**Kim Yukyung**  
Chair of the Diversity Council,  
College of Education,  
Department of Home Discipline



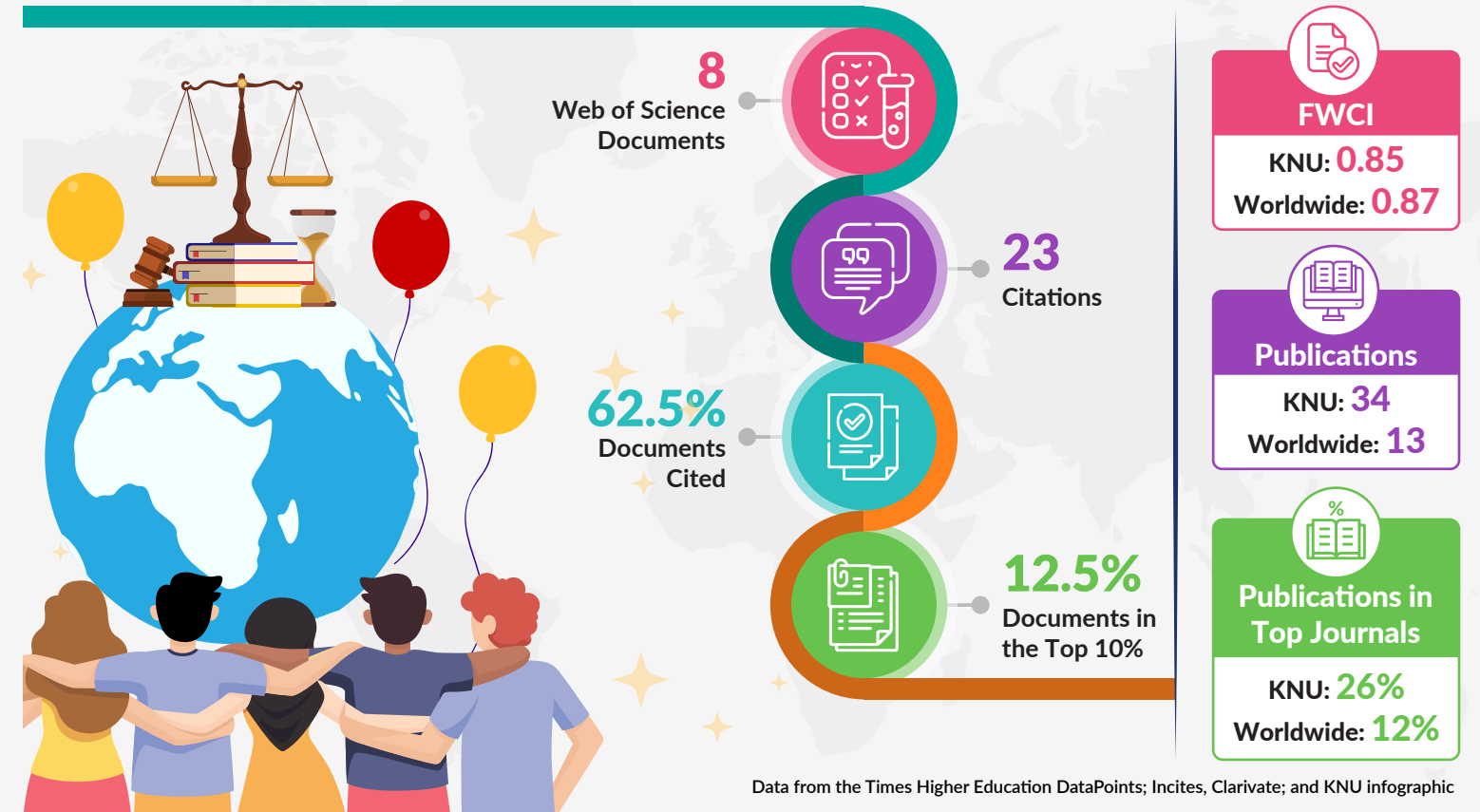
## 2022 Forum for Peace and Unification

In commemoration of the 10<sup>th</sup> anniversary of Unification Education Week, and in efforts to expand the consensus on unification within the local community, Daegu City hosted the **2022 Forum for Peace and Unification at the KNU Welfare Center**. This forum was jointly organized by Daegu City and the Institute for Peace Affairs, at the KNU Welfare Center.

During the Forum, Professor Choi Chulyoung at Daegu University explained the direction of national administration of the new administration regarding unification and presented the need for improving citizen awareness of restoring mutual trust through the expansion of exchange and cooperation in areas that urgently need it, such as healthcare and forestry.

Discussions on the importance of restarting the frozen North-South economic, cultural, and people-to-people exchanges led by local governments, as well as the importance of social integration with North Korean defectors took place.

## SDG 16-related Research Output



## March at KNU against Islamophobia

The “**KNU people who oppose Islamophobia**,” a group founded by KNU professors and students, organized a march against Islamophobia in response to the ongoing controversy surrounding the construction of the Daehyeondong Mosque. About 30 professors and students, carrying pickets with messages opposing Islamophobia and calling for a society in which diverse races and religions coexist in harmony, marched from the main building to the North Gate of KNU. The protestors chanted “Stop Islamophobia!” throughout the march.



# KNU's Global Partnerships for Sustainability

KNU recognizes that the world thrives on interconnected systems, where partnerships and collaborations are essential to tackle global issues. The University seeks to build on existing partnerships and forge new ones to encourage, empower, and support the changemakers of tomorrow.



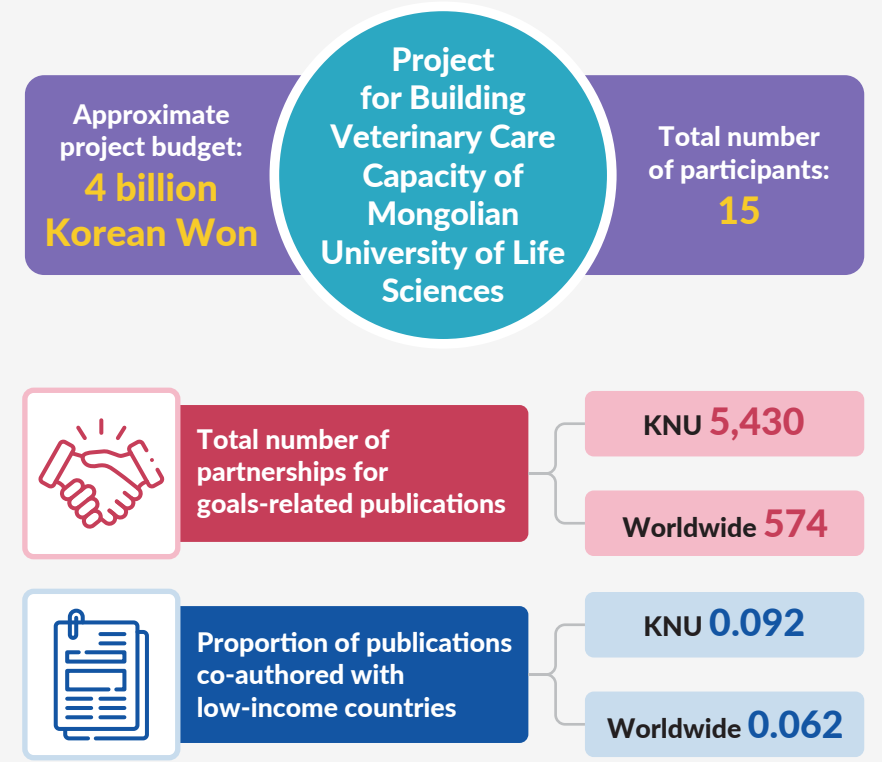
*It is important for pre-service teachers to make changes for themselves and others in their lives according to the 17 SDGs—taking this certification is an opportunity in this regard. We plan to expand the scope of this project to help pre-service teachers of various majors develop practical expertise in sustainable development education.*

**Professor Hyorim Lee**  
Department of Home Economics Education

## Strengthening Education for Sustainable Development

Since 2011, the Korean National Commission for UNESCO has been running the "Certification System of UNESCO Education for Sustainable Development (ESD) Official Project" to recognize and support exemplary ESD initiatives in various sectors of Korean society. In 2022, the "KNU ESD Changemaker Project" led by the Department of Home Economics Education at Teacher's College received official UNESCO ESD Project certification. This project involves pre-service teachers addressing issues related to the United Nations' 17 Sustainable Development Goals (SDGs). Certified for three years starting from June 2022, the program covers diverse topics including digital literacy, eco-friendly initiatives, animal rights protection, and email security management.

### SDG 17-related Research Output



Data from the Times Higher Education DataPoints; Incites, Clarivate; and KNU infographic

## Improving Veterinary Care

KNU's College of Veterinary Medicine conducted invitational training as part of an Official Development Assistance project to build veterinary care capacity at Mongolian University of Life Sciences. This project involves establishing an animal medical center in Ulaanbaatar, Mongolia, with medical equipment support and education in various areas, including animal diagnosis, treatment equipment management, disease prevention for farm animals, and infectious disease screening. It also includes field training and invitational training for Mongolian College of Veterinary Medicine professors and researchers in Korea.





# KYUNGPOOK NATIONAL UNIVERSITY AT A GLANCE



2022 QS World University Rankings

2022 National Customer Satisfaction Index (NCSI)

2022 THE World University Rankings

2022 QS Asian University Rankings

2022 Center for World University Rankings (CWUR)

2022 Best Global Universities Rankings by U.S. News and World Report

2022 Academic Ranking of World Universities by Shanghai Ranking Consultancy

**Ranked in the Top 10**  
for Corporate Preference and  
University Attended by CEOs

**7th** Attended by CEOs of the  
Top 100 Companies  
(2020)

**12th** JoongAng Ilbo University  
Ranking – Preferred by  
Corporate HR Managers  
(2020)

## Strong and Comfortable Facilities and Environments



**Carbon Zero  
Campus**



Photovoltaic and fuel cell  
power generation facilities  
**(28 billion KRW)**



EV charging facilities  
**(76 slow-speed,  
2 rapid-speed)**



Updated and renovated  
facilities  
**(19.1 billion KRW)**

## Student Comprehensive Support Center

- Academic consulting for freshmen
- Programs for preventing student dropout
- Visiting academic counselors
- Academic adaptation programs for international and transfer students
- On-campus student support programs
- Healthy and safe campus life
- Systematic psychological and career counseling



# Sustainable Development Goals at KNU (2022–2023) Snapshot of SDG Activities



Students from developing countries and less privileged backgrounds can learn at KNU



Research towards sustainable agriculture and food security is happening at KNU



New innovations and research in medicine, especially geriatric and pediatric, are developed at KNU



Volunteering programs and local forums bridge the education and resource gaps in Korea, via KNU



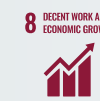
Females and student minorities are properly represented at KNU



Wastewater purification technology and clean energy from seawater is being produced at KNU



Landmark research in sustainable energy sources is going on at KNU



Entrepreneurial spirit among students and locals is bolstered with support from KNU



Organizations partner with KNU for regional innovation and encouragement to local companies



Career guidance and support for second-time entrepreneurs and multicultural students is available at KNU



Art, diversity, and a multitude of cultures are celebrated at KNU



Research and collaboration to produce efficient energy materials that can power devices sustainably happens at KNU



Research in Antarctica to understand changing sea levels and global warming involves KNU



Partnerships for marine sustainability are being forged with KNU



Systems to protect the life on land are being put in place at KNU



Religious minorities are welcomed and treated equally at KNU



Multiple partnerships to achieve the SDGs are being strengthened at KNU



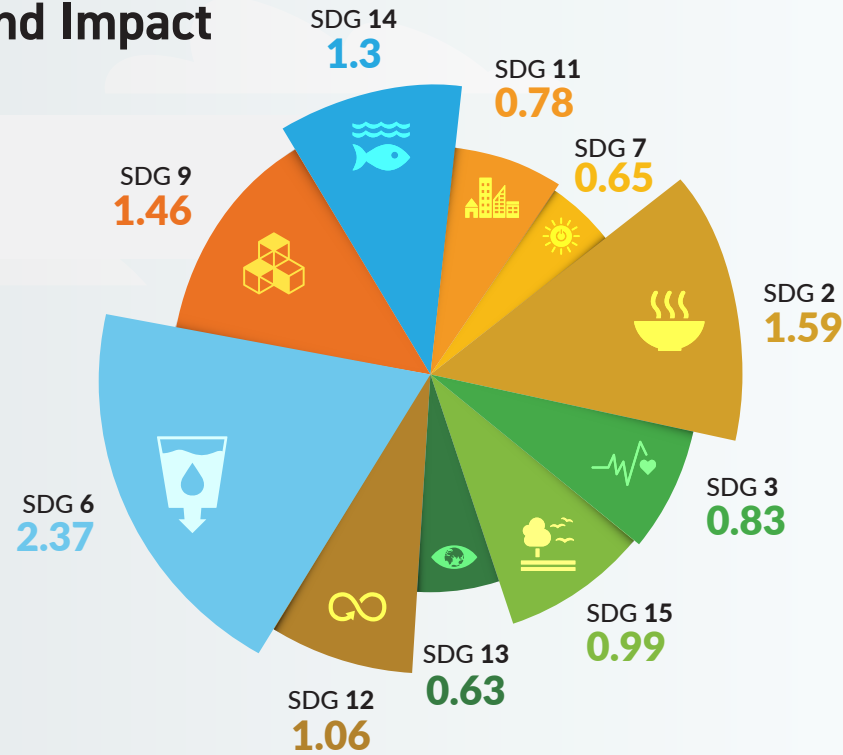
## Partners and Projects for the Goals

- The Gung Ok Gyun Scholarship Association
- ISU Abxis
- The Daegu-Gyeongbuk
- Regional Innovation Platform
- Community Contribution Center
- Business Incubation Center
- Kyungpook National University's Industry-Academic Cooperation Foundation
- University Museum Promotion and Support Program
- The Tree Diagnostic Center
- The Sustainable Agriculture Research Center
- KNU ESD Changemaker Project

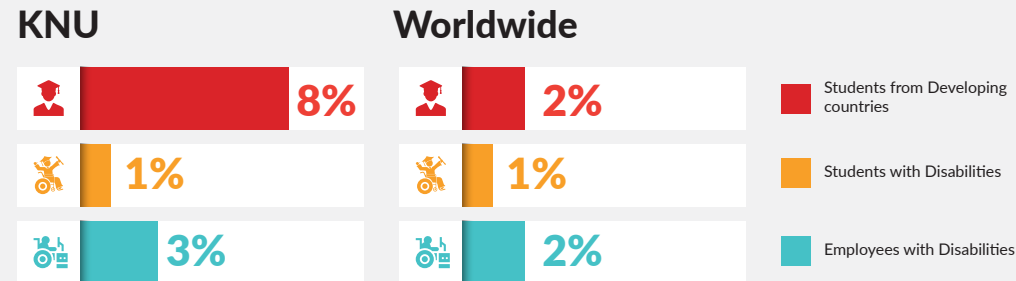
# Sustainable Development Goals at KNU (2022–2023)

## Research Performance and Impact

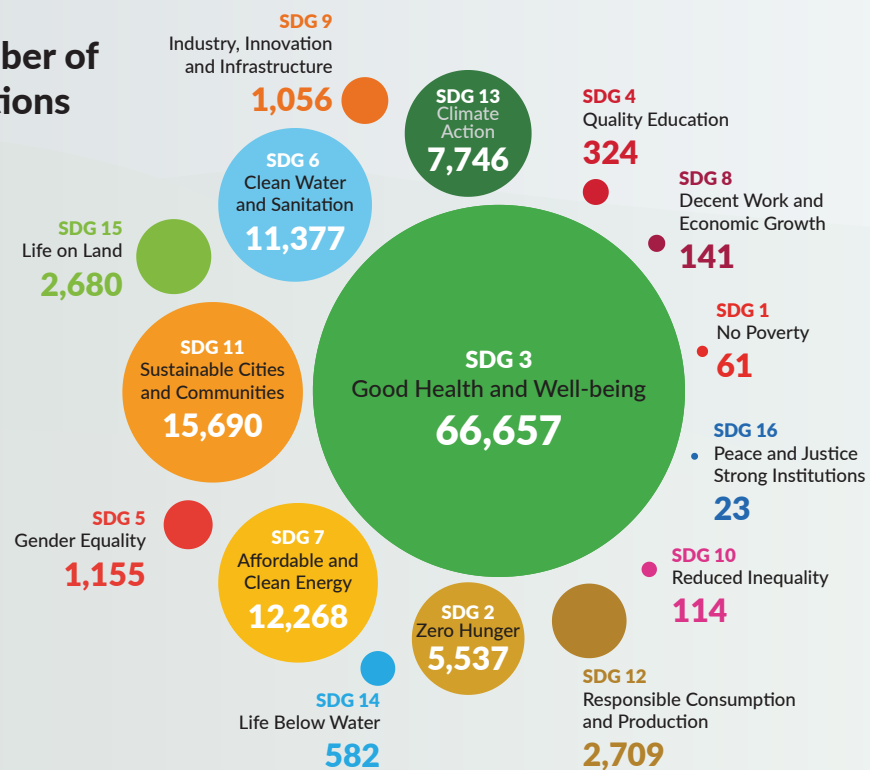
### Percentage of Published Documents in the Top 1%



### Percentage of Students/Employees from Marginalized Backgrounds



### Number of Citations



### Proportion of Female Authors



# KYUNGPOOK NATIONAL UNIVERSITY



Times Higher Education  
Impact Rankings  
2023

2



SDG2  
ZERO  
HUNGER

33<sup>rd</sup>

9



SDG9  
INDUSTRY,  
INNOVATION AND  
INFRASTRUCTURE

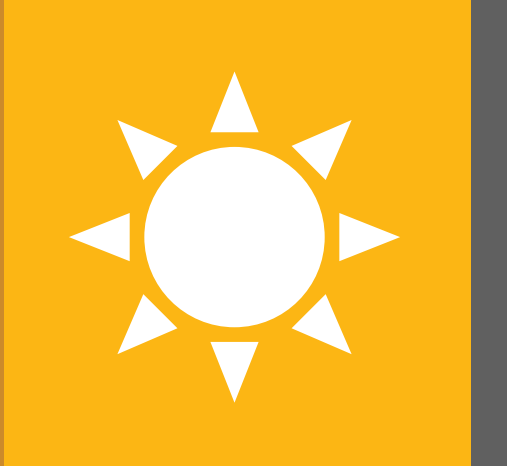
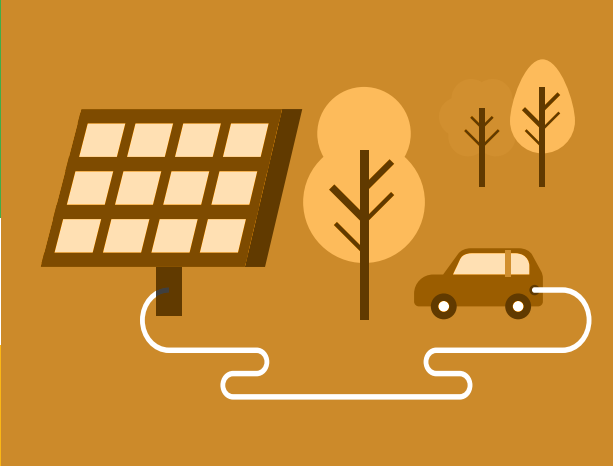
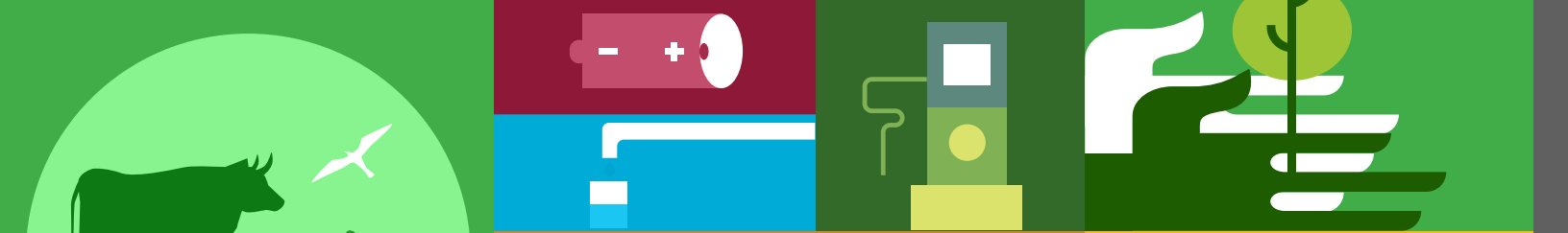
28<sup>th</sup>



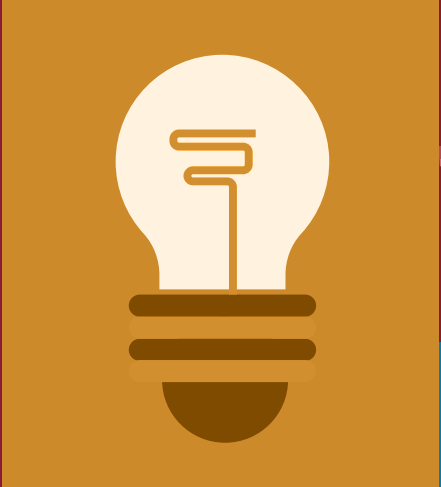
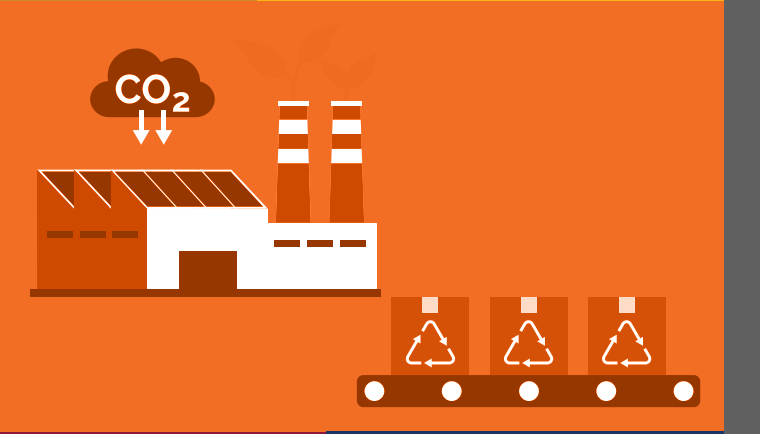
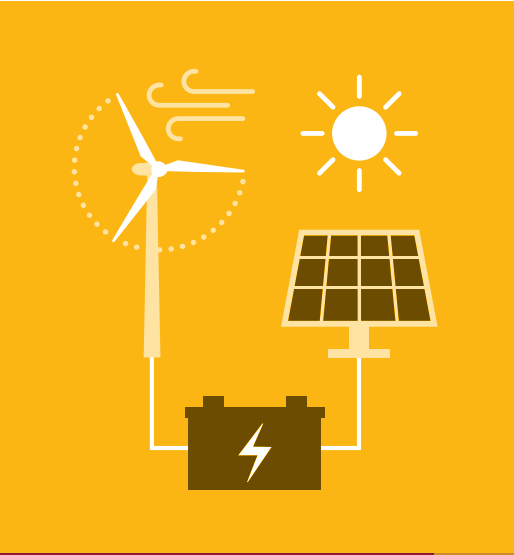
42<sup>nd</sup> in the world

@Daegu, South Korea





SUSTAINABLE DEVELOPMENT GOALS



ADVANCING THE SUSTAINABLE DEVELOPMENT GOALS

2023 REPORT

Elise W. SEO | Global Rankings Coordinator

in /kyungpooknationaluniversity

✉ eliseseo@knu.ac.kr