

# ADVANCING THE SUSTAINABLE DEVELOPMENT GOALS:

A Kyungpook National University Initiative



SUSTAINABLE  
DEVELOPMENT  
GOALS

**KNU** KYUNGPOOK  
NATIONAL UNIVERSITY







Advancing the Sustainable  
Development Goals 2020:  
A Kyungpook National University Initiative  
Woosung Elise SEO,  
Director of Global Rankings

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Kyungpook National University (KNU) is a prestigious institution, ranked #54 in the world and #1 among national universities in Korea in Times Higher Education (THE)'s World University Impact Rankings 2021.

Established in 1946, KNU has grown through the years founded on the pursuit of the educational philosophies of 'TRUTH', 'PRIDE', and 'SERVICE.'

KNU is the largest national university in Korea with a student body of over 36,000 local and international learners. Leading Korea in welcoming the Fourth Industrial Revolution, KNU has undertaken many future-oriented research projects and innovative initiatives in recent years. The University produces world-class research and exceptional specialists in fields such as engineering, information & communication, humanities, and business as well as history and the Korean language.

We keenly invest in the revival of the local economy by fostering local companies as competitive small and medium-sized enterprises. Through the progressive acceptance of new ideas and the provision of structural support, KNU offers a unique, revolutionary learning environment that promotes the development of a forward-looking society in a rapidly advancing world.







Keeping in mind the 17 Sustainable Development Goals established by the United Nations in 2015, KNU is heeding the urgent call to action with comprehensive and concrete measures.

Humanity is going through a phase that feels unprecedented, unique, and overwhelming. While the nature of the world’s problems may seem constant and largely unchanged, the generation of people experiencing these problems and hoping to build solutions is new.

An interdisciplinary approach is required to tackle the world’s problems and pave the way for a better future. With a student-centric approach and a focus on knowledge sharing and research, KNU encourages entrepreneurship and facilitates employment opportunities. The strategic location of the University near numerous industries has helped KNU globalize and become a leading institute that has partnered with private enterprises and the local government to build the first carbon-neutral campus in Korea.

This report sheds light on KNU’s commitment to service to the society, nation, and the global community at large with professionalism and educated practice. KNU hopes to continue to facilitate solutions to the universal problems of humanity, aided by excellent research and education.

- Shi-Chul LEE,  
Executive Vice President,  
Kyungpook National University





FWCI of SDG 1



**0.63**  
Worldwide  
Median  
**0.98**  
KNU

## TRAINING

Kyungpook National University's Institute of International Development was selected for two master's degree training projects promoted by the **Korea International Cooperation Agency (KOICA)**.

### March 2020 - December 2024

KOICA-Kyungpook National University Master's Degree Program in High Value-added Agriculture for ASEAN

**3 BILLION WON**

Will be conducted for 45 civil servants, businessmen, NGOs, and related field workers from six ASEAN countries

KOICA-Kyungpook National University Master's Degree Program in Agricultural Production

**2.5 BILLION WON**

Targets 60 public officials, university officials, and agricultural researchers from 24 developing countries

## MEDICAL VOLUNTEERING

Kyungpook National University Hospital has extended a hand of support to the Commonwealth of Independent States (CIS) for five years. The overseas medical volunteer group at Kyungpook National University Hospital treated eight children with congenital heart disease at the Center for Perinatology and Paediatric Cardiac Surgery in Kazakhstan.

The master classes of the medical volunteer group had a great influence on doctors from Tajikistan as well, who participated and attended training throughout the volunteer period.



## START-UP SUPPORT

**Kyungpook National University Start-up Farm Festival** - This festival was organised by Kyungpook National University's farming and start-up specialization business group under the auspices of the Ministry of Agriculture, Food and Rural Affairs and the Agriculture, Fisheries Food Education, and Culture Information Service. The event had various programs such as agricultural technology experience, exhibitions, and special lectures using VR (Virtual Reality), AR (Augmented Reality), and MR (Mixed Reality).

**Opportunities** - Kyungpook National University's start-up support group selected five promising start-ups through open recruitment and supported their participation in the 2019 Global Source Start-up Launchpad held at the Asia World Expo in Hong Kong. The five companies achieved export and investment consultations worth \$1.38 million through 69 business meetings with buyers from Asia, the United States, and Europe.

### Kyungpook National University Alumni Hyoseok Scholarship

**11 million won in scholarships to 11 undergraduate students in the first year of its establishment**

## SCHOLARSHIPS

There are over 100 scholarships at Kyungpook National University and about 64% of all the students get scholarships, and the amount is about 75 billion won yearly. For example, the Hyoseok Scholarship Foundation was founded by the late former chairman Un Hae Cho, who graduated from

Daegu Medical School, a predecessor of Kyungpook National University Medical School, and donated 1.3 billion won in 1995 to foster his alma mater.

The scholarship will be used to aid students who display a thirst for learning and continuing their education, despite their difficult family circumstances, to continue and complete their education.

Tae Won Seo, an economics graduate at Kyungpook National University, donated 100 million won in scholarship funds for future students at Kyungpook National University. Tae Won Seo also delivered 50 million won in development funds to POSTECH in 2009 and the Pohang Mayor's Association in 2014, respectively, to develop local communities and foster talented people.

Proportion of students receiving financial aid



**17%**  
Worldwide  
Median  
**34%**  
KNU

Publications related to SDG 1



**18**  
Worldwide  
Median  
**6**  
KNU

Proportion of publications co-authored with low income countries



**0**  
Worldwide  
Median  
**0.11**  
KNU



*Since 2014, we have produced 96 trainees from 37 countries, including in agricultural technologies, policy development, and agricultural processing distribution methods who can improve agricultural productivity in developing countries.*

- Director, Institute of International Research and Development

Source: THE DataPoints, THE Impact Rankings 2021 (hereinafter the same)





FWCI of SDG 2



1.18

Worldwide  
Median

1.32

KNU

## AGRICULTURE AND INNOVATION

Kyungpook National University established the Kyungpook National University Smart Agriculture Innovation Center to foster smart agricultural research. The Center has created significant connections and collaborations through business deals and agreements to work towards the Sustainable Development Goal of zero hunger.

The Innovation Center signed an MOU with Daegu Techno Park Bio Health Convergence Center to facilitate cooperation and collaboration among Smart Farm-related industries. The collaborators will apply promising core source technologies related to smart farms and support the commercialization of technologies through industrial, academic, associated, and government networking.

Publication  
in top journals

19%

Worldwide  
Median

21%

KNU

The Center also entered into a strong business agreement with two key organizations, the Artificial Intelligence Research Institute and Gyeongsang National University's Smart Farm Research Center, to strengthen the business cooperation between the various stages in smart farming. From the R&D stage of smart farms to the stage of securing source technologies, this agreement aims to facilitate the activation and commercialize the smart farm industry.

Another important agreement that the Center undertook was a business agreement with the National Food Cluster Support, linking industries to develop the food industry. Through this agreement, the two organizations will make joint efforts to foster human resources in the food industry and develop technologies for cluster tenants by utilizing their capabilities and infrastructure as much as possible.

## RESEARCH AND SOCIAL IMPACT

Kyungpook National University's Field Agricultural Machinery Development Research Center announced the sequential donation of resources towards agriculture, to be managed under the supervision of the Gunwi-gun Agricultural Technology Center.

Kyungpook National University was also selected for the "Field Agricultural Machinery Development Research Center" contest organized by the Ministry of Agriculture, Food and Rural Affairs in February 2016, and is promoting R&D projects to develop technologies for practical use of field farming machines and to foster excellent field-based professionals through cooperation between Gyeongsangbuk-do, Gunwi-gun, Kyungpook National University, and industry.

5 agricultural  
machines worth  
200 million won  
including  
100 horsepower  
and agricultural  
tractors, to the  
Gunwi-gun

Kyungpook National University Hospital acquired a re-certification of Social Contribution to Rural Development organized by the Ministry of Agriculture, Food and Rural Affairs and the National Movement for Rural Love, in recognition of its leading role in rural social contribution activities through urban and rural exchanges.

The Daegu-Gyeongbuk International Development Cooperation Center launched World Agri-Vision, a global NGO that supports domestic and foreign sustainable agriculture and rural areas, at the Wasung Hall of Kyungpook National University. The goal of World Agricultural Vision is to establish partnerships with various stakeholders to effectively support poverty mitigation and agricultural and rural development in developing countries.

Publications  
related to SDG 2

18

Worldwide  
Median

171

KNU

Formation of a cooperative group by the Daegu-Gyeongbuk International Development Cooperation Center to support the private sector's ability to participate in international development cooperation and contribute to sustainable development and poverty mitigation in developing countries.



### Notable Achievements

- Medical assistance to 7,500 farmers in Gyeongsangbuk-do Province by Kyungpook National University Hospital.
- A sisterhood relationship with Zaragok Village in Gumi City for the promotion of urban and rural exchanges through direct agricultural trade market and helping rural workers.
- Visiting educational donation project for young people in rural areas, to provide career exploration, hygiene, and prevention education for infectious diseases.
- Establishment of a nest in Masiri, Hyoryeong-myeon by Kyungpook National University Village, the nation's largest village of 113 generations of professors at Kyungpook National University, to harmonize with the local people through talent donation.
- Promotion of cooperation with Kyungpook National University in various fields, including the establishment of an eco-friendly agricultural education center at Kyungpook National University in 1997, the establishment of an eco-friendly agricultural research center in 2012, and the field agricultural machine development research center in 2016.



3 GOOD HEALTH  
AND WELL-BEING

## DENTAL

A dental health check-up was held at the Kyungpook National University School of Dentistry and Dental College Alumni Association. Kyungpook National University School of Dentistry will designate a dental health doctor to conduct dental check-ups on children, and the School of Dentistry Alumni Association will raise funds to support dental health promotion to inculcate regular oral care among children and to facilitate the business of dental care.

## DEMENTIA

Kyungpook National University Graduate School of Public Health was selected to be a university for "Dementia Prevention" by the Daegu Jung-gu Dementia Relief Center. This was organized by the Ministry of Health and Welfare and Kyungpook National University Graduate School of Public Health was the first of eight dementia relief centers in Daegu.

*We expect Kyungpook National University Graduate School of Public Health to successfully play its role as a dementia-overcoming university by dealing with in-depth information on dementia such as the status and problems of dementia.*

- Head,  
Jung-gu Dementia Relief Center

*Thank you for practicing various medical services at Kyungpook National University Chilgok Hospital so that the county people are not excluded from receiving medical benefits, and I hope that you will continue to provide medical services.*

- Governor,  
Gunwi-gun, Gyeongsangbuk-do

MEDICAL  
VOLUNTEERING

Gunwi County and Kyungpook National University Chilgok Hospital signed an agreement to improve public health care in 2017, and 100 local residents received medical services, including family medicine, radiology, rehabilitation medicine, and laboratory medicine. The Kyungpook National University Chilgok Hospital staff also visited Gunwi County and provided free medical services to local residents. In order to provide quality public health care services to the residents in Gunwi County, knowledge, resources, and experience are actively shared in an atmosphere of collaborative treatment.

COVID-19  
RESPONSE

Kyungpook National University Hospital protects the health of local residents and plays a pivotal role as a local hub and public medical institution. In response to the COVID-19 outbreak, the hospital has upgraded the pandemic response team, which was formed for the inspection and operation of the state-designated negative ICU bed, to the response headquarters.

Patients with COVID-19 symptoms are admitted to a screening clinic according to the response guidelines. Hospital admission to a state-designated hospital treatment bed is facilitated and health center results are notified to the necessary people. All patient-facing medical staff are also equipped with full-body protective clothing as a preventative and safety measure.

Kyungpook National University Hospital is doing its best to overcome the COVID-19 crisis, and also to manage infectious diseases more efficiently from the perspective of both operating local medical institutions and that of a designated COVID-19 hospital.

## REHABILITATION

Publications  
related to SDG 3



196

Worldwide  
Median

2474

KNU

Total  
project cost



48.6

billion won

The agreement on the management and operation of Gyeongbuk Regional Rehabilitation Hospital was signed under the auspices of Kyungpook National University Hospital and Gyeongsan City.

Through this agreement, it will be developed as a representative public medical hub hospital in the region via the deployment of excellent medical services, medical equipment, and excellent medical staff from Kyungpook National University Hospital, to promote excellent medical personnel and rehabilitation.

It will provide the best medical services to rehabilitation patients and communities, with cutting-edge rehabilitation equipment and swimming pool-sized hydrotherapy rooms, with 150-bedroom rehabilitation specialists, physiotherapists, work therapists, clinical psychologists, rehabilitation nurses, and social workers.

Percentage  
of graduates



15%

Worldwide  
Median

14%

KNU

**KNU, in partnership with national and local governments, strives to secure differentiated competitiveness by expanding opportunities for local hubs to serve as public hospitals and rehabilitative institutions for low-income families and disabled people to promote medical**







Publications  
related to SDG 4



24

Worldwide  
Median

38

KNU

Percentage  
of graduates



7%

Worldwide  
Median

8%

KNU

## ACCESSIBILITY

The library at Kyungpook National University experienced a rebirth with the **“Daegu/Gyeongbuk stronghold library vision declaration ceremony”**. The ceremony demonstrated Kyungpook National University Library’s commitment to being a key institution for university education and research support. Currently, the library also serves as an educational and cultural facility and a community knowledge information center in a knowledge-based society.

Kyungpook National University Library was built in 1982 and was extended in 2000 and 2017. It has 3.3 million books and is the third largest university in the country, with 1.5 million users.

*Kyungpook National University Library has become a new knowledge creation space that enables ICT-based free learning and research, active communication and collaboration, as well as the sharing of various cultural experiences. We will gradually open up the human/material resources owned by the library to the community and drive the development of education and culture in the community.*

- Head of Library,  
Kyungpook National University

*We will continue to expand and operate various high school-linked programs considering the level and aptitude of high school students. Kyungpook National University will also make efforts to establish a college entrance system that can contribute to high school education by communicating and cooperating with high schools and ensure fairness and reliability in college entrance.*

- Head of Admissions,  
Kyungpook National University

## FUN LEARNING

Kyungpook National University’s School of Earth System Science, Department of Astronomy and Atmospheric seeks to make astronomy fun and informative by organizing observations and lectures for college students as well as the general public.

The School of Earth System Science, Department of Astronomy and Atmospheric holds the Spring and Summer Night Sky Story for the general public eight times annually in the first and second half of the year at the science museums of Kyungpook National University. A public lecture is held in conjunction with public observation.

## SCHOLARSHIPS

Kyungpook National University announced the start of the sixth **“H-Jump School College Volunteer Corps”** activities with Hyundai Motor Group and the nonprofit educational social venture company, Jump.

H-Jump School College Student Education Volunteer Group is an educational sharing program that:

- Provides scholarships and quality mentoring to Kyungpook National University students.
- Provides employment to college students, who can work as teachers for teen groups from various backgrounds, including low-income families.
- Provides scholarships and opportunities to college students who receive mentoring from alumni of Kyungpook National University as well as executives and employees of the Hyundai Motor Group.

**Based on close cooperation with local education and welfare institutions, KNU’s H-Jump School College Education Volunteer Group is evaluated as a new social contribution model in which all participants grow by providing various educational opportunities to teenagers and college students.**

## EDUCATION SUPPORT

Kyungpook National University was selected for a **“High School Education Contributing University Support Project”** organized by the Ministry of Education for the fifth consecutive year. This project will select and support universities of excellence by evaluating the impact of college admission screening on high school education.

Kyungpook National University will conduct various programs to foster local talented people, including high school student experience programs, supporting free semester systems for middle schools, training on mock documents for teachers, and creative experience activities for farming and fishing villages.

## INCLUSIVITY

Kyungpook National University evaluates and supports underprivileged and foreign students from admission to education. The Daegu Local Economic Education Center of Kyungpook National University organized an **“Economic Camp for the Disabled Family”** for about 30 people with local disabilities and their families at the Daegu Organization for Parents of Disabled Persons. The camp was designed to promote the awareness of the social community and self-reliance of the disabled through experiences related to economic and financial lifestyles.

In addition to local elementary, middle, and high school students, various classes are held for as the disabled and elderly and in children’s centers, prisons, and nurseries where people are provided with real-life customized economic education.

Proportion of first  
generation students



35%

Worldwide  
Median

74%

KNU







## DIVERSITY

The Kyungpook National University Diversity Committee is a presidential advisory body established to protect and promote diversity in universities and to create a university culture that contributes to social harmony and development. It consists of a total of 15 professors, students, employees, and outside experts.

The Kyungpook National University Diversity Committee is responsible for collecting opinions on the protection of diversity, such as promoting gender equality, developing education programs to spread diversity values, and advising and proposing related policies.



*We have set up a diversity committee next to Seoul National University. We hope that the launch of the Kyungpook National University Diversity Committee will create a creative and healthy university community based on an understanding and respect for diversity.*

- Won-hwa Hong, President  
Kyungpook National University

## EDUCATION AND EQUALITY

The Daegu Women and Family Foundation signed a mutual exchange agreement with Kyungpook National University to provide **gender equality education** to prospective teachers, students of the Teachers College, as a first exchange project. The two organizations will work towards the expansion of gender equality education for college students and faculty and hold joint research and academic seminars to spread gender equality culture in the community.

*According to teachers' sensitivity to gender equality, students' perception of gender equality is learned differently. We will use this agreement as an opportunity to spread customized gender equality education for each target.*

- CEO,  
Daegu Women and Family Foundation

## TRAUMA AND WOMEN

The Korean Federation of Women Professors is a non-profit organization launched in 1998 with 4,500 female professors from universities across the country. In addition, female professors across the country have been engaged in establishing status through various activities, research, strengthening expertise in the promotion of rights and interests, and strengthening social contributions and capabilities. The Federation organized a 2019 Spring Academic Seminar at the Kyungpook National University Global Plaza, under the theme of "Social Trauma and Women."



Publications  
related to SDG 5



9  
Worldwide  
Median

21  
KNU

Percentage  
of female first  
generation students



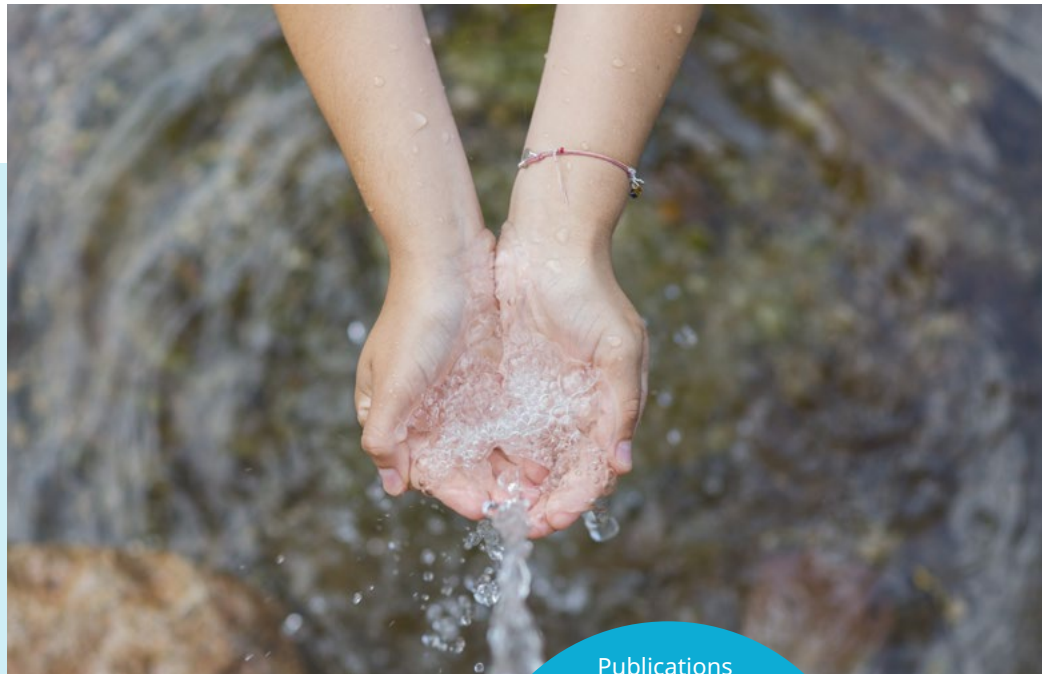
36%  
Worldwide  
Median

74%  
KNU

**In the modern society structure, the causes of trauma, methods of healing, and social alternatives were diagnosed and discussed from a female-centered perspective.**







## RESEARCH AND DEVELOPMENT

Kyungpook National University's Industry-Academic Cooperation Group and Daegu Environment Corporation signed an industry-academic cooperation agreement at Kyungpook National University's Global Plaza to foster talent in the water industry and strengthen research capabilities. Through this agreement, the two organizations will make joint efforts to drive industrial growth, increase research efficiency through mutual technology exchange, and lay the foundation for joint development in the water industry.



The development of Daegu's water industry is expected to accelerate as the government has also been actively supporting research and development through a solid infrastructure called the National Water Industry Cluster.

The cluster is expected to develop Daegu as a central city in the domestic water industry. Through digital analysis technologies by Daegu National Water Industry Cluster tenant companies, they produce water sensors 10 times more accurate than U.S. and Japanese products. The groundbreaking innovation led to their selection as an innovative water company by the Ministry of Environment.

Publications related to SDG 6



**34**  
Worldwide Median  
**238**  
KNU

## LEADERSHIP

Kyung Seok Min, a former professor of Environmental Engineering at Kyungpook National University, was appointed as the head of the Korea Institute for Water Technology Certification, which will be established in the Daegu Korea Water Cluster. Min, who was born in 1952, is a regional expert who is well-versed in the water field, and is said to be aware of various regional issues, including the relocation of Daegu's intake center and controversy over the inflow of heavy metals.

A one-stop support system called 'Technology Development, Human Resources, Verification, and Domestic and Foreign Entry' is expected to be completed if the Korea Institute for Water Technology Certification opens next month.

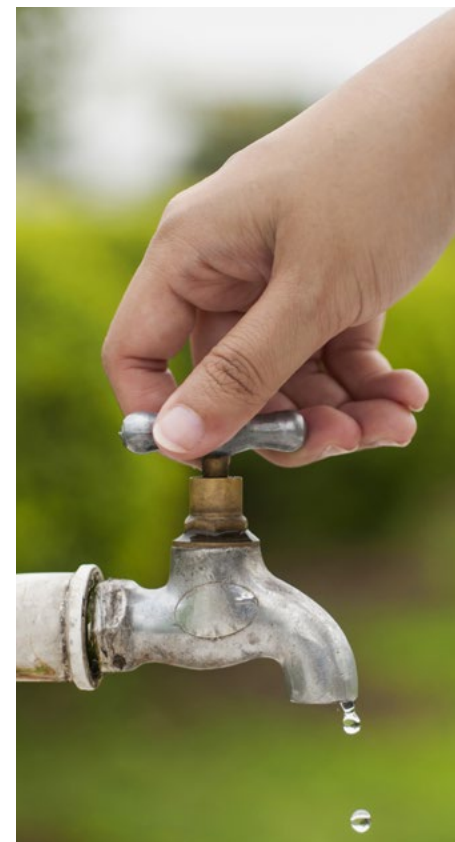
Publications in top journals



**21%**  
Worldwide Median  
**45%**  
KNU

*"As the water industry cluster is first established in Korea, we need constant attention from the Ministry of Environment, the National Assembly, Daegu City, citizens, and the community. I will do my best to play my role."*

- Head,  
Korea Institute for Water  
Technology Certification



## INNOVATION

A research team at Kyungpook National University has developed an advanced water treatment system that can break down naproxen. Existing advanced oxidation processes require high processing costs and energy and often remain in soil and water systems with low efficiency due to the incomplete release of residual drugs such as naproxen. Chang Min Park, a professor of Environmental Engineering at Kyungpook National University, and Yeo Min Yoon, a professor at South Carolina University, developed a technology that can break down 99.9% of naproxen in an hour.



- Professor Chang Min Park

*"If we actively utilize the next generation of advanced water treatment technology developed this time, we can drastically reduce the existing huge cost, time, and energy required to deal with naproxen remaining in the environment. In particular, the study is expected to be applied to the removal of other aqueous residual drugs."*

FWCI of SDG 6

**1.06**  
Worldwide Median  
**1.72**  
KNU

Hyun Woong Park, a professor of Energy Engineering at Kyungpook National University, has identified the principle of photocatalytic water decomposition and hydrogen generation, which till now was unknown, through joint research with Pohang University of Science and Technology. By finding new facts about photocatalytic water decomposition reactions, he revised the principle of photocatalytic water decomposition and hydrogen generation, which has been taken for granted in related research fields, and proposed new possibilities to increase hydrogen production efficiency.



- Professor Hyun Woong Park

*"Most research on photocatalytic hydrogen generation focuses only on improving the fragmented performance of photocatalyst materials, and the understanding of photocatalytic water decomposition itself is largely overlooked. We hope that the new knowledge of photocatalyst materials and water decomposition revealed as a result of the study will contribute to research on high-efficiency photocatalytic water decomposition and hydrogen generation."*

Professor Hyun Woong Park's research was conducted with the support of National Research Foundation of Korea mid-career research team support project and the development of technology to respond to climate change. The findings were published in the February 19 issue of *Nature Communications*, a renowned international academic journal.





FWCI of SDG 7

1.24  
Worldwide  
Median

1.36  
KNU

## RESEARCH

Kyungpook National University is stepping up efforts to research renewable energy and foster industries. The University's research capabilities in every field of renewable energy are already recognized locally and abroad. The School of Energy Engineering of Kyungpook National University ranked third among universities, with 8.11 international papers per professor and 4.77 international papers.

Kyungpook National University plans to form a key research group on hydrogen energy research on storage, utilization, and reduction from the base of hydrogen energy, to promote production and establish related cooperative subjects. Based on these strengths, it will actively cooperate with local companies to contribute to the development of the hydrogen energy industry in the future.

*To become a leading country in the hydrogen economy, expanding the number of researchers and strengthening the technology is essential. If this cooperation is achieved, it will contribute to Korea's next-generation technology.*

- Dean, KNU Strategy & Finance

Publications  
in top journals

23%  
Worldwide  
Median

34%  
KNU

## KEY DEVELOPMENTS

The Department of Chemistry of Kyungpook National University has received support from the Ministry of Education, and ranked first in the panel. Professor Sung Hwa Jung, a member of this department, was included in the '2018 to 2020 Highly Cited Researchers' list released by Clarivate Analytics, placing him in the leagues of renowned researchers around the world. His research deals with the process of selectively removing harmful substances such as pesticides, dyes, and medicines from water and returning the ecosystem to its original place. It also focuses on removing sulfur and nitrogen from petroleum, and in 2016, it succeeded in developing desulfurized adsorbents that were resistant to moisture.



Hyo Jung Cha, a professor of Hydrogen and Renewable Energy at Kyungpook National University, conducted a joint study with Professor James R. Durrant of Imperial College, London, to determine the relationship between material energy and charge life in organic solar cells in order to correct charge separation in organic solar cells and suggest new possibilities for increasing energy efficiency.

Hyun Woong Park, a professor of Energy Engineering at Kyungpook National University, is a representative researcher in the field of alternative energy using solar power. Professor Park is working on designing photocatalysts used to develop alternative energy sources such as solar energy, carbon dioxide, and hydrogen.

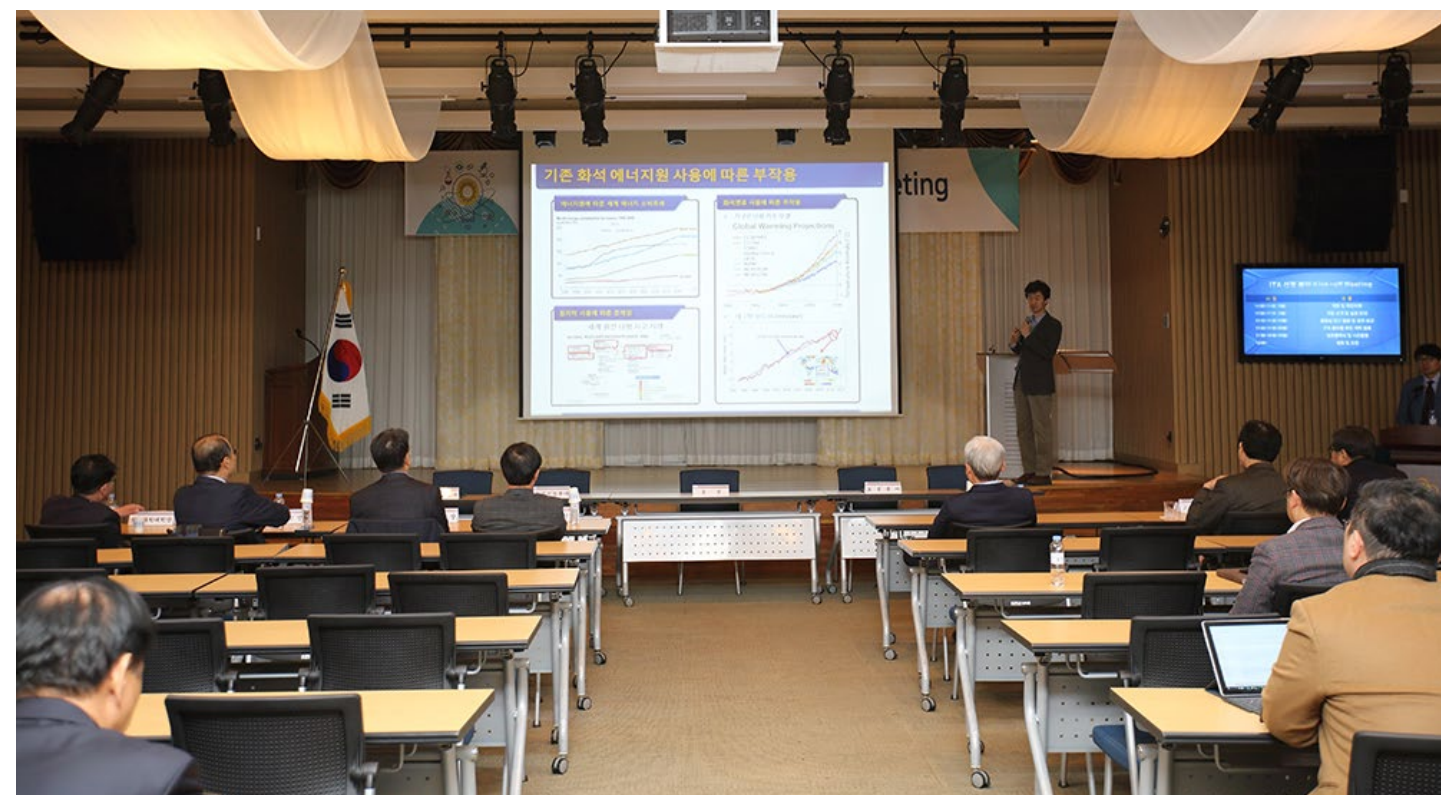
Publications  
related to SDG 7

90  
Worldwide  
Median

704  
KNU

Jin Hyuk Bae, a professor of Electronic Engineering at Kyungpook National University, has developed a technology to generate electricity in weak intensity light such as indoor lighting by utilizing excellent light absorption characteristics of organic semiconductors. The technology developed by Professor Bae can produce electricity from solar cells even with weak power and can be used as a permanent power source 24 hours a day.

Sang Il Choi, a professor of chemistry at Kyungpook National University, is conducting research on synthesizing finely controlled precious metal nano catalysts and applying them to hydrogen fuel cells and hydrothermal devices. His research has garnered attention for its possibilities to greatly improve the performance of existing hydrogen fuel cells while also reducing production costs, which can serve as an opportunity to realize fuel cell popularization.







Publications related to SDG 8



**28**  
Worldwide Median  
**95**  
KNU

## DEVELOPMENT

The Daegu International Development Cooperation Center was established under a three-way business agreement between Kyungpook National University, Daegu City, and the Korea International Cooperation Agency (KOICA) to promote international cooperation projects in Daegu. The center changed its name to Daegu Gyeongbuk International Development Cooperation Center and expanded its work area and scope of activities to strengthen its influence on ODA (Official Development Assistance).

The center will collaborate with institutions and organizations in Daegu and North Gyeongsang Province to discover and support ODA projects in various fields. The center also plans to strengthen its capabilities for promoting international cooperation projects using overseas networks.

*"If ODA projects are discovered and participated in in Daegu and North Gyeongsang Province, it will help raise international awareness of Daegu and North Gyeongsang Province and develop regional industries."*

- Head,  
Daegu Gyeongbuk International Development Cooperation Center

Percentage of employees on secure contract



**80%**  
Worldwide Median  
**100%**  
KNU

## OUTREACH

The Kyungpook National University Institute of Economic Education, established last year as the first university-affiliated institute specializing in economic education, is entrusted with being the Ministry of Strategy and Finance's regional economic education center from 2018 to 2020.

The Institute will organize the 38th Korea Economic Education Association conference under the theme of "The Reality of Korean Economic Education: Students, Textbooks, and Classes," and is expected to be attended by Korean high school teachers, teachers, and shift professors, as well as Daegu Future Education Institute, Korea Development Institute, and Meiji University.

The Kyungpook National University techno-park was selected as the host organization for the "2021 Start-up Leap Package Support Project" contest by the Ministry of SMEs and Start-ups, and the Daegu Metropolitan Government secured 9.9 billion won in state funds as a result. KNU will receive a total of 10.2 billion won, including 300 million won in municipal expenses, to support 30 companies annually in the information, telecommunication, electricity, and electronics sectors.

*"We hope that the case analysis of Korean economic education and various other discussions will revitalize economic education outside of school in a rapidly changing environment."*

- Director,  
Economic Education Research Institute

KNU has been selected to receive funding from the 2021 Open-Lab Support Project for Local Industry-Affiliated Universities by the Ministry of Science and ICT, and the Commercialization Promotion Agency for R&D Outcomes, for the second consecutive year.

Publications in top journals



**16%**  
Worldwide Median  
**22%**  
KNU

Funding secured by KNU



**10.2**  
billion won in state funds

The Open-Lab Support Project designates university laboratories as open labs to establish a technology commercialization platform that customizes and supplies technology and human resources to local industries.

KNU will receive approximately 1.8 billion won to successfully develop this platform and support local industries with the advanced skills, techniques, and specialization of the open labs. Through their establishment, KNU plans to contribute to the promotion of strategic industrial planning and the direction of policy-making for the development of core industries within the region.







## SUPPORT

Kyungpook National University Industry-Academic Cooperation Foundation signed a business agreement with DGB Daegu Bank and Kyungpook National University Holdings Co., Ltd. to revitalize local technology start-ups. The agreement will also support the discovery and growth of related companies that will lead the fourth industrial revolution. It will facilitate joint efforts to create jobs through the growth of local technology start-ups and strengthen the competitiveness of local industries.

Established in June 2013, Kyungpook National University Holdings currently operates 23 subsidiaries. The company has been selected as the organizer of the "R&BD Support Project", a subsidiary of a technology holding company promoted by the Ministry of SMEs and Start-ups and the Korea Institute for Advancement of Technology. It will receive about 3.9 billion won in business expenses for three years to help its subsidiaries develop and mass-produce products.

Kyungpook National University Holdings plans to support research and development and commercialization of cardiovascular treatments, human protective clothing, cognitive rehabilitation systems, and water purification processing devices currently being made by its subsidiaries.

*"We expect this agreement to contribute to the advancement, diversification, and revitalization of technology financing. DGB Daegu Bank will take the lead in revitalizing the local economy by promoting various support projects to strengthen support for small and medium-sized businesses in the region."*

- Head,  
Daegu Bank

Publications  
related to SDG 9



**48**  
Worldwide  
Median  
**238**  
KNU



*"We will actively support subsidiaries to successfully lead technology commercialization based on the excellent technology and infrastructure of Kyungpook National University and further make efforts to become a technology commercialization platform in Daegu and Gyeongsangbuk-do."*

- CEO,  
Kyungpook National  
University Holdings

*"Kyungpook National University Campus Innovation Park will be reborn as an innovation space for companies to grow and will turn into a regional hub for industry-academic cooperation."*

- Mayor,  
Daegu  
Metropolitan  
City

Number  
of tech transfers  
at KNU over last year



**148**

Number  
of patents citing  
university research



**53**  
Worldwide  
Median  
**1506**  
KNU

## TECHNOLOGY & INNOVATION

According to the Ministry of Education's university information disclosure, the number of technology transfers at Kyungpook National University totalled 148 last year, with profits of 2.93 billion won.

Technology transfer revenue is generated by transferring technology, a research and development achievement of universities, to companies, and is one of the main measures of research and technology competitiveness of universities.

Kyungpook National University is striving to establish a virtuous cycle of technology commercialization by strengthening its dedicated organization for technology commercialization in universities, hiring professionals, and revitalizing technology holding companies.

The "Kyungpook National University Campus Innovation Park Project" has begun in earnest to create an urban high-tech industrial complex using the site on the campus of Kyungpook National University.

Once the Kyungpook National University Campus Innovation Park Project is established, local companies are expected to grow and develop together with the university's research capabilities and excellent youth manpower. Young people also have the advantage of being able to do corporate internships and field training at the same time as studying in urban college campuses with excellent residential conditions.







“Our hospital has a lot of experience in public health projects, including cooperation with public health care institutions and private welfare facilities in Daegu. We will do our best to help people with disabilities living in areas with poor medical infrastructure.”

- Head,  
Kyungpook National University Chilgok Hospital

## SUPPORT

Since 2008, Kyungpook National University has been operating a support center for students with disabilities to facilitate various support systems and specialized programs to strengthen their capabilities and enable them to enjoy a fruitful college life. Kyungpook National University was selected as the best university in the “2020 Evaluation of Education and Welfare Support for Disabled Students” conducted by the National Institute of Special Education. In this evaluation, Kyungpook National University received nearly perfect scores, especially in the teaching and learning areas.

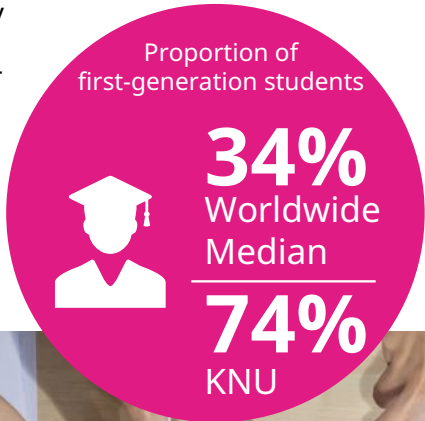
An official at the Center for Students with Disabilities in Kyungpook National University won the commendation of the Minister of Employment and Labor for the Disabled at the 2021 Employment Promotion Competition. Celebrating its 31st anniversary this year, the Employment Promotion Competition is an event that rewards business owners who contribute to promoting the employment of persons with disability.

The Regional Health and Medical Center for People with Disabilities, which is how the Kyungpook National University Chilgok Hospital will be rechristened soon, will strengthen health rights and establish an efficient health management system for people with disabilities in Daegu and Gyeongbuk. It also aims to utilize the expanded social welfare facilities and medical institutions in Daegu City, reduce the number of vulnerable people in healthcare, and train specialized personnel for people with disabilities.

## EDUCATION

Kyungpook National University has been designated as Daegu Local Economic Education Center by the Ministry of Strategy and Finance in 2020. In addition to empowering local elementary, middle, and high school students, the Center aims to provide economic education to various demographics such as people with disabilities and the elderly, and extend its services to children’s centers, prisons, and nurseries.

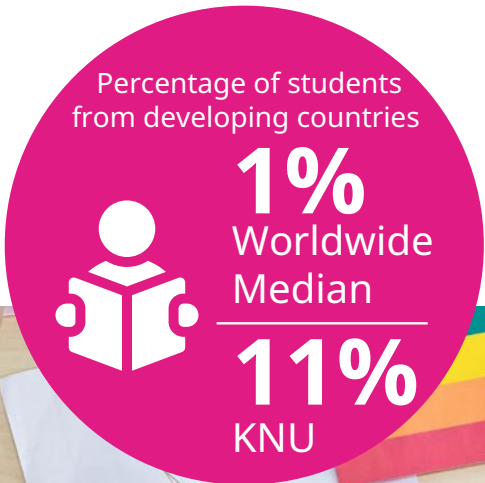
“Government Invitation Foreign Scholarship Program” is the government’s representative international scholarship program to recruit and select talented people from all over the world, establish international networks, and foster global talent through grant of scholarships. Graduate scholarship students invited by the government will receive scholarships from the Korean government, including full monthly living expenses, tuition fees, semester research fees, and medical insurance premiums during their school years.



## MENTAL HEALTH

Kyungpook National University Student Counselling Center has been selected as an excellent example of the Ministry of Education’s “Promoting Suicide Prevention for College Students” by evaluating the performance of college students’ suicide prevention efforts.

The Kyungpook National University Student Counselling Center has been conducting a full mental health survey on freshmen every year to provide early counselling for people in need of psychological support, and has established a network for responding to the mental health concerns of university students. It has also been recognized for best practice adoption based on various projects such as fostering gatekeepers for suicide prevention, holding special lectures on suicide prevention and meaningfulness in life, and providing customized psychological support.







## HERITAGE

As part of the **'2019 University Museum Promotion Support Project'** organized by the Ministry of Culture, Sports and Tourism, and the Korea University Museum Association, Kyungpook National University Museum of Natural History and Chilgok SoopCheWon operated an educational program on **"Hawk Hunting,"** which is an important part of Korean traditional culture. It was facilitated to explore the ecologically friendly capture, training, and radiation systems of traditional hawk hunting. The program was organised as a means of promoting cultural enjoyment and awareness and has been conducted seven times so far.

The Kyungpook National University Museum will hold a special lecture by six cultural heritage experts as part of the Conservation and Protection of the Museum program of the 2020 University Museum Promotion Support Project. These experts from various fields will deliver lectures on the preservation and protection of our cultural heritage.

*"It was a unique opportunity to experience our traditional culture in our forest, which received a great response from participants. As a museum of the National University of Korea, we will continue to develop and operate various programs that can be shared with the local people."*

- Director,  
KNU Museum of Natural History

Publications  
related to SDG 11

44  
Worldwide  
Median  
179  
KNU

## MUSIC & ART

The **"2019 Kyungpook National University New Year's Concert"** was organized by Kyungpook National University for the citizens of Daegu and Gyeongbuk to mark the arrival of the New Year. This concert, which began in 2008, is becoming a representative cultural event of Kyungpook National University with its colourful and high-quality performances. It provided a variety of attractions that transcended traditional and modern times to the appreciation of an enthusiastic audience.

The **"Four Universities Union Concert for Local Youth,"** hosted by Kyungpook National University was a free concert designed to provide local universities with cultural networks and high-quality music appreciation opportunities for teenagers.

*"We planned this concert to create various opportunities for teenagers in the UNESCO music creation city of Daegu to experience classical music. I hope this concert will not only help local teenagers develop their knowledge of music, but also help them nurture their dreams about the future and encourage their passion."*

- Head,  
Kyungpook National University's,  
External Cooperation and Public  
Relations

Publications  
in top journals



17%  
Worldwide  
Median  
20%  
KNU

FCWI of SDG 11



1.1  
Worldwide  
Median  
1.82  
KNU

Kyungpook National University Art Museum will conduct an art therapy atelier, which is an art therapy experience program for local people. This program has been devised to relieve stress among citizens and students who are facing pandemic fatigue and to help them return to a healthy daily life. To prevent the spread of COVID-19, the Kyungpook National University Art Museum will operate the program with a small number of elite programs and will thoroughly comply with the guidelines for preventing the spread of the coronavirus.

## EDUCATION

Kyungpook National University hosted a two-day experience camp within the campus, which enabled high school students nationwide to experience a snapshot of college life. The camp introduced the students to the excellent educational environment and specialized curriculum of Kyungpook National University through experiential activities.

As part of an agreement between Kyungpook National University Library and Art Library, the only art library in Korea, the **"Library Book"** exhibition was organised. It is a collection of books compiled by the Art Library, and featured more than 40 books and titled artworks by famous artists and architects such as Piet Mondrian, Leonardo da Vinci, Anthony Gaudi, and Frank Gary.

Kyungpook National University's library is a complex cultural space that drives the development of education and culture in the community. This reflects KNU Library's commitment to serve as an educational and cultural facility in a knowledge-based society.







## SUSTAINABLE WASTE DISPOSAL

The world’s annual dye production is approximately 1 million tons, resulting in a huge amount of colored wastewater. Through international joint research with Saudi Arabia’s King Saud University and others, Woong Kim, a professor at the Department of Environmental Engineering at Kyungpook National University, has developed a photocatalyst that can decompose more than 98% of colored dye wastewater within an hour.

This photocatalyst is an iron-organic hybrid composite material doped with molybdenum disulphide. It is special in that it can function under both ultraviolet and visible light conditions, driving a sustainable technique called the dual photocatalytic technology. The results of the study are published in the *Journal of Hazardous Materials*.



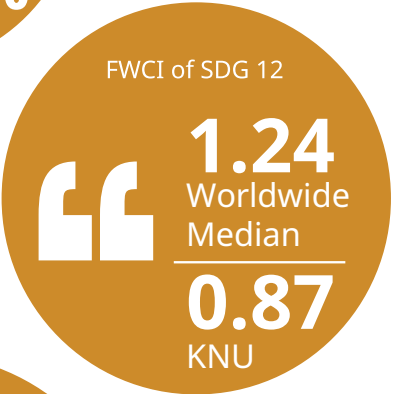
## DECOMPOSING PLASTICS

In other research, Kyung Jin Kim, a professor at Kyungpook National University, and Sang Yup Lee, a professor of biochemical engineering at the Korea Advanced Institute of Science and Technology, have identified the three-dimensional structures of PETases, compounds that break down PET (synthetic plastic).

The team identified the structures of enzymes with superior PET decomposition capabilities than existing known enzymes. They further succeeded in figuring out the mechanisms behind the decomposition activities of these enzymes and then developed mutant enzymes with increased PET decomposition activities.

Their findings are published in the online edition of the international journal, *Nature Communications*. This research is important to the sustainable plastic industry because it can accelerate research on eco-friendly plastic recycling using microorganisms.

This research was carried out through a study on the “System Metabolism Source Technology Development Task for Biorefineries”, as part of the Climate Change Response Technology Development Project supported by the Ministry of Science and ICT, Korea.







TOWARDS CARBON NEUTRALITY

Kyungpook National University is the first Korean university to declare the creation of a carbon-neutral campus by 2030. In May, Daegu City, Hyundai Electric, and Taeyoung Construction signed a business agreement for the implementation of the “University Campus Carbon Neutral Space Creation Project” estimated at approximately 2 trillion won. The plan is to generate requisite power for the campus, which includes residential dormitories, commercial facilities, research institutes, and sports facilities, through fuel and solar cells, followed by the creation of a system of microgrids to reduce electricity consumption. All of this would necessitate the creation of an innovation park, first. An energy convergence carbon-neutral talent training center is being proposed, as well as the lifting of regulations to enable commercialization of electricity and installation of power generation facilities.



“To ensure our future generations inherit a hospitable and good place to live in, we must attach great value on saving the Earth. To this end, Kyungpook National University will create a carbon-neutral campus that will make the actual emissions of carbon dioxide “0” for the first time in Korea through concrete practices. However, there is definitely a limit to one university’s achievable objectives. Fortunately, Hyundai Electric and Taeyoung Engineering & Construction have decided to actively invest in helping to accomplish our goals. Daegu City will also generously support us in terms of policy. Kyungpook National University will play a leading role in making carbon neutrality a reality, thereby transforming not only this region, but also Korea.”

- Won-hwa Hong, President  
Kyungpook National University

RESEARCH

A hydrogen complex construction project has currently been undertaken by the Korea Gas Corporation and will include a hydrogen research center, a hydrogen distribution center, a charging demonstration project, education and public relations, etc. The Kyungpook National University has created a cooperation plan with this project, to work towards Industrial Technology Advancement in hydrogen energy.

With extensive participation, the combined team of officials and professors will study hydrogen energy generation, storage, utilization, and saving technologies, and establish related cooperative subjects. Based on these strengths, Kyungpook National University will actively cooperate with local companies to contribute to the development of the hydrogen energy industry in the region

According to the Dean of Planning and Coordination Division of Kyungpook National University, expanding the number of researchers and strengthening the technology is essential to become a leading country in the hydrogen economy, and if this cooperation is achieved, it will contribute to Korea’s next-generation technology.



A research team led by Professor Sung Hwa Jhung of the Department of Chemistry at Kyungpook National University has discovered that coating zeolite on fibers such as cotton or polyester can more than double the efficiency of removing fine dust from fibers.

Professor Jhung’s research team has developed a filter manufacturing-based technology that introduces a small amount of zeolite into fibers and improves the efficiency of removing fine dust in fibers more than twice that of cotton. Zeolite has the advantage of being relatively harmless and easy to obtain enough to be used as an additive for animal feed or food packaging.

Based on the results of this study, the research team plans to conduct follow-up studies such as optimizing filters, field tests under actual conditions, and solving problems.

The study was conducted as a mid-sized research support project promoted by the Ministry of Science and ICT and the Korea Research Foundation.







## PRESERVING SMALL HORSE SHELLS

Horse shells are a very important species for preserving freshwater creatures. They function as a shelter to protect the eggs of freshwater fish. Small horse shells are native to Korea and have great value. There is a need for their preservation.

A team led by Professor Ui Wook Hwang of the Department of Biology Education at Kyungpook National University has newly discovered that horse shells living around the Korean Peninsula originated in the Yellow River area of China.

Professor Hwang’s team analyzed the mitochondrial DNA sequences of 86 horse shells and 83 small horse shells living in eight domestic water systems (Bukhan River, Namhan River, Geum River, Mangyeong River, Yeongsan River, Chimjin-gang, Seomjin River, and Nakdong River) and tracked their origins.

“With the signing of the Nagoya Protocol in 1992, it has become official that all economic benefits derived from biological resources in a particular country should be shared with bio-resource holding countries. Management and preservation of major species that are expected to be economical are linked to future national competitiveness. The results of this study are expected to be used as important basic data for the management of biological resources of freshwater shellfish in Korea.”

- Professor,  
Department of Biology Education,  
Kyungpook National University

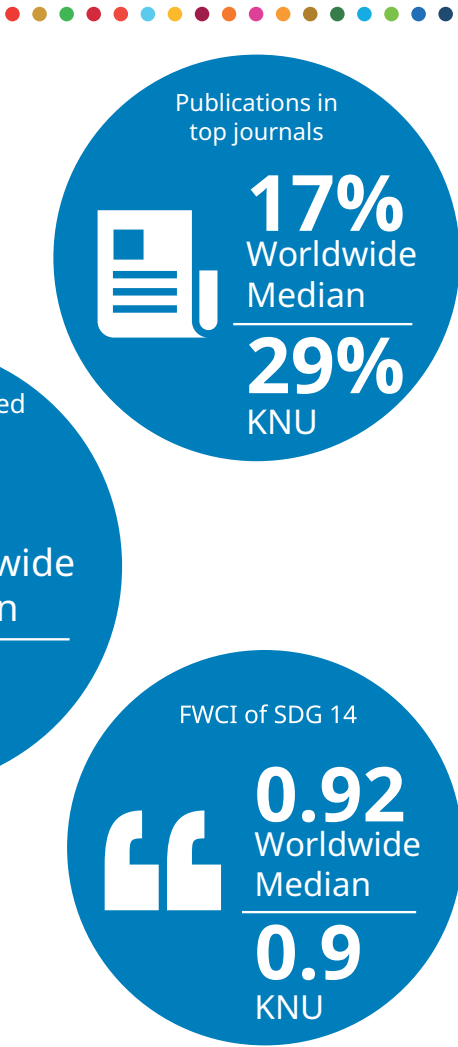


As a result of the study, Professor Hwang’s team predicted that horse shellfish were widely distributed in the ancient Yellow Sewage System flowing from China to the Korean Peninsula about 160 million years ago when Korea’s West Sea did not exist and the eastern and western parts of the Korean Peninsula were connected to one continent.

In addition, it was confirmed that the world’s only indigenous species living exclusively in Korea, small horse shells, appeared from horse shells that lived around the Korean Peninsula about 28 million years ago at the end of the Cenozoic Palae. Since then, horse shellfish have differentiated into endemic species as they settled in each region of East Asia in the early Cenozoic period 12 million years ago.

The study, conducted with support from the Ministry from Environment’s Nakdonggang National Institute of Biological Resources, was published on October 6 in *Scientific Reports*.

In addition to this, a study conducted by Professor Woong Kim from the Department of Environmental Engineering at Kyungpook National University, along with King Saud University, Saudi Arabia, led to the development of a photocatalyst that can decompose more than 98% of colored dye in wastewater. The results of the study were published in the *Journal of Hazardous Materials*.







## RESEARCH AND INNOVATION

The Kyungpook National University Tree Diagnostic Center was established in 2014 by the Korea Forest Service as part of the public tree treatment system for diagnosing damage to trees in the residential areas of Daegu and Gyeongbuk. A workshop was conducted under the theme of ‘Rust on Trees’, where Dr. Seung Gyu Lee of the Korea Tree Conservation Association delivered a lecture on the rust that occurs on trees.

*A number of diseases occur in trees, just like in humans and animals. Rust is caused by a fungus that exhibits signs like rust powder sprinkled on trees. It occurs not only in Korea but also all over the world, causing a lot of damage to fruit trees and landscape trees. I hope this workshop will be a good opportunity to learn about tree diseases as well as practical methods for diagnosing tree damage.*

- Head, KNU Tree Diagnostic Center



Kyungpook National University Tree Diagnostic Center organized a workshop with the National Tree Hospital at the Sangju Campus of Kyungpook National University.

The workshop included lectures by professors of the School of Ecology and Environmental System, KNU, on ‘Disturbance and Pioneer Spices’. The Forest Technology and Management Research Center also introduced the latest data on efficient arrowroot management. In addition, participants experienced the practices of collecting, removing, and sealing the main head of the arrowroot vine.

*For ginseng farmers, finding land that has never been planted on and renting ginseng is a big problem that influences years of farming. However, it has been almost impossible to prove that ginseng has never been planted scientifically so far, and the conflict is frequent because we can only trust the landowner’s word. As we observe a land’s microbiome, we can predict the future of the soil with soil microbiome. The technology developed by the research team creates an artificial intelligence algorithm that analyzes soil microorganisms, which can determine whether ginseng has ever been planted with an accuracy of about 91%. The accuracy of the model has room for improvement if it costs more to get more samples.*

- Professor,  
School of Applied Biosciences,  
Kyungpook National University

Professor Jae Ho Shin’s research team at Kyungpook National University’s School of Applied Biosciences has developed a method of determining ginseng crop quality using the soil microbiome analysis and machine learning.

Ginseng grown in Korea’s soil has been observed to have superior main ingredients and efficacy than ginseng from overseas countries such as China; hence, the cultivation soil plays a big role in ginseng quality. Ginseng is a crop that is highly dependent on soil quality and can be easily damaged. However, despite various soil analysis methods, it is considered very difficult to determine in advance whether there will be damage to a particular soil.

Professor Jae Ho Shin’s team has developed a machine learning model that can predict the occurrence of ginseng rusty root disease before planting ginseng. With this technology, a 90.99% chance of damage can be predicted by microbiological analysis without analyzing past cultivation records of the land or soil components. The findings, which showed the possibility of artificial intelligence use in the agricultural sector are published in a cover paper in the *Journal of Agricultural and Food Chemistry*, an international academic journal.







UNITY

The Kyungpook National University Institute of Peace Issue and the Daegu Unification Education Center jointly organized the 1st Specialist Forum and Unification Education Committee Workshop at Kyungpook National University in March.

A professor at Kangwon National University gave a lecture on the theme of the 2nd U.S.-North Korea talks and peace in the Korean Peninsula, and more than 80 Daegu citizens attended the event.

In the lecture, the professor explained the issues between the U.S. and North Korea on the scope of dismantling nuclear weapons and lifting sanctions, and evaluated the U.S.-North Korea talks in terms of failing to reach an agreement but leaving room for negotiations. He also stressed that a breakthrough in negotiations between the two countries should be made, and that implementation should be discussed over time after reaching a comprehensive and principled agreement.

During the discussion, issues such as denuclearization and permanent peace in the Korean Peninsula, media’s role in ensuring peace, coexistence, and prosperity, and exchange cooperation between North and South Korea were highlighted. The Unification Education Committee also discussed the project plan report for six key areas, including the Unification Lecture, Unification Tour Lecture, Unification Experience Learning, Expert Forum and Unification Education Committee, Unification Fair, and Children’s Unification Writing Contest, and ways to promote unification education in 2019. The Daegu Unification Education Center organized the 2019 Daegu Unification Fair at the National Debt Redemption Movement Park, and the 2019 Daegu Unification Forum under the theme of “The Status and Tasks of Daegu Unification Education.”

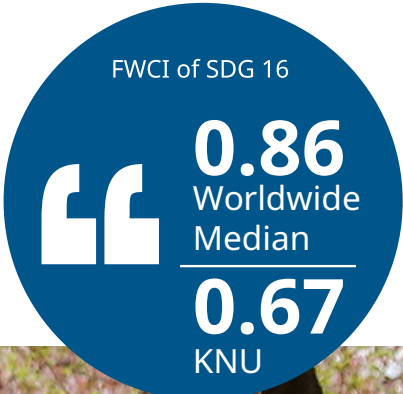


“  
Unification Education  
Committee members  
should develop an  
expert’s perspective from  
a long-term perspective.”  
- Won-hwa Hong, President  
Kyungpook National  
University

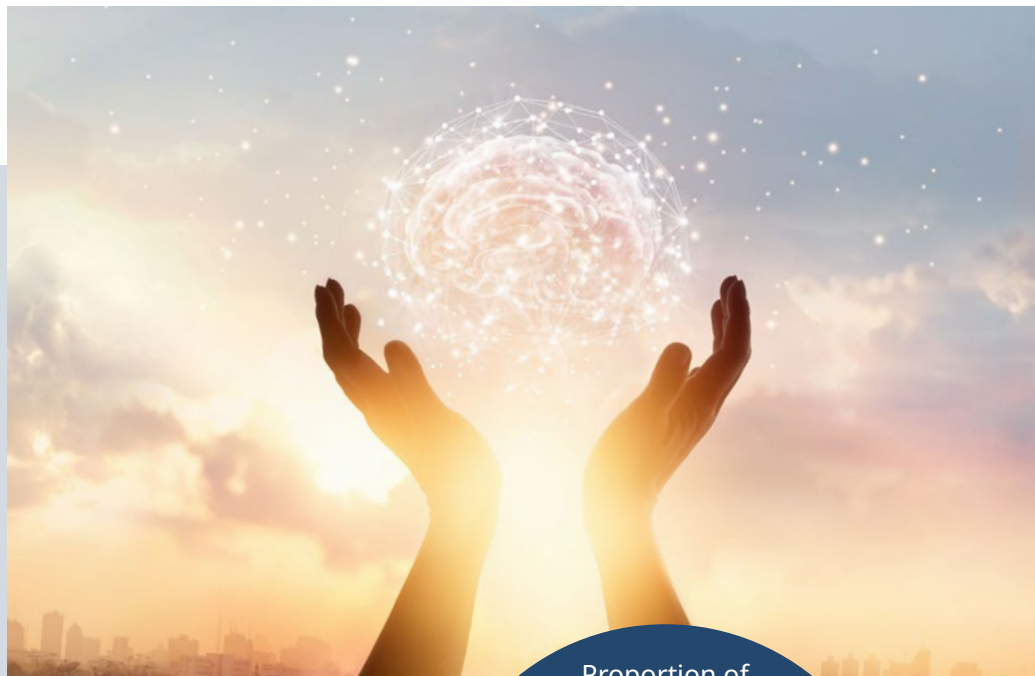
CONFLICT RESOLUTION

The BK21+ business team of the Department of Philosophy of Kyungpook National University signed a business agreement with the Korea Conflict Resolution Center on August 31 to foster conflict resolution acumen among professionals. Founded in 2010, the Korea Conflict Resolution Center is a private organization that provides professional and systematic conflict resolution prevention services. Through this agreement, the two organizations have decided to collaborate to train conflict-solving professionals who can analyze various forms of conflict and suggest alternatives.

“  
If university research is limited to theoretical explorations,  
practical aspects of academics are likely to be ignored. We  
hope this meeting with the Korea Conflict Resolution Center,  
which has amassed experience in resolving conflicts among  
different sections of the Korean society, will serve as an  
opportunity to translate theory into practice.”  
- Head of the Department of Philosophy  
and BK21+ Business Team,  
Kyungpook National University







## INNOVATION

Kyungpook National University held an agreement ceremony to mark the formation of a Regional Cooperation Committee to jointly promote the Ministry of Education's Regional Innovation Project.

The Regional Innovation Project is a project by the Ministry of Education to help various regional organizations, including universities and local governments, to build a "Regional Innovation Platform" to promote innovation plans. It is a large-scale national project that will cost 68.6 billion won.

*We will foster innovative talents in each core field through regional projects to induce local settlement, and strengthen regional economic and industrial competitiveness through cooperation and co-prosperity between local governments and universities.*

- Won-hwa Hong, President  
Kyungpook National University



**0.048**  
Worldwide  
Median

0.08  
KNU

## Cost of Regional Innovation Project



**68.6**  
billion won



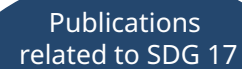
## DEVELOPMENT

*As a key means of regional innovation, we will link Kyungpook National University's open lab with local companies to secure regional strategic industry competitiveness and create jobs.*

- Head,  
Industry-Academic Cooperation  
Team, Kyungpook National  
University

Kyungpook National University was selected for the 2020 “Open-Lab Development Support Project for Regional Industry-linked Universities” promoted by the Ministry of Science and ICT and the Korea Institute of Science and Technology Job Promotion. Kyungpook National University will receive about 1.1 billion won to promote successful technology commercialization by linking its excellent technology with local companies for 10 months.

The “Regional Industry-linked University Open-Lab Promotion Support Project” is a project to establish a demand-based research and manpower customized technology commercialization platform through cooperation between local universities and companies. The key is to grant autonomy in budget execution and propose a successful technology commercialization portfolio on its own in an organization dedicated to technology commercialization, not individual laboratories.



**628**  
Worldwide  
Median

**4,163**  
KNU







# KYUNGPOOK NATIONAL UNIVERSITY

Daegu, South Korea



THE Impact Rankings 2021  
**54<sup>th</sup> in the World**

**11<sup>th</sup>**  
in the World



**SDG 2**  
Zero Hunger

**11<sup>th</sup>**  
in the World

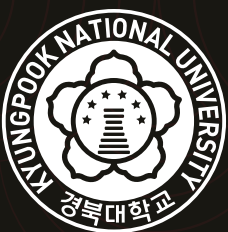


**SDG 9**  
Industry, Innovation  
and Infrastructure

**23<sup>rd</sup>**  
in the World



**SDG 11**  
Sustainable Cities and  
Communities



Advancing the Sustainable  
Development Goals 2020:  
A Kyungpook National University Initiative