



UNIVERSITAS MUHAMMADIYAH MAKASSAR

SUSTAINABILITY REPORT 2024-2025

Integrated
Green-Islamic-Futuristic



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SUSTAINABILITY REPORT TEAM



UNIVERSITAS MUHAMMADIYAH MAKASSAR IN SUSTAINABILITY



World
University
Rankings



World Rank **#Reporter** PTMA Rank in Indonesia **#5**

Private Universities in Eastern Indonesia **#1**

Based on THE World University Rankings 2025 Results

World Rank **#1001-1500** PTMA Rank in Indonesia **#4**

Private Universities in Eastern Indonesia **#1**

Based on THE Impact Rankings 2025 Results



WORLD
UNIVERSITY
RANKINGS
ASIA 2026



World Rank **#1200-1300** Southeast Asia **#185**

Indonesia Rank **#53**

Based on QS Asia University Rankings 2026 Results

World Rank **#624** Asia Rank **#359**

Indonesia Rank **#62**

Based on UI GreenMetric 2025 Results



PREFACE

Assalamu'alaikum Warahmatullahi Wabarakatuh.

All praise and gratitude be to Allah SWT for His blessings and guidance, enabling the publication of the Universitas Muhammadiyah Makassar Sustainability Report 2024–2025 as a reflection of our commitment to sustainable higher education and institutional accountability.

For Universitas Muhammadiyah Makassar, sustainability is not merely a response to global frameworks or performance indicators, but a fundamental responsibility of higher education institutions in creating meaningful impacts for society. As a Muhammadiyah university, we believe that knowledge must be developed alongside Islamic values, environmental awareness, and a commitment to human welfare.

Through the philosophy of **Integrated Green-Islamic-Futuristic**, Universitas Muhammadiyah Makassar continues to build an ecosystem that harmonizes environmental responsibility, Islamic values, and future-oriented innovation. The **Green** dimension reflects our commitment to sustainable campus development and responsible resource management. The **Islamic** dimension provides ethical guidance based on trust, justice, balance, and the responsibility of humans as *khalifah* in preserving the Earth. Meanwhile, the **Futuristic** dimension represents our commitment to digital transformation, research advancement, technological innovation, and adaptive human resource development.

This Sustainability Report highlights the university's contributions to the achievement of the Sustainable Development Goals (SDGs) through initiatives in inclusive education, poverty reduction, food security, health improvement, environmental sustainability,

community empowerment, innovation, and strategic partnerships. These efforts demonstrate the role of universities as agents of knowledge, transformation, and sustainable development.

We acknowledge that sustainability is a collective journey requiring collaboration and continuous commitment. The achievements presented in this report represent the dedication of our academic community, staff, students, partners, and stakeholders who have contributed to strengthening Universitas Muhammadiyah Makassar's sustainability agenda.

Moving forward, Universitas Muhammadiyah Makassar remains committed to becoming a Green Islamic Future University, a university that produces graduates with academic excellence, moral integrity, environmental awareness, and the ability to contribute positively to society.

We extend our sincere appreciation to all parties who have supported the preparation of this report. May the Sustainability Report 2024–2025 inspire continued collaboration and strengthen our collective efforts toward building a more sustainable, inclusive, and impactful future.

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Dr. Ir. H. Abd. Rakhim Nanda, M.T., IPU

Rector of Universitas Muhammadiyah Makassar



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SOURCES: • Scopus Website • <https://news.unismuh.ac.id> • LPKA Unismuh • LP3M Unismuh

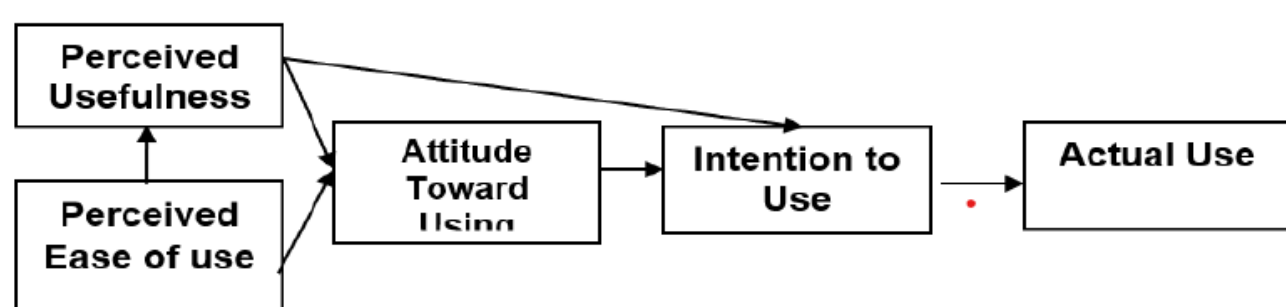
AN INTEGRATED MODEL FOR ANALYZING THE SUSTAINABILITY OF SCHOOL FINANCIAL DIGITALIZATION



Financial inclusion plays an important role in reducing inequality and supporting sustainable development, particularly by ensuring that communities have better access to essential services and resources. In the education sector, effective financial management systems are essential to ensure that educational institutions can provide transparent, efficient, and accountable services. Strengthening financial governance in schools can contribute to improving educational accessibility and reducing barriers that affect vulnerable communities.

Research entitled “An Integrated Model for Analyzing the Sustainability of School Financial Digitalization” conducted by Muchran and colleagues (2025) contributes to SDG 1: No Poverty by examining how financial digitalization can support sustainable financial management in educational institutions. The study explores the factors influencing the successful adoption of digital financial systems in schools and how these systems can generate organizational benefits through improved efficiency, transparency, and accountability.

The research highlights that schools can become important actors in promoting financial inclusion through the adoption of digital financial management systems. Digitalization enables schools to improve financial recording processes, streamline payment mechanisms, and enhance accountability in managing educational resources. These improvements are particularly relevant in supporting equitable access to education, as transparent and efficient financial systems can help ensure that educational resources are managed effectively for the benefit of students and communities.

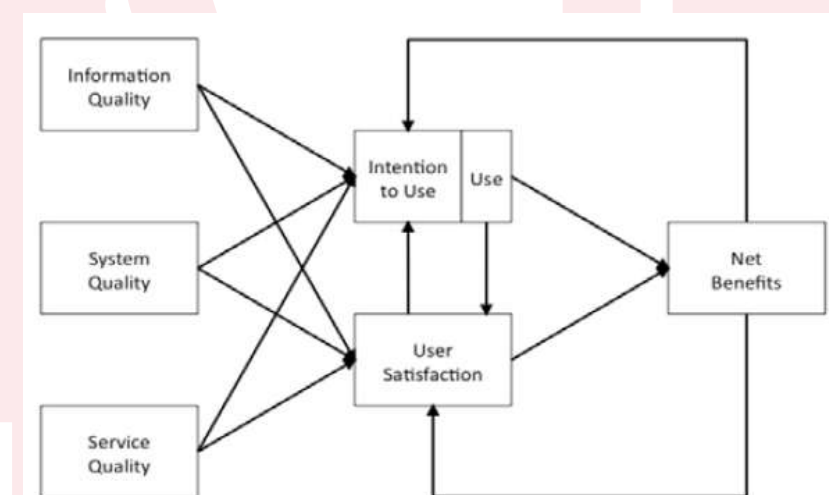


The study developed an integrated analytical model by combining the Technology Acceptance Model (TAM) and the DeLone and McLean Information Systems Success Model. The integration of these frameworks allows researchers to evaluate not only users’ acceptance of digital financial technology but also the sustainability and effectiveness of its implementation within school environments.

Using a quantitative research approach, the study collected data from schools in Makassar representing different geographical and demographic backgrounds.

The research involved 70 schools selected from a population of 410 schools, with data analyzed using Structural Equation Modeling (SEM) to examine relationships between system quality, information quality, service quality, user acceptance, satisfaction, and organizational benefits.

The findings demonstrate that the sustainability of financial digitalization depends not only on technological availability but also on how users perceive and experience the system. The study found that system quality significantly improves perceived ease of use, while information quality and service quality have important roles in increasing perceived usefulness. Furthermore, perceived ease of use contributes significantly to user satisfaction, which ultimately enhances the benefits obtained from digital financial systems.



These findings indicate that successful financial digitalization requires more than introducing technology; it requires systems that are accessible, reliable, and aligned with users’ needs. In the context of education, effective digital financial management can support better allocation of resources, reduce administrative inefficiencies, and strengthen accountability mechanisms within schools.

From an SDG 1 perspective, improving financial governance in educational institutions contributes to reducing structural barriers that affect disadvantaged communities. Transparent financial systems can support more effective management of educational assistance programs, improve institutional accountability, and strengthen the capacity of schools to provide equitable educational opportunities.

The research also demonstrates that digital transformation can become an instrument for inclusive development. By improving financial management practices, schools are better positioned to ensure that available resources are utilized effectively and reach their intended beneficiaries. This contributes to poverty reduction efforts by strengthening education systems, which serve as one of the most important pathways for improving social and economic mobility.

EVALUATING INCLUSIVE EDUCATION INITIATIVES IN INDONESIA: FROM POLICY TO PRACTICE



Education is widely recognized as one of the most important instruments for reducing poverty and promoting sustainable development. Access to quality education provides individuals with greater opportunities to develop skills, improve socioeconomic conditions, and participate more equally in society. Within the framework of Sustainable Development Goal 1 (SDG 1): No Poverty, inclusive education plays an important role by addressing educational inequalities that often contribute to social and economic exclusion, particularly among vulnerable groups such as students with disabilities.

The research entitled “Evaluating Inclusive Education Initiatives in Indonesia: From Policy to Practice” by Fauziyah et al. (2025) contributes to SDG 1 by examining the implementation of inclusive education policies in Indonesia and identifying barriers that prevent equal educational access. The study emphasizes that ensuring education accessibility for all learners, regardless of physical abilities or socioeconomic background, is essential for reducing inequality and supporting long-term poverty reduction efforts.

Inclusive education contributes to poverty reduction by preventing marginalized groups from being excluded from educational opportunities. Students with disabilities often face greater challenges in accessing education due to limited infrastructure, insufficient teacher preparation, social stigma, and unequal resource distribution. These barriers can negatively affect their future employment opportunities and economic independence. Therefore, strengthening inclusive education systems represents an important strategy to break cycles of disadvantage and promote social mobility.

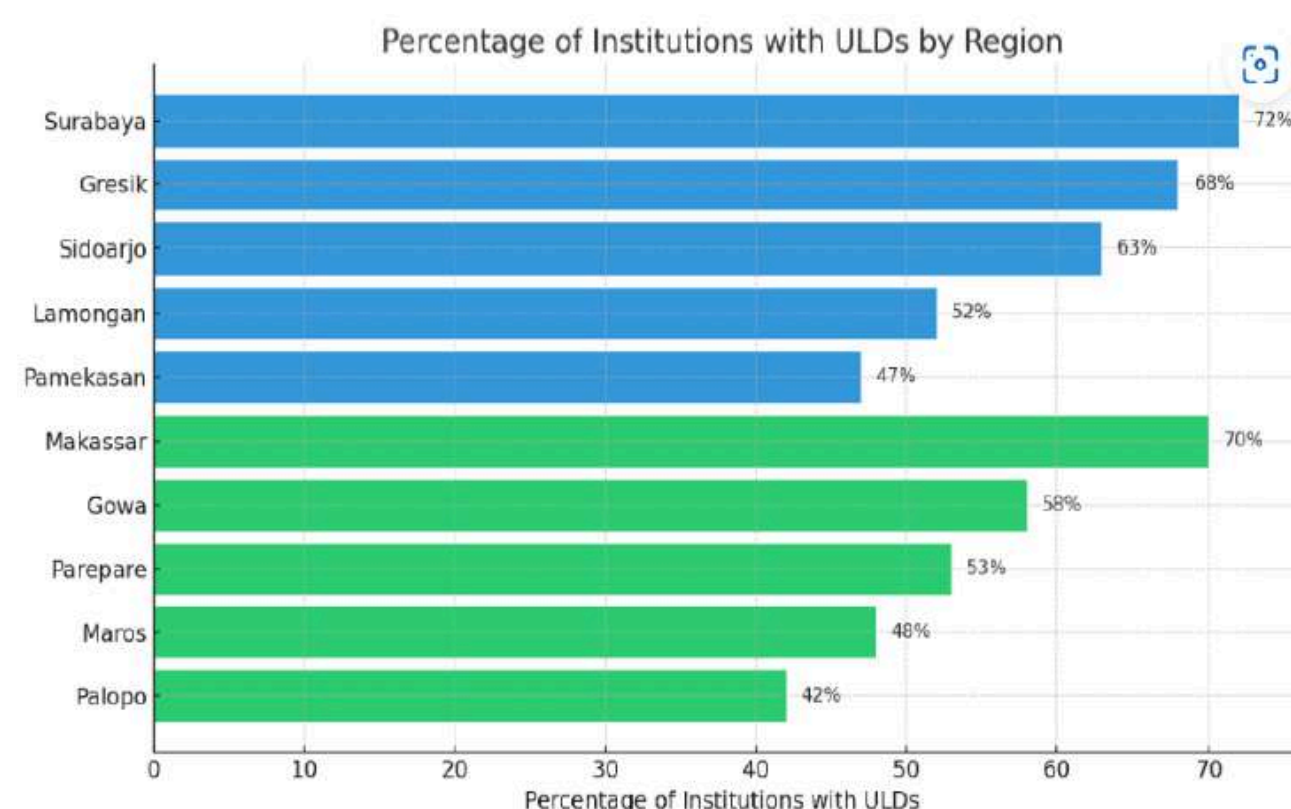
members, through questionnaires, interviews, focus group discussions, and observations. This approach enabled the researchers to examine not only policy implementation outcomes but also the practical challenges experienced by stakeholders at the local level.

The findings revealed significant disparities between urban and rural regions in implementing inclusive education policies. Urban areas such as Surabaya and Makassar demonstrated stronger institutional support, including higher availability of disability service units, educator training programs, and accessibility infrastructure. In contrast, rural areas such as Pamekasan, Maros, and Palopo experienced greater challenges due to limited funding, inadequate infrastructure, and fewer professional development opportunities for educators.

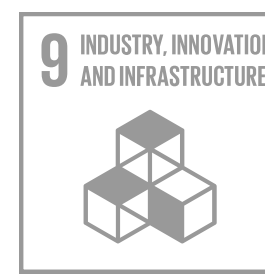
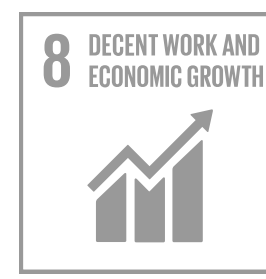
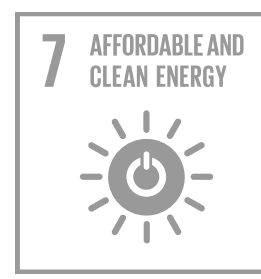
The study highlights that teacher competency development is a critical factor in achieving inclusive education. The results showed that educators in urban regions generally received more consistent training and professional development opportunities compared with educators in rural areas. For example, Surabaya showed higher participation levels in inclusive education training, while regions such as Maros and Palopo reported lower levels of educator preparation. Improving teacher capacity is therefore essential because qualified educators can create learning environments that accommodate diverse student needs and prevent vulnerable students from being left behind.

Furthermore, the research emphasizes the importance of institutional support and government involvement in reducing educational inequality. Local governments play a key role in allocating resources, developing policies, providing training programs, and supporting schools in implementing inclusive practices. However, the study found that insufficient funding, administrative barriers, and differences in regional capacity remain major obstacles to achieving equitable education across Indonesia.

The relationship between inclusive education and poverty reduction can also be understood through the concept of equal opportunity. When students with disabilities and other vulnerable groups receive appropriate educational support, they have greater potential to improve their quality of life and participate in economic activities. Inclusive education therefore functions not only as an educational policy but also as a social investment that strengthens human capital development and reduces structural inequalities.



The study evaluated inclusive education implementation in two Indonesian provinces, namely South Sulawesi and East Java, using a mixed-methods case study approach. Data were collected from 230 participants, consisting of educators, local government officials, and community



UNIVERSITY FINANCIAL AID PROGRAM SUPPORTING POVERTY REDUCTION THROUGH ACCESS TO HIGHER EDUCATION



<https://news.unismuh.ac.id/2024/10/12/unismuh-gelar-wawancara-penerima-beasiswa-bumm-kategori-bup-dan-prestasi-akademik/>

Access to higher education is an important pathway for reducing poverty and promoting social mobility. Financial barriers remain one of the major challenges that prevent students from low-income families and vulnerable backgrounds from continuing their education. Within the framework of Sustainable Development Goal 1 (SDG 1): No Poverty, educational support programs such as scholarships play an important role in reducing inequality by ensuring that economic limitations do not become a barrier to accessing quality education.

The Beasiswa Universitas Muhammadiyah Makassar (BUMM) program represents an institutional commitment to expanding educational opportunities through financial assistance for prospective students with academic achievements and specific backgrounds. In 2024, the university conducted an interview selection process for prospective recipients of the Bibit Unggul Persyarikatan (BUP) and Academic Achievement Scholarship categories. This initiative aims to identify and support talented students who have the potential to contribute academically and socially while reducing financial obstacles in pursuing higher education.

Through the BUMM scholarship scheme, financial assistance is provided to students based on academic excellence and organizational potential. The Academic Achievement Scholarship recognizes students with outstanding academic performance, while the BUP category supports students with strong involvement in Muhammadiyah organizations. These programs demonstrate that scholarship provision is not only focused on financial support but also on developing human capital by encouraging academic achievement, leadership, and social engagement.

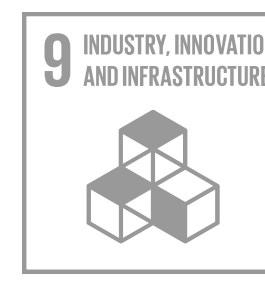
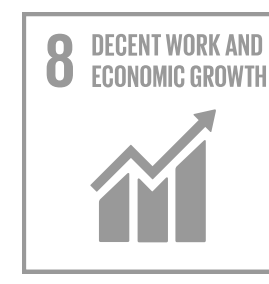
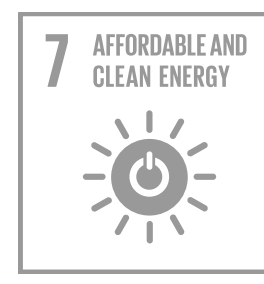
The implementation of BUMM contributes to SDG 1 by addressing one of the root causes of educational inequality, namely limited financial access. Students from economically disadvantaged families often face difficulties in covering tuition fees and other educational

expenses, which may increase the risk of dropping out or limiting their future opportunities. By providing scholarship support, higher education becomes more accessible, allowing students to improve their skills, qualifications, and future employment prospects.

In addition to supporting individual students, scholarship programs generate broader social and economic impacts. Increasing access to higher education can strengthen human resources and create opportunities for upward socioeconomic mobility. Students who successfully complete their education are expected to obtain better career opportunities, improve household economic conditions, and contribute to community development. Therefore, investment in educational scholarships serves as a long-term strategy to break cycles of intergenerational poverty.

The commitment to expanding scholarship access is reflected in the allocation of IDR 3.8 billion for approximately 1,601 new student scholarship quotas in 2024. The scholarship allocation includes Academic Achievement Scholarships, Hafidz Qur'an Scholarships, and Bibit Unggul Persyarikatan Scholarships. Through various scholarship categories, the program accommodates students with different forms of achievement and potential, ensuring that educational opportunities are available for a wider range of beneficiaries.

The Academic Achievement Scholarship provides different levels of financial support based on students' academic performance, including full scholarship opportunities for students with outstanding academic records. Meanwhile, the BUP scholarship provides opportunities for students who demonstrate organizational commitment and leadership potential through Muhammadiyah student networks. This approach reflects an effort to develop not only academically capable graduates but also socially responsible individuals who can contribute to society.



STRENGTHENING COMMUNITY EMPOWERMENT AND POVERTY REDUCTION THROUGH SUSTAINABLE VILLAGE DEVELOPMENT PROGRAMMES



<https://news.unismuh.ac.id/2025/08/14/hadiri-rakornas-pemberdayaan-masyarakat-di-unesa-unismuh-berbagi-pengalaman-dampingi-30-desa-binaan/>

Poverty reduction requires more than providing short-term assistance; it requires strengthening the capacity of communities to become economically independent, resilient, and capable of utilizing their local resources sustainably. Universities play an important role in addressing poverty by transferring knowledge, developing innovations, and supporting communities through research-based empowerment programs. Through community engagement initiatives, higher education institutions can contribute directly to improving livelihoods and reducing structural barriers that limit economic development.

The participation in the National Coordination Meeting (Rakornas) of the Higher Education Forum for Community Empowerment reflects its commitment to strengthening the role of universities in poverty alleviation and sustainable community development. The forum, held at Universitas Negeri Surabaya (UNESA) in August 2025, brought together higher education institutions and stakeholders to strengthen collaboration in supporting community empowerment programs across Indonesia.

During the event, Unismuh shared its experience in implementing community assistance programs through the Lembaga Penelitian, Pengembangan, dan Pengabdian kepada Masyarakat (LP3M). In 2025, Unismuh conducted intensive mentoring programs in 30 assisted villages across South Sulawesi, focusing on strengthening local economic potential, improving community capacity, and developing sustainable solutions based on village resources.

The village empowerment programs implemented by Unismuh cover various sectors, including local product development, agroindustry strengthening, digital technology training, renewable energy innovation, MSME empowerment, and tourism village development based on local natural and cultural potential. These initiatives demonstrate an integrated approach to poverty reduction by addressing economic, technological, educational, and social dimensions simultaneously.

Several flagship programs illustrate the university's contribution to improving community welfare. In Bulu Cindea Village, Pangkep Regency, the university supported the development of an industrial salt production center to improve local economic productivity and strengthen coastal community livelihoods. In Tumampua Village, Pangkep Regency, an inclusive school-preneurship program was developed to encourage entrepreneurship education and expand economic opportunities among community members.

Other initiatives include agroindustry value-added training in Manimbahoi Village, Gowa Regency, the implementation of a solar-powered biofloc system for tilapia cultivation in Belapunranga Village, and the empowerment of forest farmer groups through agroforestry-based coffee development in Erelembang Village, Gowa Regency. These programs demonstrate how academic knowledge and technological innovation can be applied to address real community challenges while creating sustainable sources of income.

From the perspective of SDG 1, these initiatives contribute to poverty reduction by strengthening community economic resilience and increasing access to productive resources. Rather than focusing only on financial assistance, the programs emphasize empowerment through skills development, technology adoption, entrepreneurship strengthening, and improved management capacity. This approach enables communities to generate sustainable income and reduce dependency on external support.

The implementation of village empowerment programs also reflects the importance of long-term intervention. Unismuh emphasizes that community development should not be viewed as short-term projects but as continuous processes that require mentoring, evaluation, and collaboration with local stakeholders. Through sustained assistance, communities are encouraged to develop self-reliance and maintain the benefits of empowerment programs beyond the initial implementation period.

02

SDG 2

ZERO HUNGER

Strengthening Food Security through Sustainable Agriculture, Nutrition, and Campus Responsibility



RESEARCH RELATED TO HUNGER

Research related to hunger focuses on food security, household food resilience, sustainable agriculture, organic fertilizer, aquaculture productivity, nutrition, malnutrition, urban farming, farmer institutional development, and circular food systems. The Scopus-indexed SDG 2 portfolio comprises 58 publications covering post-pandemic food security, sago product innovation, compost utilization, rice and maize farming, seaweed cultivation, aquaculture productivity, malnutrition screening, and urban farming. These studies generate evidence-based recommendations and practical innovations that strengthen food availability, improve nutritional quality, enhance sustainable food production, and support resilient agricultural communities.

CAMPUS FOOD WASTE

Campus food waste governance is strengthened through the Sustainable Waste Solutions Center (SWSC), established under Rector Decree No. 494 of 2025 as the official unit responsible for integrated campus waste management. The center promotes structured waste sorting, technical training, campus waste-bank operations, and organic waste processing, including composting of kitchen and garden waste. These initiatives support responsible food waste management, improve resource recovery, and reinforce circular economy practices while reducing the environmental impact of campus operations.

STUDENT HUNGER

Student well-being is supported through initiatives that promote food security awareness, nutrition education, and community-based learning. These efforts are reinforced by research on food security, nutrition, sustainable agriculture, and responsible food systems, while student engagement in food sustainability activities strengthens awareness of healthy and sustainable lifestyles. Additional evidence on meal support, food subsidies, emergency food assistance, and student food security will further strengthen institutional efforts to address student hunger and enhance inclusive student welfare.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id> • SWSC Unismuh

OUR IMPACT SNAPSHOT

401-600
Global

58
Publication

110
Identified Agriculture Graduates

1
SWSC CampusWaste Management Unit

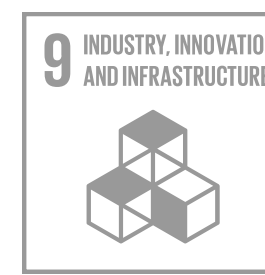
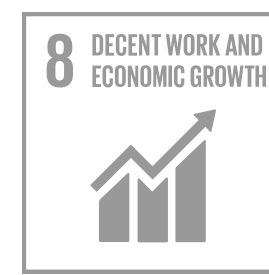
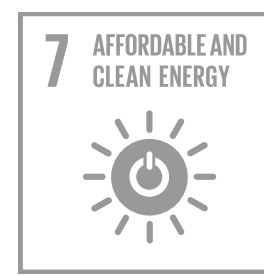
PROPORTION OF GRADUATES IN FOOD SUSTAINABILITY

Graduates in food sustainability are represented by programmes in agriculture, agribusiness, agrotechnology, aquaculture, forestry, and other food-system-related disciplines. During the 2025 reporting period, available graduation records identified at least 110 graduates from the Faculty of Agriculture across the 84th and 85th graduation ceremonies. These graduates contribute to strengthening expertise in sustainable agriculture, food production, and natural resource management. The overall proportion will be determined using official graduate data and the list of relevant study programmes provided by the Academic Administration Bureau (BAA) and the Faculty of Agriculture.

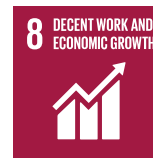
NATIONAL HUNGER

National hunger reduction is supported through initiatives that strengthen urban food resilience in collaboration with international partners and local government. In 2025, the Faculty of Economics and Business (FEB) collaborated with Universiti Tun Hussein Onn Malaysia (UTHM) and the Government of Bontoala District, Makassar City, to implement an urban farming initiative as a practical solution for limited land availability in dense urban areas. The programme promoted household food security, productive green spaces, limited-space farming, organic waste composting, harvest management, financial literacy, and Islamic crowdfunding, contributing to sustainable food access and more resilient urban communities.

Urban farming collaboration in Bontoala, Makassar, with UTHM Malaysia and local government to strengthen urban food resilience.



SUSTAINABLE FOREST STRATEGY BASED ON LAND CAPABILITY EVALUATION FOR SUPPORTING SUSTAINABLE AGRICULTURE AND FOOD SECURITY



Sustainable food systems depend not only on agricultural production but also on the availability and long-term health of natural resources, particularly land and water. Land degradation, inappropriate land utilization, and ecosystem damage can significantly reduce agricultural productivity and threaten the ability of communities to maintain stable food supplies. Therefore, sustainable land management strategies are essential to ensure that agricultural activities remain productive while preserving environmental functions.

The research entitled “Sustainable Forest Strategy Based on Land Capability Evaluation in Muna Regency, Indonesia” by Mukrimin et al. (2025) contributes to SDG 2: Zero Hunger by developing a land management strategy that supports sustainable agricultural production, ecosystem conservation, and community livelihood improvement. The study emphasizes the importance of evaluating land capability before determining appropriate land utilization strategies to prevent degradation and optimize agricultural potential.

The research was conducted in the Jompi Watershed, Muna Regency, Indonesia, an area that has experienced ecosystem degradation due to land-use changes, reduced vegetation cover, and conversion of forest areas into non-forest land. These changes have affected watershed functions, land productivity, and community welfare. The study highlights that sustainable watershed management requires balancing soil and water conservation efforts with agricultural production and community economic needs.

The study aimed to evaluate land capability classes and determine appropriate land-use directions based on ecological conditions. The researchers applied a descriptive-exploratory approach supported by field surveys, laboratory soil analysis, and Geographic Information System (GIS) analysis. Land capability evaluation was conducted by assessing various factors, including soil texture, permeability, erosion sensitivity, slope conditions, drainage, salinity, soil depth, and surface rock characteristics.

The findings identified three major land capability classes within the Jompi Watershed: Class IV, Class V, and Class VIII. Class IV covered approximately 2,429.27 hectares (48.65%), Class V covered 1,014.08 hectares (20.31%), and Class VIII covered 1,550.10 hectares (31.04%). These classifications indicate that the land has different levels of limitation, including steep slopes, poor drainage, slow or excessive permeability, coarse soil texture, and surface rock conditions.



One of the key recommendations from this research is the implementation of agroforestry systems for land classified as Class IV and V. Agroforestry combines agricultural crops, forestry plants, and livestock within the same landscape, creating a balance between food production and ecosystem conservation. The study recommends applying conservation practices such as terrace construction and organic matter improvement to increase soil quality, reduce erosion, improve water retention, and maintain agricultural productivity.

Agroforestry provides multiple benefits related to food security. By integrating annual crops, perennial plants, and livestock, farmers can diversify their sources of production and income while reducing dependence on a single commodity. The study notes that the Jompi Watershed has potential commodities including corn, pumpkin, watermelon, peanuts, teak, Jabon (*Nauclea cadamba*), coconut, and livestock such as chickens and cattle. These resources create opportunities for developing sustainable agricultural systems that support local food availability and community welfare.

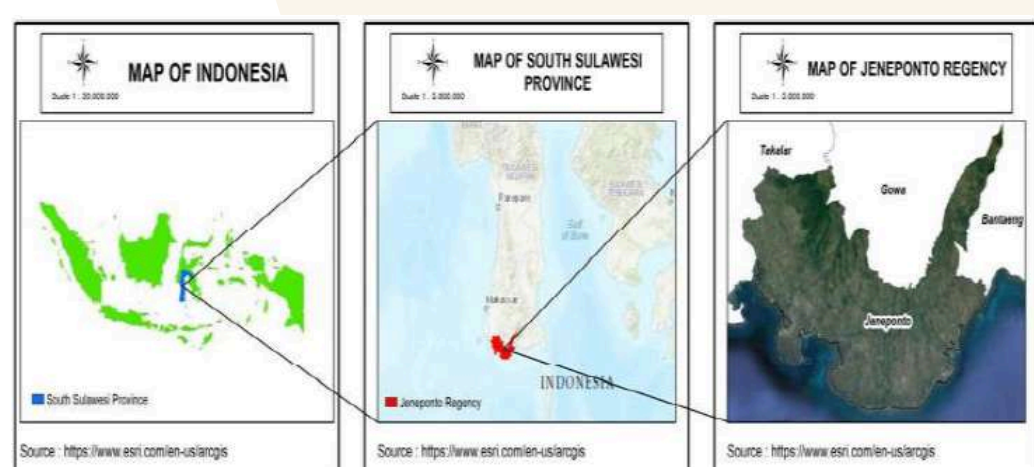
The research also demonstrates that sustainable land management contributes to long-term agricultural resilience. Agroforestry practices can improve soil fertility, reduce erosion, maintain biodiversity, conserve water resources, and reduce risks associated with climate variability. These environmental benefits are closely connected with SDG 2 because sustainable food production requires healthy ecosystems capable of supporting agricultural activities over time.

STRENGTHENING MAIZE FARMER INSTITUTIONS THROUGH STAKEHOLDER COLLABORATION TO SUPPORT FOOD SECURITY AND SUSTAINABLE AGRICULTURE



Food security is not only determined by agricultural production capacity but also by the strength of institutional systems that support farmers in accessing resources, technology, markets, and financial services. Sustainable agricultural development requires an integrated approach involving farmers, government institutions, private companies, research organizations, and community-based organizations. Without strong institutional support, smallholder farmers often face challenges related to limited market access, inadequate technology adoption, insufficient capital, and weak bargaining positions.

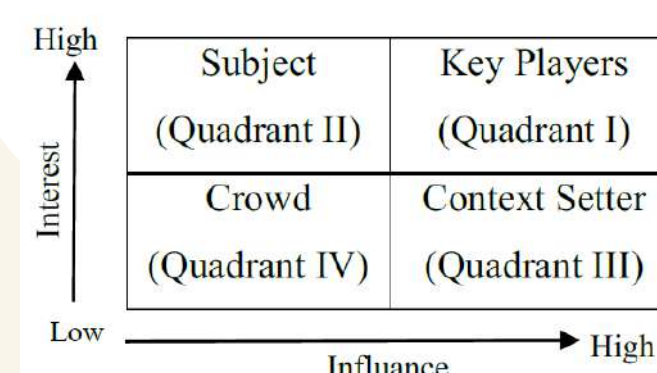
The research entitled “An Examination of The Mapping Stakeholders in The Institutional Strengthening of Maize Farmers in Jeneponto District, Indonesia” by Mudatsir et al. (2025) provides an important contribution to SDG 2: Zero Hunger by analyzing stakeholder roles in strengthening maize farmer institutions to improve agricultural productivity, sustainability, and food security. The study highlights that achieving sustainable food systems requires not only increasing agricultural output but also developing institutional networks that enable farmers to access resources and participate effectively in agricultural development programs.



The study was conducted in Jeneponto District, South Sulawesi Province, Indonesia, which is recognized as one of the centers of maize development. Maize plays a strategic role in Indonesia because it functions as an important food commodity, livestock feed source, and industrial raw material. However, maize farmers continue to experience several constraints, including limited access to markets, capital, agricultural technology, and weak coordination among institutions supporting maize production.

To address these challenges, the research applied a stakeholder mapping approach to identify and analyze actors involved in strengthening maize farmer institutions. The study used a qualitative method through purposive sampling, interviews with key stakeholders, field observations, and document analysis. Stakeholder analysis was conducted based on two main indicators: the level of influence and the level of importance of each stakeholder in supporting farmer institutional development.

The results identified 20 stakeholders involved in maize farmer institutional strengthening, which were divided into three main sectors: the public sector, voluntary sector, and private sector. Public sector stakeholders included agricultural extension centers, agriculture offices, food security offices, village governments, regional development planning agencies, agricultural training centers, and financial institutions. The voluntary sector consisted of universities, non-governmental organizations, village-owned enterprises, farmer associations, and self-help agricultural training centers. Meanwhile, private sector stakeholders included agricultural companies, seed providers, fertilizer distributors, farm shops, and agricultural product traders.



From the perspective of SDG 2, the involvement of these stakeholders is essential because food security depends on the entire agricultural value chain rather than only on farmers' production activities. Government institutions contribute through agricultural policies, infrastructure development, subsidies, extension services, and technical support. For example, the Department of Agriculture and Agricultural Extension Centers were identified as key players because they have strong influence and importance in developing farmer capacity, disseminating agricultural innovation, and implementing agricultural development programs.

Agricultural extension services have a particularly important role in improving farmers' knowledge and technological capabilities. Through training, mentoring, and technology dissemination, extension officers help farmers adopt improved cultivation practices, increase productivity, and improve farm management. This directly supports SDG 2 because increasing farmers' capacity is essential for achieving sustainable food production systems.

The research also emphasizes the importance of private sector involvement in strengthening food security. Agricultural companies such as PT Jiva Agriculture Indonesia and PT Bisi International Tbk contribute by providing production inputs, superior seeds, partnership programs, and market access. These partnerships reduce production constraints faced by farmers, particularly regarding access to agricultural inputs and marketing channels. Improved access to technology and markets allows farmers to increase productivity and obtain better economic returns from maize production.

SUSTAINABLE WASTE MANAGEMENT AS A SUPPORTING STRATEGY FOR FOOD SECURITY AND ENVIRONMENTAL SUSTAINABILITY



<https://news.unismuh.ac.id/2025/08/23/unismuh-makassar-teguhkan-komitmen-green-campus-melalui-swsc/>

Sustainable development requires an integrated approach that does not only focus on food production but also considers environmental management, resource efficiency, and responsible consumption patterns. Within the framework of the Sustainable Development Goals (SDGs), SDG 2: Zero Hunger is closely connected with environmental sustainability because agricultural productivity and food availability depend on healthy ecosystems, efficient resource management, and sustainable practices. Improper waste management can contribute to environmental degradation, reduce soil quality, and disrupt sustainable food systems. Therefore, initiatives that transform waste into valuable resources have an important role in supporting long-term food security.

The news article entitled “Unismuh Makassar Strengthens Green Campus Commitment through SWSC” highlights the commitment of Universitas Muhammadiyah (Unismuh) Makassar to developing an environmentally responsible campus through the establishment of the Sustainable Waste Solutions Center (SWSC). This program focuses on integrated waste management through waste separation, recycling, compost production, and environmental education. Although the main focus of this initiative is sustainable waste management, the program has a strong connection with SDG 2: Zero Hunger, particularly through organic waste utilization, circular economy implementation, and support for sustainable agricultural practices.

The establishment of SWSC represents a strategic effort to create a green campus ecosystem based on structured waste governance. Through the Rector’s Decree Number 494 of 2025, SWSC was officially established as an institutional unit responsible for managing campus waste. This initiative demonstrates that environmental management can become part of institutional development strategies, where waste is not viewed merely

as a disposal problem but as a potential resource that can provide ecological and economic benefits.

One of the important contributions of this program to SDG 2 is the utilization of organic waste as a resource for agricultural sustainability. During the training activities, SWSC introduced the management of organic waste from kitchen and garden activities through compost production. Organic waste processing into compost can improve soil fertility, increase nutrient availability, and reduce dependence on chemical fertilizers. These practices are directly related to sustainable agriculture because healthy soil is a fundamental component in maintaining agricultural productivity and ensuring stable food production.

The transformation of organic waste into compost reflects the principles of a circular economy, where waste materials are returned into productive cycles instead of being discarded. In the context of SDG 2, circular approaches are increasingly important because food security depends not only on increasing production but also on maintaining natural resources for future generations. By converting organic waste into agricultural inputs, institutions can support environmentally friendly farming systems and contribute to more sustainable food chains.

Implementation of the Campus Waste Bank Program provides another connection to SDG 2 through community empowerment and resource efficiency. The program applies the concept of “saving waste,” where recyclable materials such as plastic bottles, paper, and cardboard are collected, weighed, and recorded. These materials can later be exchanged for social funds, incentives, or environmental empowerment activities. This approach encourages behavioral change among campus communities while creating economic value from waste materials.

PROMOTING URBAN FARMING AS A SUSTAINABLE SOLUTION FOR FOOD SECURITY AND COMMUNITY EMPOWERMENT IN URBAN AREAS



<https://news.unismuh.ac.id/2025/06/28/prodi-perpajakan-unismuh-dan-uthm-malaysia-gagas-urban-farming-di-jantung-kota-makassar/>

Food security is increasingly challenged by rapid urbanization, limited agricultural land availability, and growing dependence on external food supply chains. In urban areas, where open agricultural spaces are becoming increasingly limited, innovative approaches are needed to ensure sustainable food production while improving community resilience. Urban farming has emerged as one of the potential solutions by transforming limited urban spaces into productive areas that support local food availability, environmental sustainability, and community empowerment.

The community engagement initiative entitled “Urban Farming Development in the Heart of Makassar City” represents a collaborative effort between Universitas Muhammadiyah Makassar (Unismuh) and Universiti Tun Hussein Onn Malaysia (UTHM) to promote sustainable urban agriculture. Implemented through the Taxation Study Program, Faculty of Economics and Business (FEB) Unismuh, the program introduced urban farming practices to communities in Bontoala District, Makassar City, as an innovative approach to addressing food security challenges in densely populated urban environments.

This initiative contributes to SDG 2: Zero Hunger by encouraging the development of localized food production systems that can improve community access to fresh agricultural products. Urban farming allows residents to utilize limited spaces, such as home yards, community areas, and unused urban land, for food cultivation. Through this approach, communities can reduce dependence on external food sources while strengthening their capacity to produce food independently.

The program was developed based on the understanding that urban agricultural development requires collaboration between academic institutions, government

agencies, and local communities. Representatives from UTHM provided knowledge on efficient urban farming techniques adapted to limited urban spaces, while Unismuh contributed expertise related to financial literacy, including management of agricultural income, harvest utilization, and access to business capital.

From the perspective of food security, urban farming provides multiple benefits beyond food production. The implementation of urban agriculture can improve household resilience by providing alternative food sources, particularly during periods of economic uncertainty or disruptions in food supply chains. By empowering communities with agricultural skills, the program supports the creation of more resilient urban food systems.

The involvement of local government institutions, including the Makassar City Spatial Planning Office and Bontoala District administration, strengthens the sustainability of this initiative. Government support ensures that urban farming aligns with broader urban development strategies, particularly in utilizing limited urban spaces as productive green areas. This approach demonstrates that sustainable food systems require integration between environmental planning, community participation, and institutional support.

The collaboration between Unismuh and UTHM also highlights the importance of knowledge exchange in achieving sustainable agricultural development. International cooperation enables the sharing of innovative agricultural practices, technology adaptation, and community empowerment strategies. Through this partnership, urban farming solutions developed in one context can be adapted and applied to address similar challenges in other regions.

03

SDG 3
GOOD HEALTH
AND WELL-
BEING

Strengthening healthcare innovation, professional development, and community well-being through research and collaboration.



RESEARCH ON HEALTH AND WELL-BEING

Research on health and well-being contributes to improving disease prevention, healthcare innovation, and community health outcomes. Health-related studies explore various medical and public health challenges, including disease management, preventive care, health promotion, and the development of potential therapeutic interventions. One notable publication examined the potential effect of curcumin in lowering blood glucose levels in diabetic rat models, providing insights into alternative approaches for diabetes management through natural compounds. The study demonstrated the potential of curcumin in reducing blood glucose levels and protecting pancreatic tissue, supporting further exploration of evidence-based health interventions. Beyond biomedical research, health-related publications also address broader issues such as community health, healthcare access, nutrition, mental well-being, and preventive strategies. These studies support the development of practical solutions that can be applied in clinical settings and community-based health programs. Through interdisciplinary research involving medicine, health sciences, and related fields, Unismuh continues to strengthen its contribution to advancing health knowledge and improving quality of life.

PROPORTION OF HEALTH GRADUATES

Preparing competent health professionals is an important contribution to strengthening healthcare systems and improving community well-being. Through health-related academic programs, graduates are equipped with scientific knowledge, clinical competencies, and professional skills to support healthcare services in various settings. In 2025, 285 graduates from the Faculty of Medicine contributed to the total of 3,578 university graduates, representing the institution’s contribution to developing qualified health professionals. These graduates are prepared to support medical services, disease prevention, health promotion, and community healthcare initiatives. By producing skilled healthcare personnel, Unismuh contributes to SDG 3 by expanding the availability of health professionals and supporting better health outcomes for society.

OUR IMPACT SNAPSHOT

1001-1500
Global

71
Publication

285
Health
Graduates
(2025)

4
International
Health
Collaborations

COLLABORATIONS AND HEALTH SERVICES

Strengthening health outcomes requires collaboration between academic institutions, healthcare facilities, and international partners. In 2025, Unismuh established four international collaborations supporting health education, research, and community engagement. Partnerships with Universiti Kebangsaan Malaysia (UKM) focus on biomedical science development and student mobility programs, while collaboration with Universiti Sains Islam Malaysia (USIM) supports health innovation and international guest lectures. Cooperation with Universiti Sains Malaysia (USM) contributes to medical education, mental health, therapy, and pharmaceutical studies, while Yala Rajabhat University (Thailand) supports joint research and international community service initiatives. These collaborations complement existing health services provided through the Medical Center and RSU PKU Unismuh Makassar, strengthening the integration of education, research, and healthcare delivery.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>



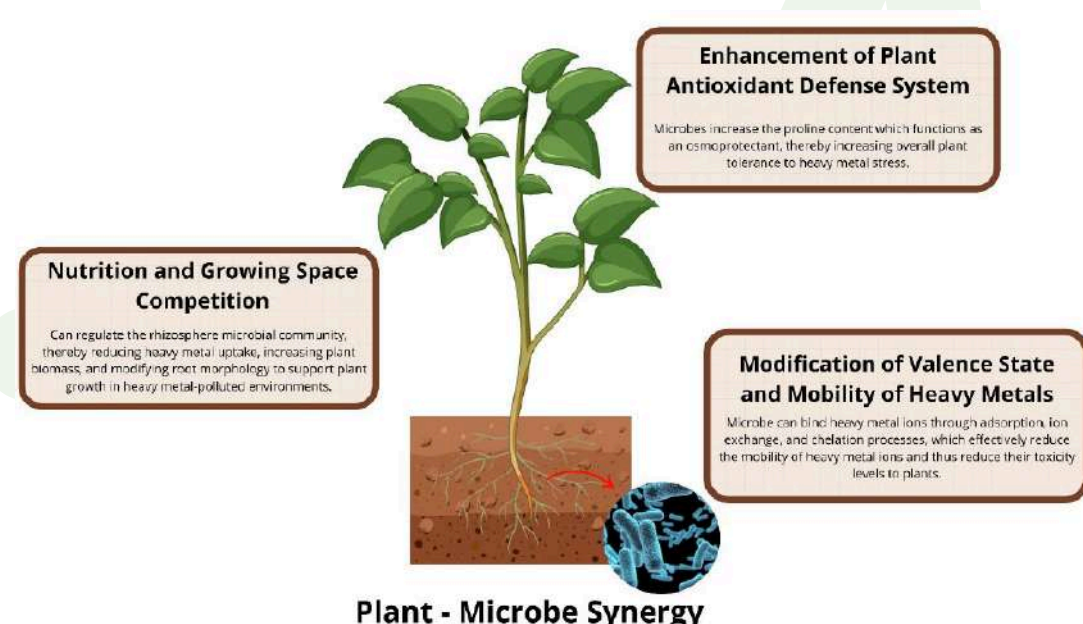
Promoting health innovation and well-being through education, research, and healthcare services.

THE ROLE OF SENGON (FALCATARIA MOLUCCANA) IN POSTMINING PHYTOREMEDIATION: PLANT-MICROBE SYNERGY IN HEAVY METAL DETOXIFICATION



Environmental quality is closely connected with human health and well-being. Exposure to environmental pollutants, particularly heavy metals from industrial and mining activities, has become a major public health concern due to their persistence, toxicity, and ability to accumulate within living organisms. Contaminated soil and water can introduce hazardous substances into agricultural systems and food chains, increasing the risk of chronic diseases and reducing the quality of life of communities living near affected areas.

The research entitled “The Role of Sengon (*Falcataria moluccana*) in Post-Mining Phytoremediation: Plant-Microbe Synergy in Heavy Metal Detoxification” contributes to SDG 3: Good Health and Well-being by addressing environmental factors that influence human health. The study investigates the potential of Sengon trees as a biological remediation agent to restore contaminated post-mining lands and reduce the presence of toxic heavy metals in ecosystems.



Mining activities provide important economic benefits but may generate significant environmental consequences, particularly through the release of hazardous metals such as cadmium (Cd), lead (Pb), mercury (Hg), and nickel (Ni). These contaminants are persistent in the environment and can remain for extended periods, allowing them to migrate through soil, water systems, and biological pathways. When accumulated in food chains, heavy metals can negatively affect human health, including neurological disorders, kidney damage, and other chronic health problems.

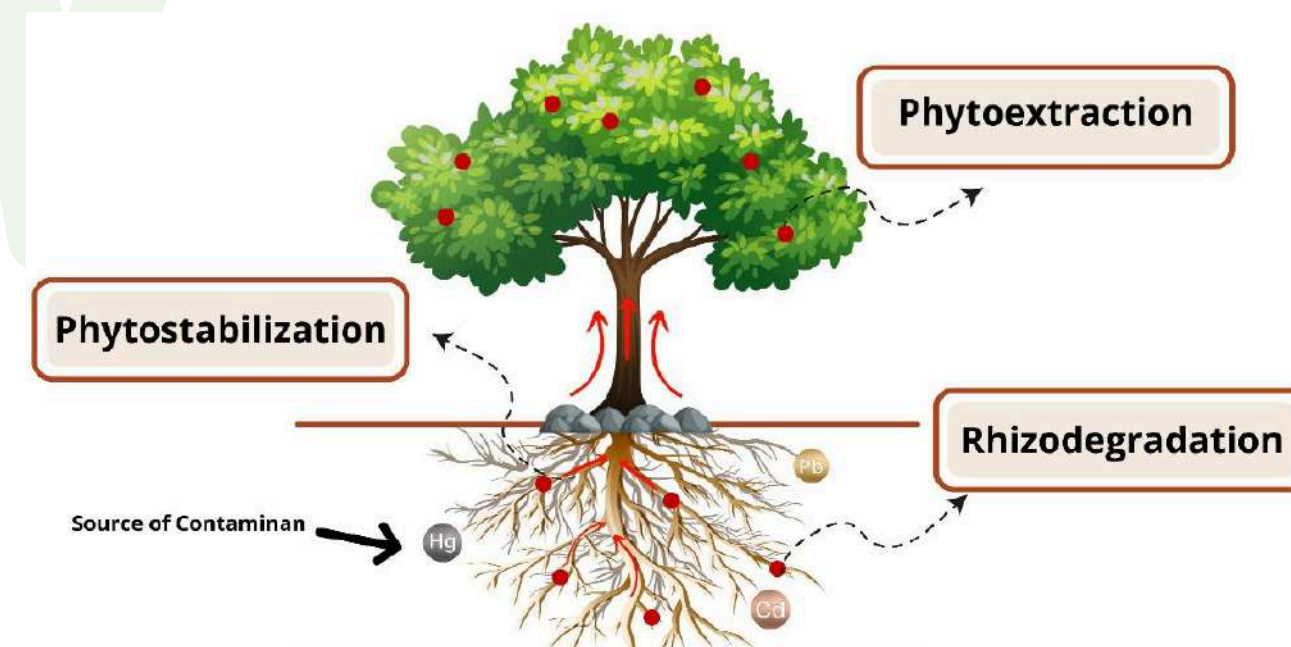
The study highlights that post-mining land degradation is not only an ecological issue but also a public health challenge. Communities surrounding mining areas may face increased exposure risks when contaminated land is used for agriculture, settlement, or other activities. Therefore, restoring contaminated environments is an important preventive strategy to protect human health and create safer living conditions.

This research applied a literature review approach supported by case studies to evaluate the effectiveness of Sengon (*Falcataria moluccana*) in absorbing and

stabilizing heavy metals in contaminated soils. The study also examined the interaction between plants and soil microorganisms in improving phytoremediation performance.

The findings demonstrate that Sengon has strong potential as a phytoremediation species due to its ability to absorb and immobilize heavy metals. The study reported significant reductions in soil heavy metal concentrations, including nickel removal through phytoextraction reaching up to 72.5%. Heavy metals were primarily accumulated in plant roots and stems, reducing their availability in the surrounding soil environment. An important contribution of this research is the identification of plant-microbe synergy in improving remediation effectiveness. The study found that arbuscular mycorrhizal fungi (AMF) colonization, with rates around 61%, enhanced nutrient absorption, improved plant tolerance to metal stress, and supported Sengon growth in contaminated environments. Additionally, phosphate-solubilizing bacteria contributed to increasing root biomass and strengthening metal binding processes within the rhizosphere.

The research also emphasizes the importance of integrating phytoremediation with sustainable land rehabilitation strategies. Restoring post-mining landscapes through vegetation recovery and microbial management can transform degraded areas into healthier ecosystems that support biodiversity and reduce environmental hazards. This approach aligns with the broader concept of preventive public health, where maintaining environmental quality becomes an essential component of improving human well-being.



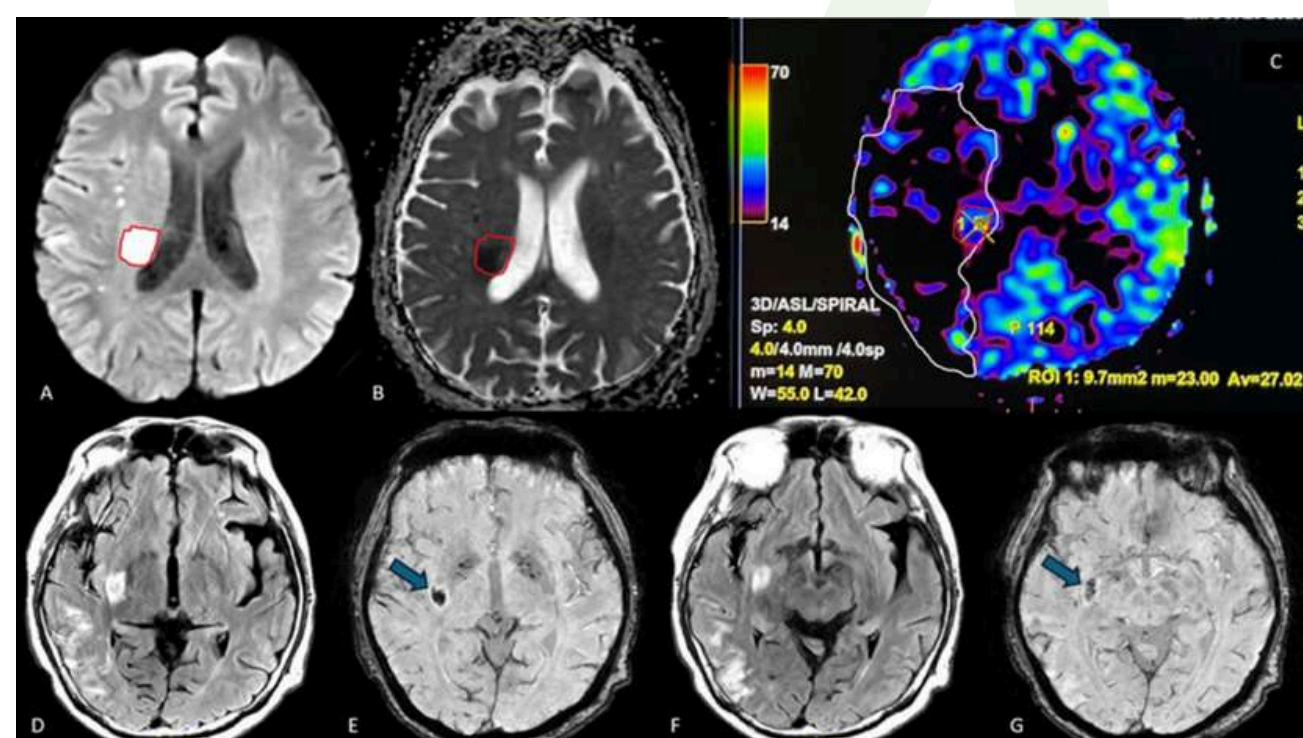
The application of Sengon-based phytoremediation has important implications for communities affected by mining activities. By rehabilitating contaminated areas, this strategy can contribute to safer agricultural environments, improved ecosystem services, and reduced health risks associated with toxic pollutants. Therefore, environmental management and public health protection are interconnected efforts that must be addressed together.

NON-CONTRAST MRI SEQUENCES FOR ISCHEMIC STROKE: A CONCISE OVERVIEW FOR CLINICAL RADIOLOGISTS



Good health and well-being require effective prevention, early diagnosis, and timely treatment of diseases that contribute significantly to global mortality and disability. Among these health challenges, stroke remains one of the leading causes of death and long-term disability worldwide. Improving diagnostic accuracy and reducing delays in stroke management are essential components in achieving SDG 3: Good Health and Well-being, particularly in ensuring access to quality healthcare services and reducing premature mortality caused by non-communicable diseases.

The article entitled “Non-Contrast MRI Sequences for Ischemic Stroke: A Concise Overview for Clinical Radiologists” by Bachtiar et al. (2024) contributes to SDG 3 by highlighting advances in medical imaging technology that support faster, safer, and more accurate diagnosis of ischemic stroke. The study reviews the application of various non-contrast magnetic resonance imaging (MRI) sequences as effective diagnostic approaches, reducing dependence on contrast agents while maintaining clinical effectiveness in stroke evaluation.

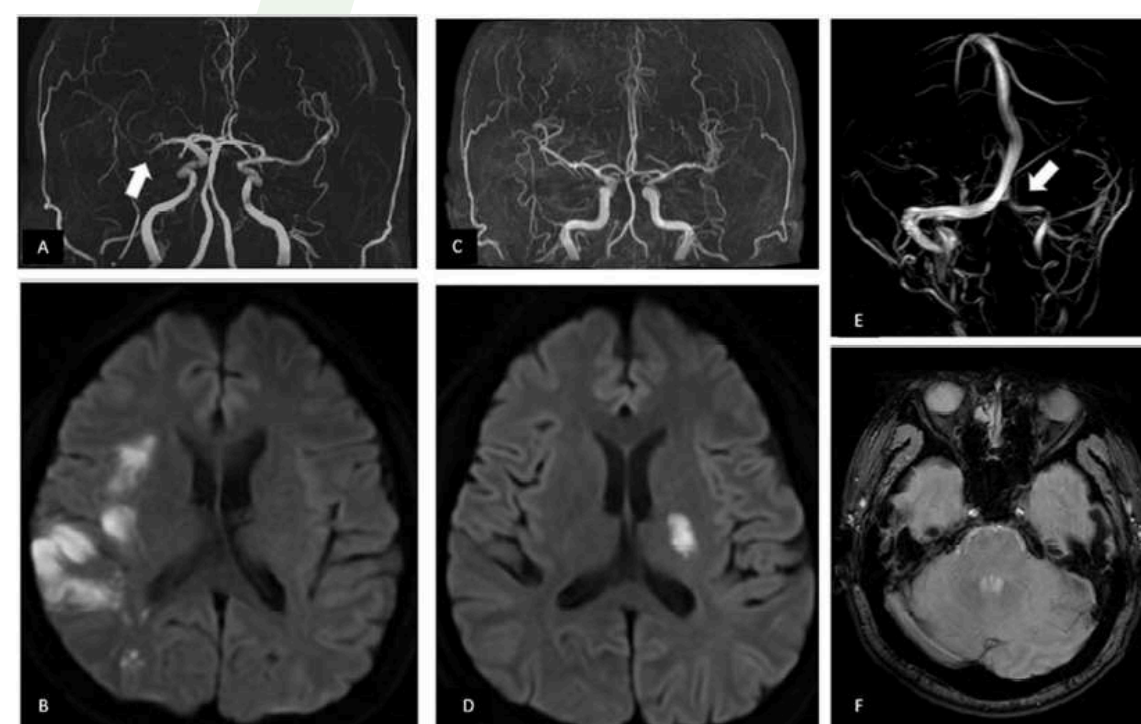


Ischemic stroke represents a major global health burden due to its high impact on mortality, disability, and quality of life. The article emphasizes that stroke is currently the second leading cause of mortality and morbidity worldwide, creating an urgent need for rapid diagnosis and appropriate therapeutic decisions. Accurate identification of stroke type, location, severity, and progression is critical because treatment effectiveness is highly dependent on the time interval between symptom onset and intervention.

The research highlights the important role of MRI technology in improving stroke diagnosis. Conventional imaging approaches, including computed tomography angiography (CTA), digital subtraction angiography (DSA), and contrast-enhanced magnetic resonance angiography (MRA), provide valuable information but may present limitations due to the requirement for contrast materials. Contrast agents can increase

healthcare costs and may pose risks for patients with kidney impairment or allergic reactions. Therefore, the development and utilization of non-contrast MRI techniques provide an alternative approach that supports safer and more accessible diagnostic procedures.

The study provides a comprehensive overview of several MRI sequences that contribute to ischemic stroke assessment, including T1-weighted imaging (T1WI), T2-weighted imaging (T2WI), fluid-attenuated inversion recovery (FLAIR), diffusion-weighted imaging (DWI), apparent diffusion coefficient (ADC), susceptibility-weighted imaging (SWI), arterial spin labeling (ASL), time-of-flight magnetic resonance angiography (TOF-MRA), magnetic resonance venography (MRV), and MR spectroscopy. Each sequence provides specific clinical information, such as infarct location, infarct age, tissue viability, vascular abnormalities, hemorrhagic transformation, and patient prognosis.



From the perspective of SDG 3, the application of non-contrast MRI contributes significantly to improving healthcare quality through earlier and more precise disease detection. For ischemic stroke patients, rapid identification of brain damage and blood flow abnormalities enables clinicians to determine appropriate treatment strategies, including timely recanalization therapies. The ability to identify salvageable brain tissue through techniques such as ASL-DWI mismatch analysis may improve treatment outcomes and reduce the burden of long-term disability.

The article also demonstrates the importance of interdisciplinary collaboration in improving stroke management. Effective stroke diagnosis requires cooperation between radiologists, neurologists, and other healthcare professionals to interpret imaging findings and integrate them into clinical decision-making. By strengthening diagnostic capacity among healthcare providers, advanced MRI approaches contribute to improving health system responsiveness and patient-centered care.

04

SDG 4
QUALITY
EDUCATION

Advancing quality education through innovative teaching practices, qualified educators, and inclusive learning pathways that support sustainable development.



RESEARCH ON EARLY YEARS AND LIFELONG LEARNING EDUCATION

Research on early years and lifelong learning education focuses on improving learning quality through innovative teaching strategies, educational technology, and inclusive learning approaches. One notable contribution is the study on the collaboration of Teaching at the Right Level (TaRL) and Problem-Based Learning (PBL), which promotes student-centered learning by considering differences in students’ abilities and learning readiness. The approach improves engagement, critical thinking, and problem-solving skills through differentiated instruction. These research contributions support SDG 4 by strengthening evidence-based educational practices, reducing learning disparities, and promoting inclusive and effective learning opportunities for all learners.

PROPORTION OF GRADUATES WITH A TEACHING QUALIFICATION

Preparing qualified educators is an important contribution to improving education quality and supporting sustainable learning systems. Graduates from education-related programs are equipped with pedagogical competencies, teaching skills, and professional knowledge to support learning at various educational levels. Alumni contributions include roles as early childhood education teachers, inclusive education facilitators, science teachers integrating sustainability concepts, and community education trainers. Through teacher preparation programs, graduates are encouraged to develop adaptive teaching abilities and respond to diverse learner needs. These efforts contribute to SDG 4 by strengthening the availability of competent educators who support inclusive and quality education.

PROPORTION OF FIRST-GENERATION STUDENTS

Ensuring equal access to higher education requires attention to students from diverse socioeconomic and educational backgrounds, including first-generation students. Support mechanisms such as scholarships, financial assistance, academic guidance, and student development programs help reduce barriers faced by students who are the first in their families to pursue university education. Through initiatives such as KIP Kuliah and institutional scholarship programs, access to higher education is expanded for students with limited financial resources. These efforts promote educational equity, strengthen social mobility, and support SDG 4 by ensuring that educational opportunities are accessible regardless of family background.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>

OUR IMPACT SNAPSHOT

401–600
Global

88
Publication

839
Lecturers

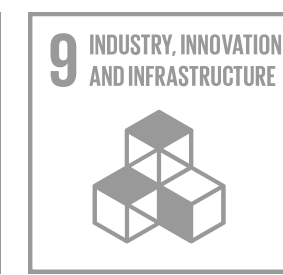
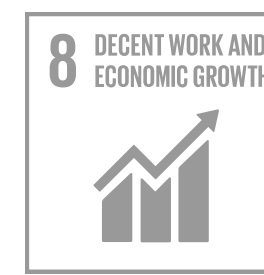
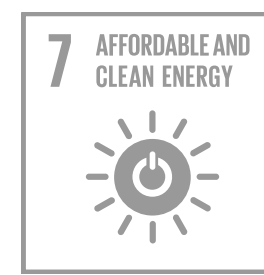
86%
New Students
Receiving
Scholarship
Support

LIFELONG LEARNING MEASURES

Lifelong learning initiatives encourage continuous knowledge development beyond formal education by providing opportunities for skill improvement, professional development, and community empowerment. Learning activities are supported through innovative teaching methods, technology-based education, training programs, and community engagement initiatives. Research on student-centered learning approaches demonstrates the importance of developing independent learners who can adapt to changing social and technological environments. Through academic programs and community-based learning activities, educational resources are extended beyond campus boundaries to support wider society. These initiatives contribute to SDG 4 by promoting continuous learning opportunities and strengthening competencies needed for sustainable development.



Advancing inclusive and innovative education through research, teaching excellence, and lifelong learning opportunities.



THE COLLABORATION OF TEACHING AT THE RIGHT LEVEL APPROACH WITH PROBLEM-BASED LEARNING MODEL



Quality education is a fundamental element in achieving sustainable development because it provides individuals with the knowledge, skills, and competencies needed to participate actively in society. Sustainable Development Goal 4 (SDG 4): Quality Education emphasizes the importance of ensuring inclusive, equitable, and effective learning opportunities for all learners. Achieving this goal requires educational systems that are not only focused on curriculum delivery but also responsive to students' diverse abilities, learning needs, and potential.

The article "The Collaboration of Teaching at The Right Level Approach with Problem-Based Learning Model" contributes to SDG 4 by exploring an innovative learning strategy that combines the Teaching at the Right Level (TaRL) approach with the Problem-Based Learning (PBL) model to improve students' learning outcomes. The study highlights the importance of shifting from traditional teacher-centered learning toward student-centered approaches that consider individual differences in students' abilities and learning readiness.



One of the major challenges addressed in the study is the variation of students' academic abilities within the same classroom. Conventional learning systems often organize students based on age or grade level, even though students may have different levels of understanding and competency. The implementation of TaRL provides a solution by first identifying students' learning levels through diagnostic assessments and then grouping students according to their actual abilities rather than only their grade level. This approach supports SDG 4 by promoting inclusive education and ensuring that students receive learning experiences that match their needs.

The integration of TaRL with PBL strengthens the quality of learning by encouraging active participation, critical thinking, collaboration, and problem-solving skills. Through PBL activities, students are encouraged to analyze real-world problems, discuss possible solutions, and construct their own understanding through investigation. This learning model transforms students from passive recipients of information into active participants in the learning process, supporting the development of 21st-century skills required for sustainable development.

The research findings demonstrate that this collaborative approach positively influenced students' academic achievement. The study involved 73 students, and the final assessment showed an average score of 79.73, indicating improved understanding after implementing the TaRL and PBL approaches. Furthermore, observations during learning activities showed that students became more engaged, motivated, and confident because learning materials were adjusted to their ability levels and connected with real-life problem contexts.



The approach also contributes to educational equity by reducing learning gaps among students. Through diagnostic assessment and differentiated instruction, teachers can identify students who require additional support while still providing appropriate challenges for students with higher abilities. This ensures that every learner has the opportunity to progress according to their potential, which aligns with SDG 4.5 that promotes equal access to quality education and reduces disparities in learning opportunities.

Another important contribution of the study is strengthening teachers' roles as facilitators of meaningful learning. The implementation of TaRL and PBL requires teachers to understand students' characteristics, design flexible learning activities, and continuously evaluate learning progress. This supports SDG 4.7, which emphasizes the development of relevant knowledge and skills through effective educational practices. By improving teachers' capacity to implement innovative pedagogical strategies, education systems can become more adaptive and responsive to learners' needs.

However, the study also identifies challenges in achieving fully equitable learning outcomes. Although students' average scores improved, differences in individual achievement remained. This indicates the need for continuous adjustment, monitoring, and additional interventions, especially for students who require more intensive learning support. Therefore, sustainable implementation of innovative learning approaches requires teacher training, appropriate educational resources, and institutional support.

FRAMEWORK OF COMPUTER SCIENCE LEARNING THROUGH HYBRID SERVICE LEARNING ORIENTED VISUAL TOWARD THE CONTINUUM OF VISUALIZATION THINKING AND GENERIC SKILLS



Quality education is a key foundation for sustainable development because it enables individuals to acquire knowledge, skills, and competencies required to address social, technological, and economic challenges. Sustainable Development Goal 4 (SDG 4) emphasizes the importance of providing inclusive, equitable, and effective learning opportunities while improving educational quality through innovative teaching approaches. In the context of higher education, achieving SDG 4 requires learning systems that go beyond knowledge transfer by developing students’ critical thinking, creativity, communication skills, and ability to apply knowledge in real-world situations.

The article “Framework of Computer Science Learning Through Hybrid Service Learning Oriented Visual Toward the Continuum of Visualization Thinking and Generic Skills” contributes to SDG 4 by introducing an innovative learning framework that integrates Hybrid Service Learning, visual learning approaches, and web-based technology to improve students’ learning experiences and generic skills. The study highlights the importance of transforming Computer Science education from conventional theoretical learning into an experiential learning process where students can connect academic concepts with practical applications in real-life contexts.

One of the main contributions of this study to SDG 4 is the development of a more inclusive and meaningful learning environment through technology integration. Computer Science subjects often require students to understand abstract concepts and translate them into practical solutions. However, limited opportunities to apply theoretical knowledge can hinder students’ ability to visualize concepts and develop problem-solving skills. Through the implementation of the Visual-Assisted Hybrid Service Learning (HiPS-V) framework, students are

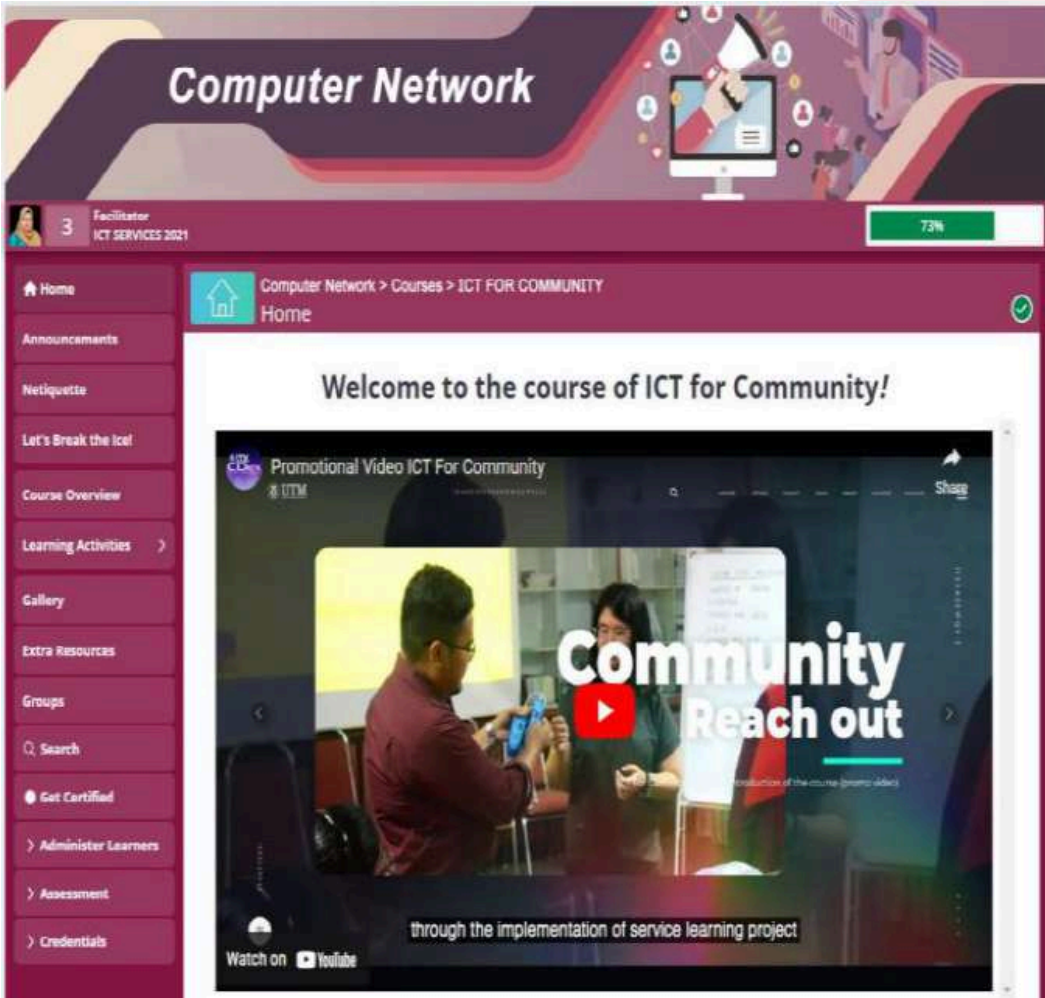
provided with learning activities supported by visual materials and online platforms, allowing them to better understand complex concepts and apply knowledge in practical situations.

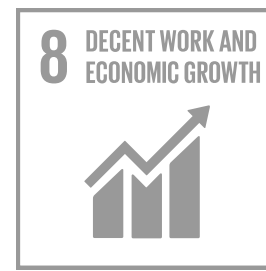
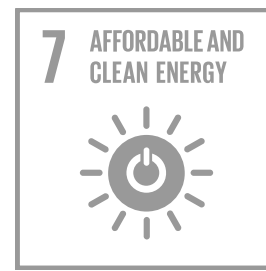
The study demonstrates that technology-supported learning can improve students’ visualization thinking skills, which consist of three important elements: visual thinking, visual learning, and visual communication. The findings showed significant improvements between pre-activity and post-activity assessments. Students’ visual thinking scores increased from an average of 2.44 to 3.22, while visual learning improved from 2.37 to 3.18. Visual communication skills also increased from 2.81 to 3.25 after participating in hybrid service learning activities. These results indicate that integrating visual approaches into learning processes can strengthen students’ ability to interpret, understand, and communicate knowledge effectively.

The research findings also indicate that service-learning activities significantly improved students’ generic skills. The analysis showed significant differences between pre-service and post-service learning activities, demonstrating that students developed stronger abilities throughout the learning process. The integration of investigation, preparation, action, reflection, and demonstration phases provided students with opportunities to collaborate, communicate, create solutions, and reflect on their learning experiences.

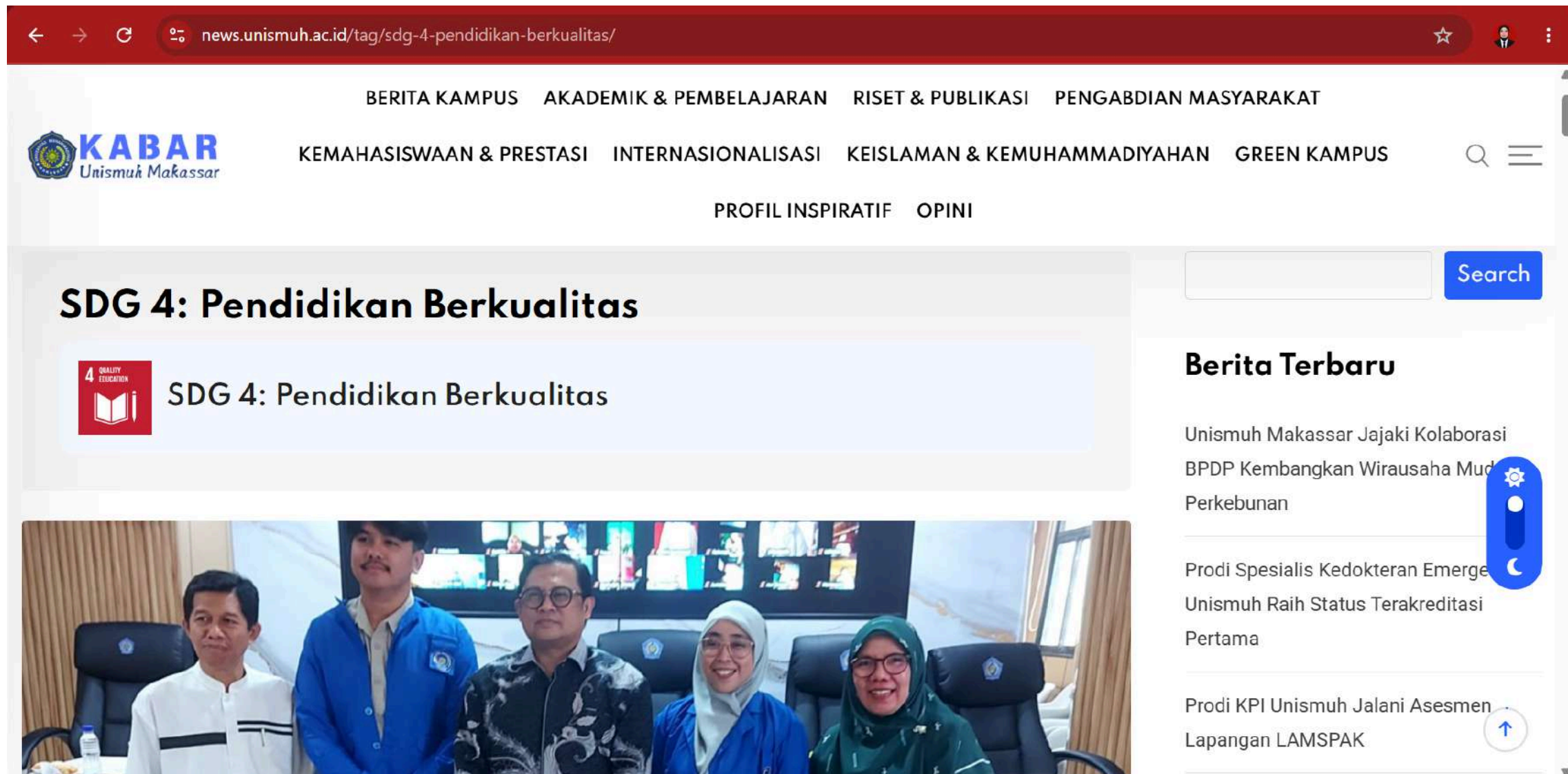
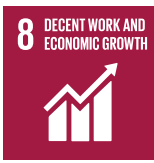
Another important contribution of this study relates to improving accessibility and flexibility in education. The use of web-based learning platforms enables students to access learning materials, participate in activities, and engage with digital resources beyond traditional classroom boundaries. This approach supports the development of flexible learning environments that are responsive to the needs of modern learners, particularly in the digital era where technology plays an increasingly important role in education delivery.

The students’ perceptions toward the implementation of Hybrid Service Learning were also highly positive. The study reported that students considered visual materials helpful in improving understanding, with high perception scores for visual usage (mean = 4.79), visual integration (mean = 4.77), visual application (mean = 4.61), and hybrid service learning activities (mean = 4.76). These findings indicate that technology-based and visually supported learning approaches can create engaging educational experiences and increase students’ motivation to participate actively in learning.





STRENGTHENING INCLUSIVE, INNOVATIVE, AND LIFELONG LEARNING THROUGH EDUCATIONAL DEVELOPMENT PROGRAMS



<https://news.unismuh.ac.id/tag/sdg-4-pendidikan-berkualitas/>

Quality education is a fundamental driver of sustainable development because it provides individuals with the knowledge, skills, and competencies needed to improve their quality of life and contribute to society. Sustainable Development Goal 4 (SDG 4): Quality Education emphasizes the importance of ensuring inclusive and equitable education, improving learning quality, and expanding lifelong learning opportunities for all groups.

One of the important contributions is the implementation of the Recognition of Prior Learning (Rekognisi Pembelajaran Lampau/RPL) Program, which provides opportunities for individuals with previous learning experiences, professional backgrounds, or workplace competencies to continue their higher education journey. This initiative supports lifelong learning principles by recognizing diverse learning pathways and expanding access to higher education for broader communities. Through RPL, education becomes more flexible and inclusive, allowing individuals to improve their qualifications without being limited by conventional educational pathways.

The university also strengthens SDG 4 through initiatives that improve the capacity of future educators. Training programs focusing on inclusive education, including sign language training for prospective teachers, demonstrate efforts to prepare educators who are capable of creating learning environments that accommodate diverse student needs, including students with disabilities. These programs contribute to building a more inclusive education system where every learner has equal opportunities to participate and succeed.

Beyond formal academic activities, educational quality is also strengthened through community-based learning programs. Student activities such as KKN-Dik (Educational Community Service Program) provide opportunities for university students to contribute directly to schools and communities. Programs focusing on character development, anti-bullying awareness, and entrepreneurship education demonstrate that quality education extends beyond academic achievement by also developing social responsibility, creativity, and life skills among younger generations.

The integration of innovative teaching approaches and community engagement reflects the university's commitment to developing students with competencies relevant to current social challenges. Through practical learning experiences, students are encouraged to apply knowledge, collaborate with communities, and develop problem-solving abilities. This approach supports SDG 4 by promoting education that is meaningful, contextual, and connected with real-world needs.

Furthermore, strengthening educational quality is supported through academic collaboration and knowledge exchange. International academic partnerships and guest lecture programs provide opportunities for lecturers and students to gain broader perspectives, strengthen research networks, and improve the quality of teaching and learning processes. Such collaborations contribute to the continuous improvement of higher education quality and support the internationalization of academic practices.

05

SDG 5 GENDER EQUALITY

Strengthening gender equality through inclusive education, women's leadership, and equitable opportunities for all members of the academic community.



RESEARCH ON THE STUDY OF GENDER EQUALITY

Research related to gender equality explores the relationship between social structures, women's participation, empowerment, and sustainable development. One notable contribution is the study "Gender Analysis in the Islamic Law-Based Ecofeminism Movement for Ecosystem Protection", which examines the integration of ecofeminism and Islamic legal principles to strengthen women's roles in environmental sustainability. The study highlights that gender equality requires equal access to resources, decision-making, education, and economic opportunities. By recognizing women as active agents of change, this research contributes to SDG 5 through evidence-based perspectives that support inclusive policies, social justice, and women's empowerment.

PROPORTION OF FIRST-GENERATION FEMALE STUDENTS

Supporting first-generation female students is an important aspect of promoting equal access to higher education. Students who are the first in their families to pursue university education may face challenges related to financial limitations, social expectations, and limited educational support. Through inclusive admission policies, scholarship programs, and student support services, opportunities are expanded for female students from diverse backgrounds to access and complete higher education. These initiatives contribute to reducing educational inequality and strengthening women's social mobility. By ensuring that educational opportunities are not limited by family background or economic conditions.

STUDENT ACCESS MEASURES

Equal access to education is strengthened through institutional policies that promote equality, diversity, and inclusion. The implementation of EDI policies ensures that students receive fair opportunities, protection from discrimination, and access to academic and non-academic support regardless of gender, background, or personal conditions.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>

OUR IMPACT SNAPSHOT

THE IMPACT RANKINGS
On process

Scopus®
15
Publication

EDI Policy
Equality, Diversity
& Inclusion
Framework

153
Structural
Officials

PROPORTION OF SENIOR FEMALE ACADEMICS

Women's participation in academic leadership and senior positions represents an important indicator of institutional commitment toward gender equality. Increasing the representation of female academics in strategic roles strengthens diversity in decision-making and provides broader perspectives in academic governance. Through professional development opportunities, leadership pathways, and inclusive organizational practices, female academics are encouraged to contribute to teaching, research, and institutional development. The appointment of structural officials across various university units reflects efforts to establish a professional and inclusive leadership environment where competence and contribution become the main considerations for advancement.

PROPORTION OF WOMEN RECEIVING DEGREES

Ensuring equal opportunities for women to complete higher education is essential for achieving gender equality and strengthening women's empowerment. Female students are provided with access to academic programs, learning resources, financial assistance, and institutional support that enable them to successfully complete their studies. Equal participation in higher education allows women to develop knowledge, professional skills, and career opportunities that contribute to social and economic development. By supporting women's academic achievement and graduation outcomes, the university contributes to reducing gender disparities in education and improving women's future participation in professional sectors.

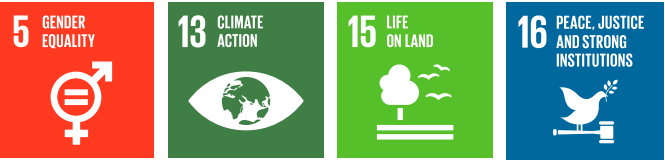
WOMEN'S PROGRESS MEASURES

Promoting women's progress requires continuous institutional efforts to create an environment where women can develop, participate, and achieve leadership positions. Through inclusive governance, professional development, and equality-based policies, opportunities are provided for women to contribute across academic, administrative, and organizational areas. The Equality, Diversity, and Inclusion policy establishes institutional commitments to fairness, non-discrimination, accessibility, and equal participation for all members of the university community. These measures support women's advancement by reducing structural barriers and strengthening a culture of respect and empowerment.



Supporting women's progress through inclusive education

GENDER ANALYSIS IN THE ISLAMIC LAW-BASED ECOFEMINISM MOVEMENT FOR ECOSYSTEM PROTECTION





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Gender Analysis in the Islamic Law-Based Ecofeminism Movement
for Ecosystem Protection

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Gender equality is a fundamental component of sustainable development, emphasizing equal opportunities, participation, and empowerment for all individuals regardless of gender. Sustainable Development Goal 5 (SDG 5): Gender Equality highlights the importance of eliminating discrimination, strengthening women’s participation in decision-making, and ensuring that women have equal access to resources and opportunities. In this context, addressing environmental challenges through an inclusive gender perspective is essential because women often experience the impacts of ecological crises while simultaneously playing significant roles in environmental protection.

The article “Gender Analysis in the Islamic Law-Based Ecofeminism Movement for Ecosystem Protection” explores the integration of ecofeminist perspectives with Islamic legal principles to promote environmental sustainability while strengthening women’s roles as active agents of change. The study emphasizes that ecological degradation and gender inequality are interconnected issues influenced by social structures, particularly systems of domination that have historically limited women’s participation and marginalized their contributions.

From the perspective of SDG 5, the study highlights the importance of recognizing women not only as affected groups but also as key contributors to environmental management and sustainability efforts. The concept of ecofeminism challenges traditional perspectives that position women and nature as passive entities requiring control. Instead, it promotes a more balanced relationship where women are recognized as knowledge holders, decision-makers, and leaders in ecosystem protection initiatives.

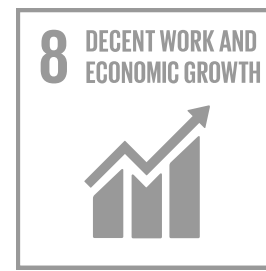
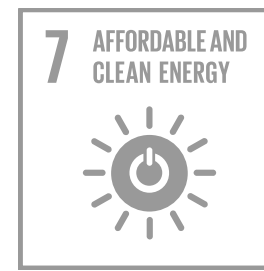
The integration of Islamic law principles provides an additional foundation for strengthening gender equality. The concepts of ‘adl (justice), mizan (balance), and

khalifah (human responsibility as guardians of the earth) emphasize fairness, environmental responsibility, and collective participation. Through this perspective, environmental stewardship is not limited by gender boundaries; rather, both women and men have equal responsibilities in maintaining ecological balance and protecting natural resources.

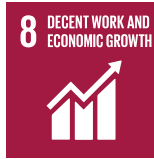
The study also demonstrates that providing women with greater access to land, natural resources, education, and economic opportunities can increase their participation in agriculture and environmental management. Such empowerment contributes directly to SDG 5 by strengthening women’s independence, improving their socio-economic position, and enabling them to become leaders in sustainable development initiatives. Women’s involvement in environmental programs can also generate broader impacts, including poverty reduction and stronger community resilience.

However, achieving gender equality in environmental movements still faces several challenges. The article identifies barriers including resistance from patriarchal communities, limited financial and technical support, and insufficient access to continuous education and training. These challenges demonstrate that gender equality requires not only policy commitments but also long-term efforts to transform social norms, increase capacity building, and create supportive institutional environments for women’s participation.

Technology and innovation also play an important role in supporting inclusive environmental policies. By improving access to information, training, and sustainable technologies, women can gain greater opportunities to participate in environmental decision-making and resource management. This approach aligns with SDG 5.5, which encourages women’s full and effective participation and equal opportunities for leadership at all levels.



UNISMUH RECTOR INAUGURATES 153 STRUCTURAL OFFICIALS, EMPHASIZING EXCELLENT SERVICE AND SYNERGY AMONG UNITS



<https://news.unismuh.ac.id/2025/08/26/rektor-unismuh-lantik-153-pejabat-struktural-tekanan-pelayanan-prima-dan-sinergitas-antar-unit/>

Gender equality is an essential component of sustainable development, requiring equal opportunities for participation, leadership, and decision-making across all sectors. Within the framework of Sustainable Development Goal 5 (SDG 5): Gender Equality, higher education institutions have an important role in promoting inclusive governance structures that provide fair opportunities for both women and men to contribute to institutional development.

The appointment of 153 structural officials at Universitas Muhammadiyah Makassar represents a commitment to strengthening professional and inclusive institutional leadership. Through this leadership regeneration process, Unismuh continues to develop a governance system based on competence, responsibility, and equal opportunities for academic and professional advancement.

The appointment involved leaders from various strategic units, including academic departments, quality assurance institutions, research and community service divisions, student affairs, and administrative units. The broad representation of leadership roles demonstrates the university's efforts to create a diverse organizational structure where individuals with different expertise and backgrounds can contribute to decision-making processes.

From the perspective of SDG 5, inclusive leadership practices are important in ensuring that institutional development is not limited by gender-based barriers. By providing opportunities for qualified individuals to occupy strategic positions, universities can strengthen women's participation in leadership and encourage a more balanced decision-making environment. Such practices contribute to creating an academic culture that values equality, professionalism, and respect.

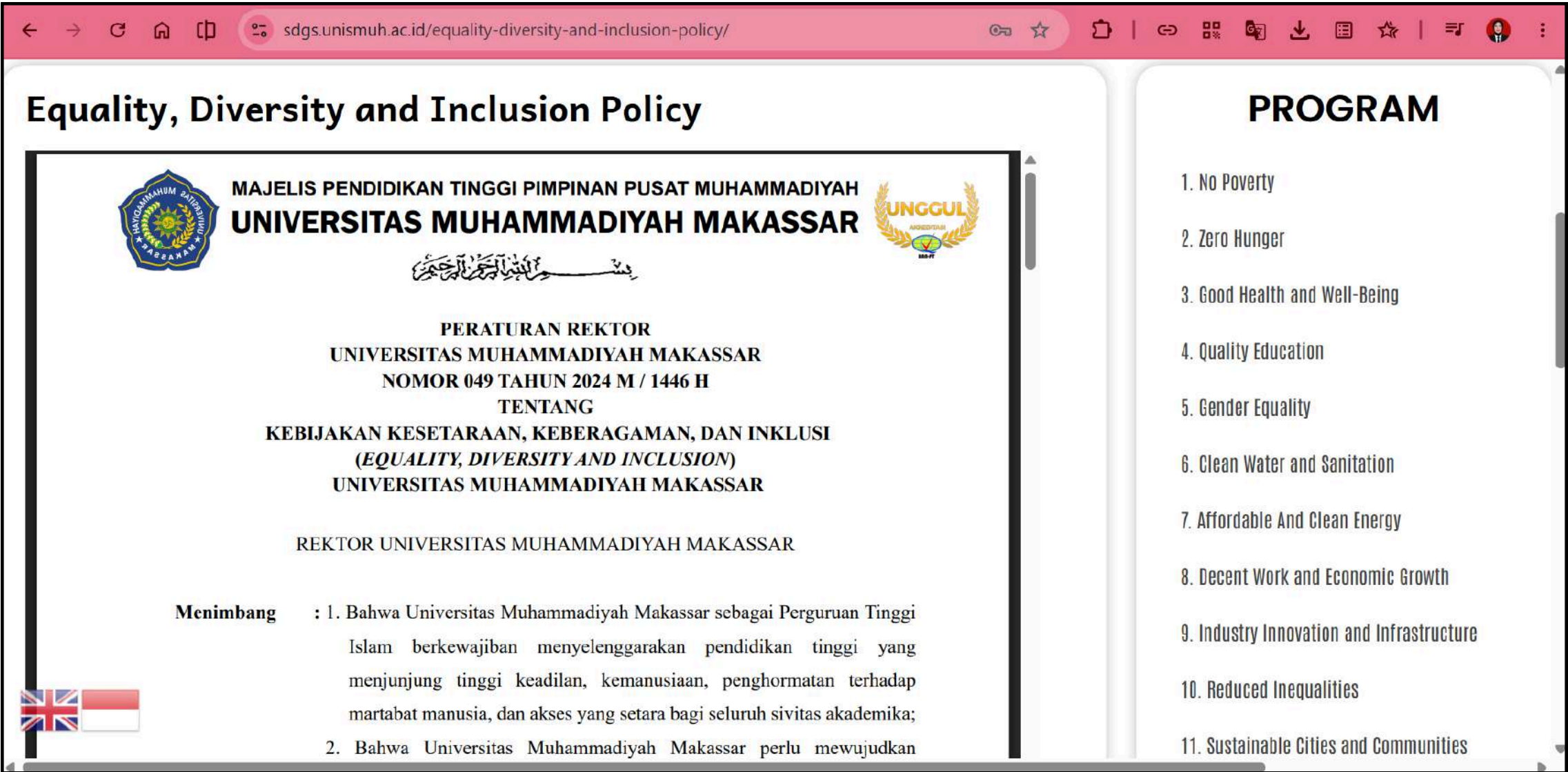
The leadership transition also emphasizes the importance of organizational culture in supporting gender-responsive governance. During the inauguration, university leaders highlighted the need for commitment, ethical behavior, teamwork, and a collaborative culture among all officials. These principles are essential in building an institutional environment where every member has equal opportunities to develop and participate.

Furthermore, strengthening leadership capacity supports the creation of better academic services for students. The newly appointed officials are expected to improve institutional performance, enhance administrative efficiency, and provide responsive services regardless of students' backgrounds. This reflects the broader goal of creating an inclusive higher education environment that supports equal access and opportunities.

The involvement of women in various academic and managerial positions within the university structure also reflects progress toward gender-inclusive governance. Women's participation in leadership roles contributes diverse perspectives, strengthens institutional decision-making, and challenges traditional barriers that may limit women's professional advancement in higher education.

Through this leadership regeneration initiative, Universitas Muhammadiyah Makassar demonstrates that gender equality is not only achieved through specific programs but also through institutional policies and governance practices. The commitment to professional, inclusive, and collaborative leadership aligns with SDG 5 by promoting equal participation, reducing barriers to leadership opportunities, and supporting an organizational culture based on fairness and empowerment.

PROMOTING EQUAL OPPORTUNITIES AND AN INCLUSIVE ACADEMIC ENVIRONMENT THROUGH EQUALITY, DIVERSITY, AND INCLUSION POLICY



<https://sdgs.unismuh.ac.id/equality-diversity-and-inclusion-policy/>

Gender equality is an essential component of sustainable development, ensuring that all individuals have equal rights, opportunities, and participation regardless of gender or personal background. In higher education, achieving SDG 5 requires institutional commitments that prevent discrimination, promote equal access, and create a safe and inclusive environment for all members of the academic community.

Universitas Muhammadiyah Makassar strengthens its commitment to SDG 5 through the implementation of the Equality, Diversity, and Inclusion (EDI) Policy, established under Rector Regulation Number 049 of 2024. This policy serves as an institutional framework to ensure equal treatment, respect for diversity, and inclusive participation across academic and non-academic activities. It aims to prevent discrimination, exclusion, harassment, and other barriers that may limit the participation of students, lecturers, educational staff, and stakeholders.

The EDI Policy supports gender equality by ensuring equal opportunities in education, employment, professional development, and campus participation. The policy requires recruitment, career development, and promotion processes for lecturers and staff to be conducted fairly, transparently, and without discrimination. It also emphasizes equal access to capacity-building opportunities, allowing all members of the university community to develop their potential.

In the academic environment, the policy promotes inclusive education by integrating EDI principles into learning processes, curriculum development, research,

and community engagement. The university is committed to providing accessible services, facilities, and learning resources while ensuring that students from diverse backgrounds, including vulnerable groups, receive appropriate support and opportunities to succeed.

The policy also strengthens protection mechanisms against discrimination, harassment, violence, and exclusion through prevention programs, awareness activities, training, and accessible reporting systems. These mechanisms ensure that complaints are handled fairly while protecting the confidentiality and rights of affected individuals.

Furthermore, the implementation of EDI principles is supported through institutional governance, monitoring, evaluation, and continuous improvement. University leaders and organizational units are responsible for integrating equality and inclusion values into policies, programs, and services. Regular evaluation ensures that EDI implementation remains aligned with institutional commitments toward creating a fair and inclusive campus environment.

The EDI Policy represents a strategic effort to advance SDG 5 by embedding gender equality and inclusion into university governance, education, human resource management, and campus culture. Through this approach, Universitas Muhammadiyah Makassar contributes to building an academic environment where every individual has equal opportunities to participate, develop, and achieve success.

06

SDG 6
CLEAN WATER
AND
SANITATION

Delivering sustainable water solutions that improve environmental quality, public health, and community well-being through research, education, and innovation.



RESEARCH ON CLEAN WATER AND SANITATION

Research on clean water and sanitation focuses on advancing sustainable water resource management, climate resilience, and environmentally sound infrastructure. Studies address rainfall-runoff modelling, watershed management, flood mitigation, and Geographic Information Systems (GIS)-based analyses to improve urban drainage and reduce disaster risks. Innovative approaches integrating hydrological modelling, machine learning, and Low Impact Development (LID) provide scientific evidence for adaptive water governance and sustainable sanitation planning. These research outcomes support policymakers and local communities in strengthening water security, protecting freshwater ecosystems, and developing resilient infrastructure capable of responding to increasing climate-related water challenges.

WATER CONSUMPTION

Responsible water consumption is supported through integrated water management, combining clean water production, rainwater harvesting, and efficient campus infrastructure. The university operates the Unismuh Water treatment facility, supplying approximately 481 litres of the campus's 1,650-litre daily clean water demand, reducing reliance on external sources. Water conservation is further enhanced through rainwater harvesting systems, including a 288 m³ reservoir at the Main Campus and a 5,610 m³ conservation lake at the Bollangi Campus. These facilities provide alternative water sources for irrigation, groundwater recharge, campus greening, and environmental sustainability while promoting efficient water use.

WATER REUSE

Water reuse is implemented through a circular water management system that maximizes resource efficiency while minimizing environmental impacts. Wastewater generated from campus facilities is treated through the IPAL system and safely reused for landscape irrigation and fish ponds. During the reporting period, approximately 600,000 litres of treated wastewater were reused from 1.77 million litres of total water consumption, representing a 33.9% reuse rate. Rainwater harvesting facilities at both campuses further support water reuse by supplying irrigation, groundwater recharge, campus maintenance, and environmental conservation, reducing dependence on freshwater resources.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id> • Unismuh Water

OUR IMPACT SNAPSHOT

On process

Scopus®

31
Publication

288 m³
Rainwater
Harvesting
Capacity

33.9%
Wastewater
Reuse Rate

WATER CARE

Water quality protection is strengthened through wastewater treatment, environmental monitoring, and smart water management systems. The Wastewater Treatment Plant (IPAL) at the Tun Abdul Razak Campus processes up to 40 m³ of wastewater per day using anaerobic-aerobic biofilters, filtration, and chlorination before safe reuse or discharge. Routine monitoring covers pH, BOD, COD, TSS, ammonia, temperature, and wastewater discharge to ensure compliance with national environmental standards. Water conservation is further supported by 150 automatic sensor faucets, 33 automatic water-level controllers, and the gradual implementation of IoT-based monitoring technologies to improve operational efficiency and reduce unnecessary water losses.

WATER IN THE COMMUNITY

Clean water initiatives extend beyond campus through research, community engagement, and partnerships supporting sustainable water management. Research findings on flood mitigation, watershed management, and healthy urban development provide scientific recommendations for improving community resilience and access to safe water resources. Community programmes promote environmental awareness, water conservation, sanitation, and climate adaptation through collaboration with local governments and surrounding communities. These initiatives strengthen evidence-based water governance while encouraging sustainable practices that protect freshwater ecosystems, improve public health, and enhance community resilience against water-related environmental challenges, contributing directly to the achievement of Sustainable Development Goal 6.



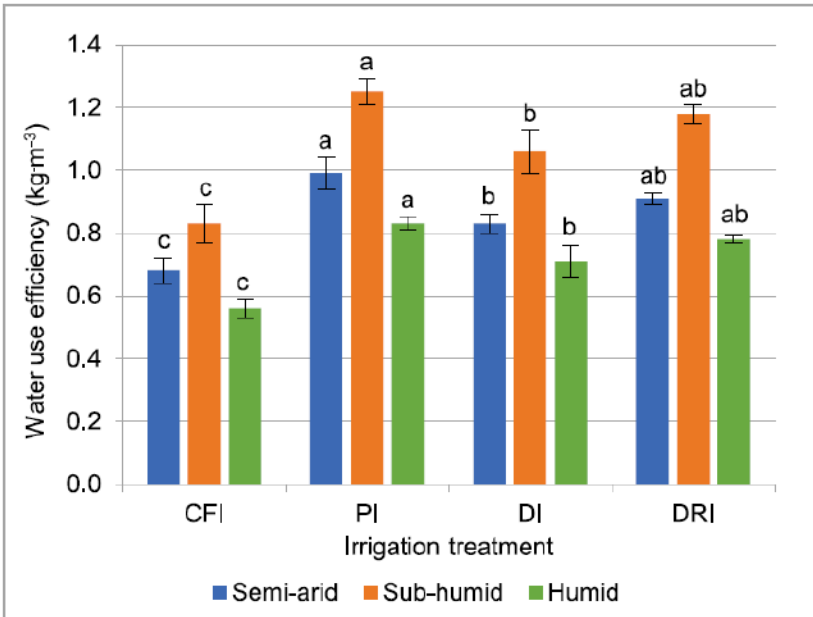
Sustainable water management. Cleaner environments. Better quality of life.

IMPROVING WATER EFFICIENCY THROUGH SUSTAINABLE IRRIGATION TECHNOLOGIES FOR WATER CONSERVATION AND FOOD SECURITY



Water scarcity has become a growing global challenge, particularly in agricultural regions where increasing food demand and climate change continue to place pressure on limited water resources. Agriculture remains one of the largest consumers of freshwater, while traditional irrigation methods often result in significant water losses through evaporation, runoff, and inefficient distribution. Therefore, improving water management practices through sustainable irrigation technologies is essential to achieving Sustainable Development Goal 6 (SDG 6): Clean Water and Sanitation, particularly in promoting efficient water use and sustainable management of water resources.

The article entitled “Comparative analysis of precision, deficit, and drip irrigation for water efficiency in Iraq” contributes to SDG 6 by evaluating different irrigation strategies to improve water use efficiency (WUE) while maintaining agricultural productivity. The study compares precision irrigation (PI), deficit irrigation (DI), and drip irrigation (DRI) with conventional flood irrigation (CFI) across different agroecological zones in Iraq. The findings demonstrate that sustainable irrigation practices can significantly reduce water consumption while improving crop performance, providing an important approach for addressing water scarcity challenges.



One of the key contributions of this research to SDG 6 is the promotion of efficient water utilization in agriculture. Conventional flood irrigation often leads to excessive water application and losses through surface runoff, evaporation, and deep percolation. In contrast, precision irrigation uses real-time soil moisture monitoring to deliver water according to crop requirements, minimizing unnecessary water use. The study found that precision irrigation increased water use efficiency by 46–51% compared with conventional flood irrigation across the studied regions, demonstrating its potential to improve agricultural water management.

The research also highlights the effectiveness of water-saving irrigation approaches in reducing agricultural water demand. Deficit irrigation achieved the highest water savings, reducing water application by approximately 30% compared with conventional

irrigation, while drip irrigation also improved efficiency by delivering water directly to the crop root zone. These results demonstrate that sustainable irrigation technologies can help conserve freshwater resources while maintaining or even improving crop productivity.

Beyond water conservation, this study contributes to SDG 6 by supporting sustainable management of water resources through technology integration. The application of remote sensing and hydrological modelling provided additional insights into water balance, crop conditions, and irrigation impacts. The study showed that precision irrigation reduced evapotranspiration and surface runoff while increasing groundwater recharge, indicating improved efficiency in the overall water cycle management.

The implementation of sustainable irrigation systems also supports long-term water security in regions facing climate-related challenges. Iraq represents a water-stressed region where rising temperatures, changing rainfall patterns, and limited water availability threaten agricultural sustainability. By improving water productivity, efficient irrigation methods can help farmers produce more food with less water, supporting both water conservation and food security.

Treatment	Change components compared to CFI (%)					
	evapotran- spiration		surface runoff		groundwater recharge	
	value	SE	value	SE	value	SE
PI	-15	±2	-40	±5	+25	±3
DI	-25	±3	-30	±4	+15	±2
DRI	-20	±2	-35	±4	+20	±3

Furthermore, the study emphasizes that achieving sustainable water management requires more than technological innovation alone. Successful adoption of precision, deficit, and drip irrigation depends on capacity building, farmer education, supportive policies, and stakeholder collaboration. These factors are important to ensure that water-saving technologies can be implemented effectively and provide long-term benefits for communities.

Although sustainable irrigation technologies offer significant opportunities, several challenges remain, including implementation costs, technological accessibility, and adaptation to different environmental conditions. Future strategies should focus on improving affordability, expanding farmer awareness, and integrating advanced monitoring systems to support wider adoption of efficient irrigation practices.

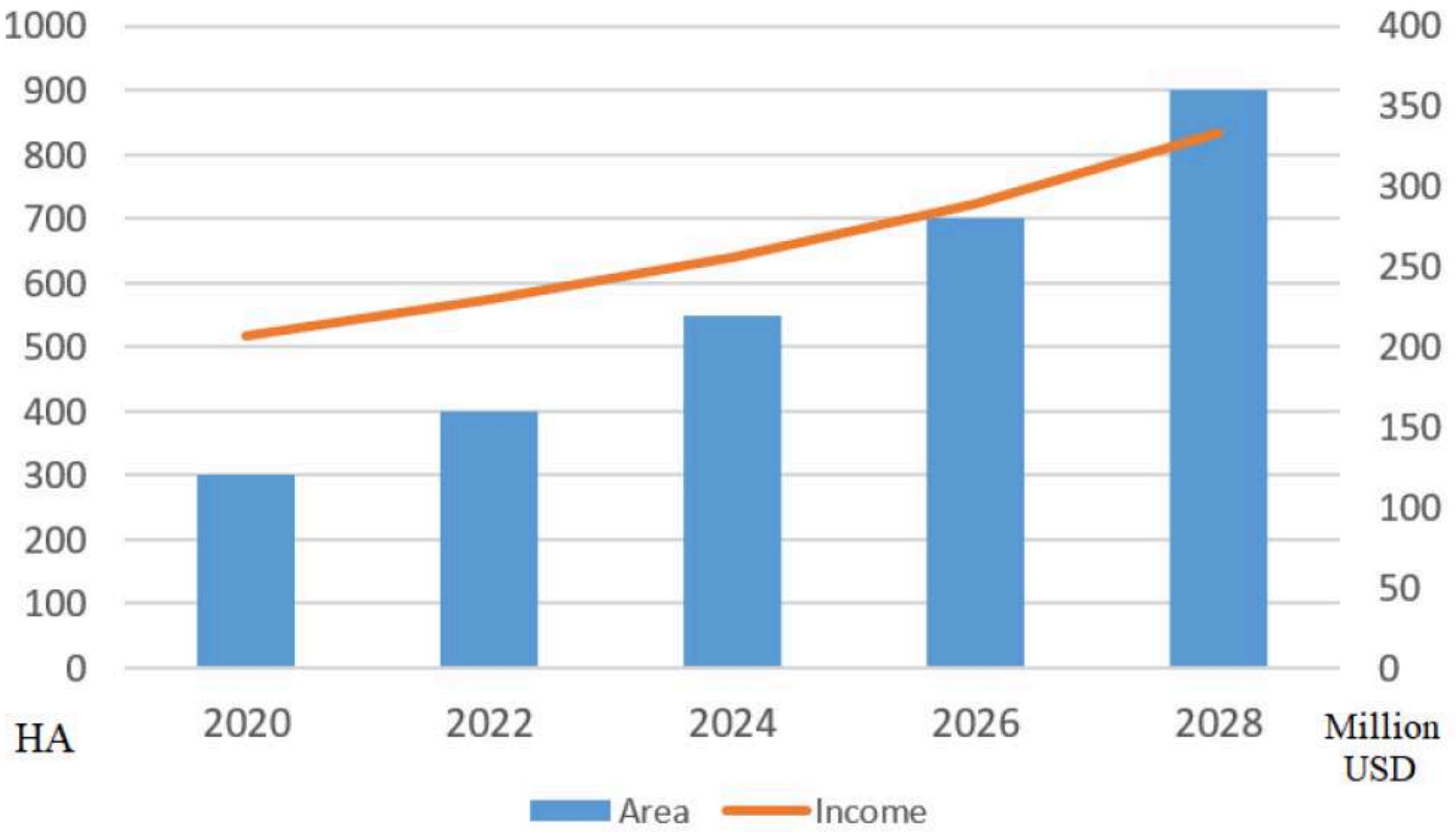
PROMOTING SUSTAINABLE WATER RESOURCE MANAGEMENT THROUGH ORGANIC AGRICULTURE AND ENVIRONMENTAL PROTECTION



Sustainable water management is an important aspect of achieving Sustainable Development Goal 6 (SDG 6): Clean Water and Sanitation, particularly in ensuring the availability and sustainable use of water resources. Agriculture is one of the largest users of freshwater, while conventional farming practices that rely heavily on chemical fertilizers and pesticides can contribute to water pollution through runoff and chemical residues. Therefore, adopting sustainable agricultural systems, such as organic agriculture, provides an effective approach to protecting water quality and promoting responsible resource management.

soil health, enhances nutrient availability, and increases water retention capacity, contributing to more efficient water utilization.

The study further emphasizes that organic agriculture supports broader environmental protection by maintaining soil quality, preserving ecosystems, and encouraging responsible production systems. The research involved 71 agricultural experts and found that organic agriculture capabilities explained 96.1% of the variation in food security, covering aspects of availability, accessibility, utilization, sustainability, and food safety.



The article entitled “Increasing Food Health and Safety by Improving Biological Fertility and Using Organic Agriculture” contributes to SDG 6 by demonstrating how organic agriculture can reduce environmental pollution and support the sustainability of soil and water ecosystems. The study highlights that excessive use of synthetic fertilizers and pesticides can disrupt soil balance and increase the risk of water contamination. In contrast, organic agriculture reduces dependence on chemical inputs by utilizing biological fertilizers and natural ecological processes.

These findings demonstrate that sustainable agricultural practices can simultaneously support food production and environmental conservation.

From the perspective of SDG 6, this research highlights that water sustainability is closely connected with agricultural management practices. Protecting water resources requires approaches that reduce pollution, improve resource efficiency, and maintain ecosystem balance. Organic agriculture provides a preventive strategy by minimizing harmful inputs and promoting farming systems that work in harmony with natural processes.

One of the key contributions of this research is the potential of organic farming to minimize agricultural impacts on water resources. By reducing chemical runoff and improving soil fertility, organic agriculture helps maintain cleaner water systems and supports more sustainable agricultural practices. The use of biological fertilizers from beneficial microorganisms also improves

However, wider implementation of organic agriculture requires continuous support through farmer education, certification systems, financial assistance, and access to sustainable technologies. Addressing these challenges is essential to accelerate the transition toward environmentally responsible agricultural systems and strengthen long-term water and resource sustainability.

07

SDG 7 AFFORDABLE AND CLEAN ENERGY

Advancing sustainable energy solutions through renewable energy adoption, energy efficiency, and innovative research for a low-carbon future.



RESEARCH ON AFFORDABLE AND CLEAN ENERGY

Research on affordable and clean energy focuses on developing sustainable solutions to improve energy efficiency and reduce dependence on conventional energy sources. Research on cold thermal energy storage (CTES) demonstrates how energy management strategies can optimize cooling systems, reduce peak electricity demand, and improve economic efficiency in commercial buildings. In addition, studies on passive building design highlight the role of natural lighting optimization in reducing artificial lighting requirements. These research contributions support SDG 7 by promoting innovative, efficient, and sustainable energy solutions applicable to buildings, industries, and communities.

CLEAN ENERGY MEASURES

Clean energy measures are implemented through renewable energy adoption and energy-efficient technologies. The university has introduced solar-powered street lighting systems that utilize solar energy stored in batteries to provide nighttime lighting while reducing dependence on conventional electricity. Energy-saving technologies such as LED lamps, efficient air conditioners, motion sensors, and automated systems have also been implemented across campus facilities. These initiatives improve energy efficiency, reduce electricity consumption, and support the transition toward cleaner energy systems. The integration of renewable energy and efficiency measures demonstrates institutional commitment to sustainable energy management.

ENERGY USE

Energy use management is strengthened through continuous monitoring, efficiency improvement, and smart building implementation. Electricity consumption data show a reduction from 2,144,071 kWh in 2023 to 2,134,034 kWh in 2024, indicating improved energy efficiency. Furthermore, 99.96% of campus building areas have implemented smart building elements, including automation, energy management, smart lighting, and environmental control systems. These technologies optimize energy utilization by reducing unnecessary consumption while maintaining user comfort. Sustainable energy management practices contribute to more efficient resource utilization and support long-term energy conservation goals.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>

OUR IMPACT SNAPSHOT

THE IMPACT RANKINGS

On process

Scopus®

25
Publication



57,707
LED Lamps
Installed



1,314
kWh

Annual Solar
Energy Generated

ENERGY AND THE COMMUNITY

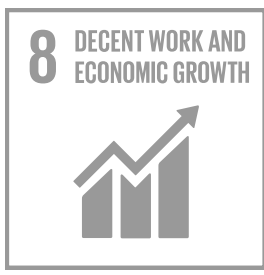
Energy sustainability requires awareness and participation from the academic community. Energy-efficient facilities, renewable energy systems, and smart technologies implemented on campus provide practical examples of responsible energy use for students, lecturers, and staff. Research on passive classroom design also provides knowledge for improving energy efficiency in educational environments by maximizing natural lighting and reducing dependence on artificial lighting. Through education, research, and campus implementation, energy conservation practices can be promoted among broader communities. These efforts strengthen awareness of sustainable energy use and encourage collective participation in achieving clean energy goals.

LOW-CARBON ENERGY USE

Low-carbon energy use is supported through renewable energy adoption, energy efficiency improvements, and sustainable building strategies. Solar-powered lighting systems contribute to reducing dependence on fossil-based electricity and lowering carbon emissions from campus operations. Smart building systems and energy-efficient appliances further reduce indirect emissions by optimizing electricity consumption and minimizing unnecessary energy use. In addition, passive daylight optimization strategies reduce energy requirements for artificial lighting in educational buildings by maximizing natural resources. These combined approaches demonstrate how renewable energy integration, efficient technologies, and sustainable design can support carbon reduction efforts. Through continuous improvement in energy management, these initiatives contribute to the transition toward a more sustainable, resilient, and low-carbon energy system.



Smart technology for
sustainable and efficient
energy management.



COMPUTATIONAL STUDIES: A PASSIVE STRATEGY TO IMPROVE VISUAL COMFORT BY OPTIMIZING DAYLIGHT UNIFORMITY IN THE CLASSROOM



Energy efficiency in buildings plays an important role in achieving SDG 7: Affordable and Clean Energy, particularly by reducing electricity consumption and promoting sustainable approaches in the built environment. Educational buildings often require significant energy use due to continuous lighting demands during learning activities. The article entitled “Computational studies: A passive strategy to improve visual comfort by optimizing daylight uniformity in the classroom” highlights the potential of passive design strategies to improve natural lighting performance while reducing dependence on artificial lighting systems.



The study demonstrates that optimizing daylight distribution through passive design interventions can contribute to more efficient energy use in classrooms. Using computational simulation with Autodesk Ecotect Analysis, the research evaluated existing classroom conditions and modified designs incorporating passive strategies such as reflective surfaces, improved window configurations, and orientation adjustments. The findings showed that conventional classroom models generally achieved sufficient illumination levels but experienced poor daylight uniformity and excessive brightness in certain areas. These conditions may increase reliance on artificial lighting and reduce overall energy efficiency.

One of the main contributions of this research to SDG 7 is the promotion of daylight utilization as a renewable and cost-effective energy-saving strategy. The improved classroom models achieved better daylight uniformity while maintaining adequate illumination levels above the required standard. For example, the Type-2 classroom models demonstrated improved lighting performance with average illuminance values ranging from approximately 494 Lux to 547 Lux and reduced maximum illumination levels, minimizing glare and improving

visual comfort. These results indicate that passive design can optimize the use of natural resources while lowering the need for electrical lighting during daytime operations.



Furthermore, the study highlights the relationship between sustainable architectural design and energy conservation. By maximizing natural lighting availability, passive strategies can reduce electricity consumption associated with artificial lighting systems. The article indicates that optimized daylighting configurations have the potential to reduce artificial lighting demand by approximately 40–60%, demonstrating the significant role of building design in supporting energy efficiency and reducing operational carbon emissions.

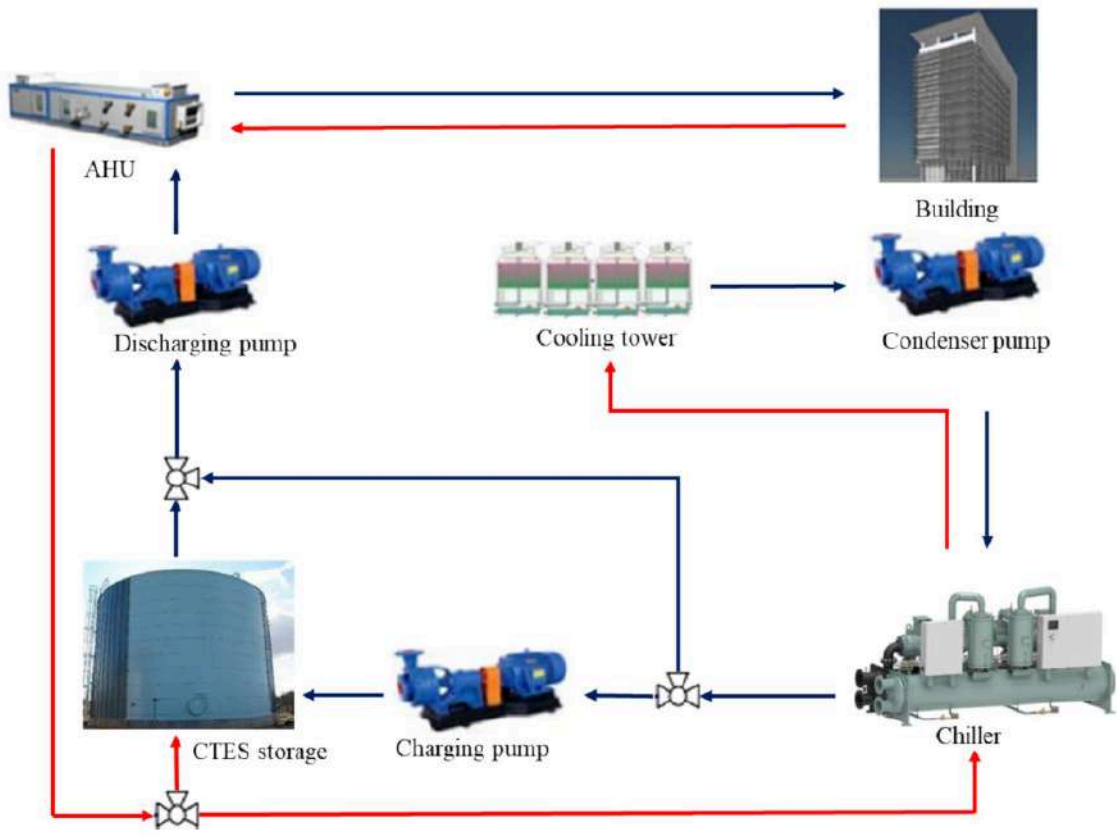
The research also contributes to SDG 7 by supporting the development of energy-efficient educational infrastructure. Sustainable classroom design not only reduces energy consumption but also creates healthier learning environments through improved visual comfort and reduced glare. The integration of passive strategies provides a practical solution for tropical regions, where abundant solar availability can be utilized as an alternative energy source for indoor illumination. This approach supports affordable and sustainable energy access by reducing operational costs and improving long-term building performance.

In addition, the computational simulation approach applied in this study supports evidence-based decision-making for sustainable building development. By evaluating multiple design scenarios before implementation, architects and planners can identify solutions that achieve optimal energy performance while maintaining occupant comfort. This contributes to more responsible energy planning and encourages the adoption of sustainable technologies in future infrastructure development.

THERMO- ECONOMIC STUDY OF COLD THERMAL ENERGY STORAGE WITH VARIOUS STORAGE SCENARIOS IN A SUPERMARKET LOCATED IN TROPICAL CLIMATES



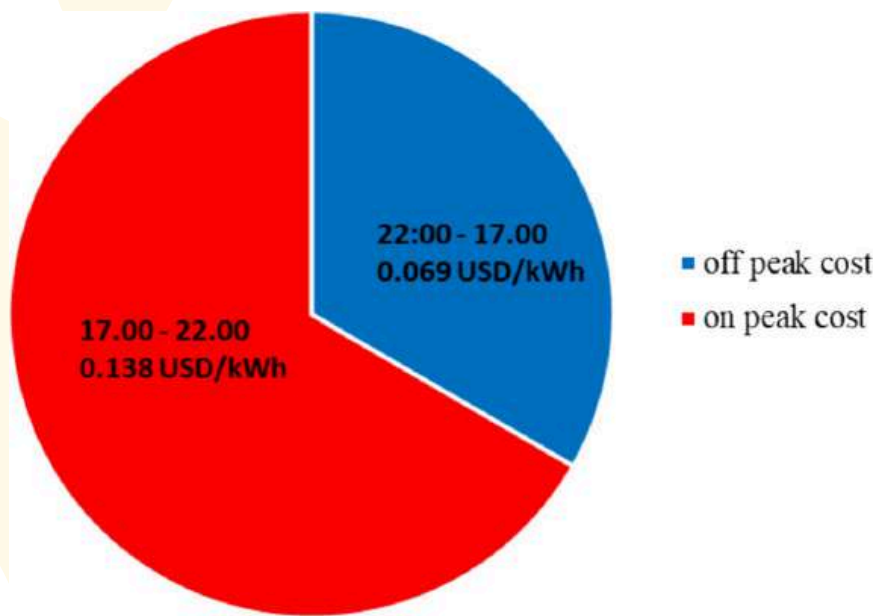
The achievement of Sustainable Development Goal (SDG) 7: Affordable and Clean Energy requires the development of energy systems that are efficient, sustainable, and capable of reducing unnecessary energy consumption. One of the major challenges in tropical regions is the high demand for cooling systems, particularly in commercial buildings such as supermarkets, where refrigeration and air-conditioning systems contribute significantly to electricity consumption. The article entitled “Thermo-economic study of cold thermal energy storage with various storage scenarios in a supermarket located in tropical climates” provides an important contribution to SDG 7 by investigating the implementation of cold thermal energy storage (CTES) as an energy efficiency strategy to reduce electricity demand and improve cooling system performance.



This study focuses on optimizing the operation of cooling systems through thermal energy storage technology. Cold thermal energy storage allows cooling energy to be produced and stored during periods of lower electricity demand and then utilized during peak demand periods. This approach supports energy conservation by reducing the operational burden of chillers during high-demand hours. The research evaluated ten different CTES scenarios using thermodynamic and economic analyses to compare their effectiveness with conventional direct cooling systems in a tropical climate supermarket environment.

The findings demonstrate that CTES implementation contributes significantly to improving energy efficiency. The study found that increasing storage capacity reduced daily electricity tariffs compared with direct cooling systems, resulting in higher annual savings and shorter payback periods. Among the evaluated scenarios, the leveling storage off-peak mode was identified as the optimal CTES design because it provided substantial economic benefits and achieved the shortest payback period of approximately six years without requiring major modifications to the existing cooling infrastructure.

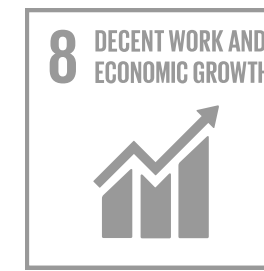
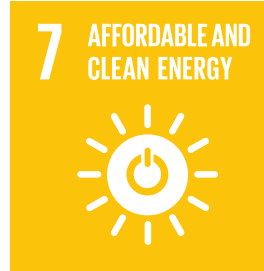
From the perspective of SDG 7, this research highlights the importance of demand-side energy management as a strategy for achieving affordable and sustainable energy use. Instead of increasing electricity production to meet peak consumption, CTES technology enables more efficient utilization of existing energy resources by shifting cooling loads from peak hours to off-peak periods. This reduces pressure on electricity grids, improves system stability, and supports the transition toward more sustainable energy management practices.



Furthermore, the application of CTES technology has environmental implications related to reducing energy waste and carbon emissions. Cooling systems are among the largest electricity consumers in commercial buildings, especially in tropical climates where cooling demand remains high throughout the year. By improving the efficiency of cooling operations and reducing peak electricity consumption, CTES can contribute to lowering the environmental impact associated with energy generation from fossil-based sources.

The article also demonstrates the relationship between technological innovation and sustainable energy solutions. Through thermo-economic analysis, the study does not only evaluate energy performance but also considers economic feasibility, including investment costs, operational expenses, annual savings, and payback periods. This integration between technical efficiency and economic evaluation is essential for encouraging wider adoption of clean energy technologies, particularly in commercial sectors where energy costs represent a significant operational challenge.

In addition, this research is relevant to tropical developing regions because it provides a practical approach for addressing high cooling energy demands. The implementation of CTES systems can support sustainable infrastructure development by improving energy efficiency without requiring complete replacement of existing cooling systems. This makes the technology more accessible and economically realistic for businesses seeking to reduce energy consumption while maintaining operational performance.



UNISMUH STUDENTS LEARN GREEN ARCHITECTURE AT NIPAH PARK, A GREEN BUILDING CERTIFICATION



<https://news.unismuh.ac.id/2025/01/16/mahasiswa-unismuh-pelajari-arsitektur-hijau-di-nipah-park-bangunan-bersertifikasi-green-building/>

The activity of Universitas Muhammadiyah Makassar (Unismuh) architecture students at Nipah Park represents an important contribution to Sustainable Development Goal (SDG) 7: Affordable and Clean Energy, particularly in promoting energy efficiency and sustainable building practices. Through this field study, 51 architecture students gained direct knowledge about the implementation of green building concepts in a commercial environment. Nipah Park, recognized as one of the first green building-certified mixed-use buildings in Eastern Indonesia, provides a practical example of how architectural design can support more efficient and environmentally responsible energy use.

The visit introduced students to various green building strategies, including energy-efficient technologies, sustainable materials, and integrated building management systems. These approaches contribute to SDG 7 by reducing unnecessary energy consumption and improving the efficiency of energy utilization in buildings. Energy-efficient building design plays an important role in addressing increasing energy demand, especially in urban areas where commercial buildings contribute significantly to electricity consumption.

Nipah Park’s achievement as the recipient of the ASEAN Energy Awards 2023 in the Energy Efficient Building

category for Tropical Building demonstrates the effectiveness of applying sustainable energy principles in tropical climates. The building serves as an example of how architectural innovation can reduce dependence on conventional energy sources through passive design strategies, efficient systems, and environmentally conscious operational practices.

From an educational perspective, this activity strengthens the role of universities in supporting SDG 7 through knowledge transfer and capacity building. By exposing students to real-world applications of green architecture, Unismuh encourages future architects to integrate energy efficiency principles into their designs. This is essential because sustainable energy development requires not only technological innovation but also human resources capable of designing and implementing energy-conscious solutions.

The involvement of students from Universitas Aisyiyah Yogyakarta and an international student from Thailand highlights the importance of collaboration and knowledge exchange in promoting sustainable energy awareness. Cross-cultural learning activities can expand perspectives on global challenges related to energy efficiency and encourage broader adoption of sustainable building practices.

RENEWABLE ENERGY-BASED BIOFLOC AQUACULTURE FOR SUSTAINABLE COMMUNITY DEVELOPMENT



<https://news.unismuh.ac.id/2025/01/16/mahasiswa-unismuh-pelajari-arsitektur-hijau-di-nipah-park-bangunan-bersertifikasi-green-building/>

Access to affordable and sustainable energy is essential for supporting economic activities while reducing environmental impacts. In line with SDG 7: Affordable and Clean Energy, the adoption of renewable energy technologies provides opportunities to improve efficiency, reduce dependence on conventional energy sources, and support sustainable development in local communities.

The community engagement program “Energy-Efficient Tilapia Aquaculture through Solar-Powered Biofloc Systems in Gowa Regency” demonstrates the integration of renewable energy with sustainable aquaculture practices. Implemented through the Community Partnership Program (PKM) at SMAS Islam Hizbul Wathan, Belapuranga Village, Gowa Regency, by Universitas Muhammadiyah Makassar, the initiative aims to strengthen community capacity while introducing environmentally friendly technology for fish cultivation.

The program combines a biofloc aquaculture system with solar panel technology to improve the efficiency of tilapia farming. Solar energy is utilized to support aquaculture operations, reducing reliance on conventional electricity and lowering operational costs. This approach demonstrates how renewable energy can be applied in productive sectors to support economic activities while promoting environmental sustainability.

The implementation began with the installation of solar panels, followed by the development of biofloc ponds and fish stocking. Through training and mentoring activities, community partners received knowledge about solar energy utilization, biofloc management, fish feeding techniques, pond maintenance, and marketing strategies.

This ensures that the technology introduced can be managed independently and sustained in the long term.

The biofloc system also contributes to sustainable production by improving resource efficiency. Through the utilization of microorganisms to process organic waste into additional nutrients, the system can optimize feed usage, reduce water exchange, and minimize environmental impacts compared to conventional aquaculture practices.

From the perspective of SDG 7, this initiative highlights the role of renewable energy in supporting community-based economic development. The use of solar power in aquaculture represents a practical example of clean energy application that improves energy efficiency while creating new opportunities for sustainable livelihoods.

Beyond energy transition, the program also supports food security and community empowerment. Tilapia cultivation provides a local source of nutritious protein for the school community while creating potential economic benefits through sustainable fish production. The initiative reflects how renewable energy, innovation, and community engagement can work together to address environmental and socioeconomic challenges.

The program further demonstrates the role of universities in promoting sustainable innovation through knowledge transfer and community partnerships. Collaboration between Universitas Muhammadiyah Makassar, SMAS Islam Hizbul Wathan, government institutions, and local communities strengthens the sustainability of the initiative by combining technological solutions with education and capacity building.

08

SDG 8 DECENT WORK AND ECONOMIC GROWTH

Promoting decent employment, entrepreneurship, and workforce development through research, innovation, and inclusive economic opportunities.



RESEARCH ON ECONOMIC GROWTH AND EMPLOYMENT

Research, innovation, and community empowerment activities play an important role in supporting economic growth and employment development. Research initiatives are directed toward creating practical solutions that improve productivity, community welfare, and economic resilience through technology transfer and product innovation. In addition, student entrepreneurship development is strengthened through three PKM Wirausaha programs focusing on innovation, business development, and research commercialization. These initiatives encourage students and communities to develop entrepreneurial skills, create economic opportunities, and contribute to employment generation. Through research-based innovation, UNISMUH supports sustainable economic growth and the achievement of SDG 8.

EMPLOYMENT PRACTICES

Decent employment practices are implemented through comprehensive human resource management policies that regulate employee rights, responsibilities, career development, welfare support, and professional standards. With 839 lecturers and 597 education staff, UNISMUH continues to strengthen a supportive and professional working environment. Employment policies include salary systems, allowances, incentives, healthcare support, and welfare facilities to ensure employee well-being. The institution also promotes equality and non-discrimination by providing fair opportunities regardless of gender, religion, ethnicity, or social background.

EXPENDITURE PER EMPLOYEE

Investment in employee development is an essential strategy to improve workforce quality and institutional sustainability. Support is provided through professional training, certification programs, continuing education, and career development opportunities. During the reporting period, 599 lecturers obtained professional certifications, while 103 lecturers participated in further academic studies to strengthen their qualifications. In addition, six professional development programs were conducted for lecturers and education staff, covering competency certification, international preparation, patent writing, and doctoral development. These investments enhance employee capacity, productivity, and professional growth while strengthening institutional performance in supporting decent work and economic development.

OUR IMPACT SNAPSHOT

THE IMPACT RANKINGS
601-800
Global

Scopus®
70
Publication

3,492
Internship
Participants

599
Certified
Lecturers

PROPORTION OF STUDENTS TAKING WORK PLACEMENTS

Work placement and internship programs provide students with valuable opportunities to gain practical experience and develop professional competencies. A total of 3,492 students participated in internship activities designed to strengthen their readiness for future employment. These programs help bridge the gap between academic learning and workplace expectations by introducing students to professional environments, industry practices, communication skills, and problem-solving processes. Through direct workplace exposure, students improve their adaptability and career readiness.

PROPORTION OF EMPLOYEES ON SECURE CONTRACTS

Employment security is supported through structured personnel management systems and clear employment regulations. The institution applies policies that define employee status, rights, obligations, and opportunities for professional advancement. Based on institutional data, 49 employees are recorded under secure contract arrangements, while no employees are categorized as non-permanent workers. Employees are supported through various development programs, including training, workshops, technical guidance, and career advancement opportunities. These practices demonstrate a commitment to providing stable employment conditions, protecting employee welfare, and creating a supportive working environment.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>



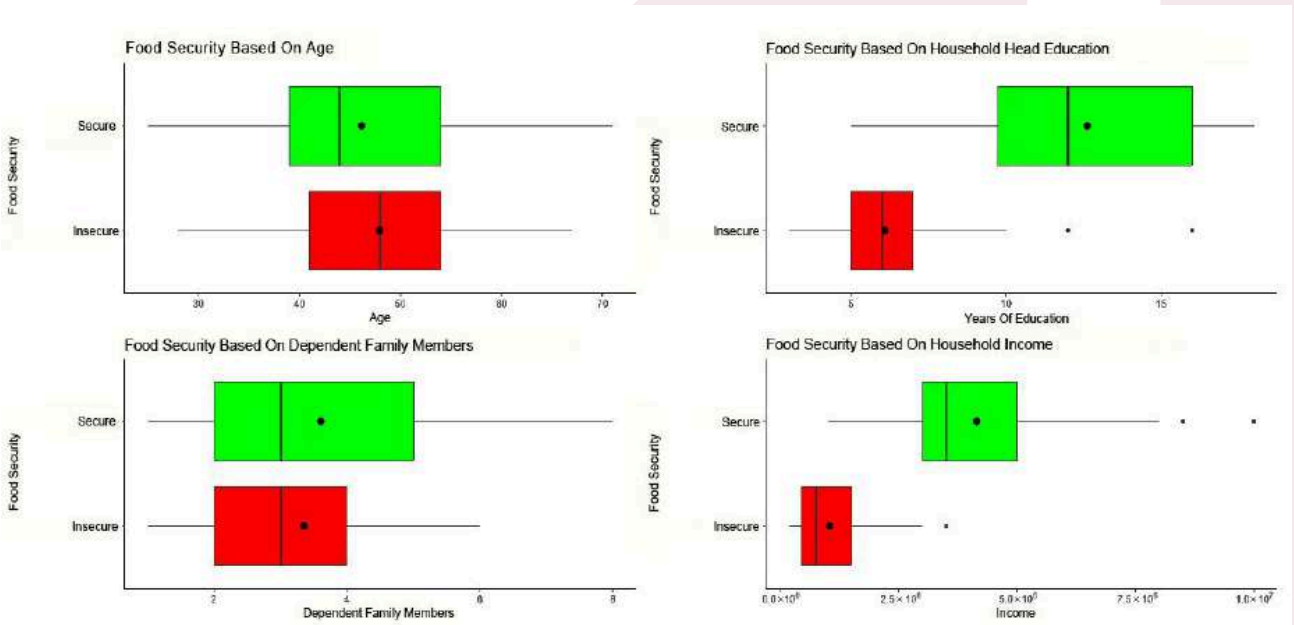
Empowering communities through skills development and sustainable economic initiatives.

THE APPLICATION OF BINARY LOGISTIC REGRESSION IN MODELING THE POST-COVID-19 EFFECTS ON FOOD SECURITY: IN SEARCH OF POLICY RECOMMENDATIONS IN PROMOTING SUSTAINABLE LIVELIHOODS FOR FOOD-INSECURE HOUSEHOLDS



Sustainable economic growth requires not only increased productivity but also the creation of decent livelihoods that enable individuals and households to achieve economic security. Sustainable Development Goal 8 (SDG 8): Decent Work and Economic Growth emphasizes the importance of inclusive economic development, productive employment, and improved living conditions for vulnerable communities. The COVID-19 pandemic highlighted the fragility of household economies, particularly among low-income groups whose livelihoods were disrupted by income reduction, employment instability, and limited access to essential resources.

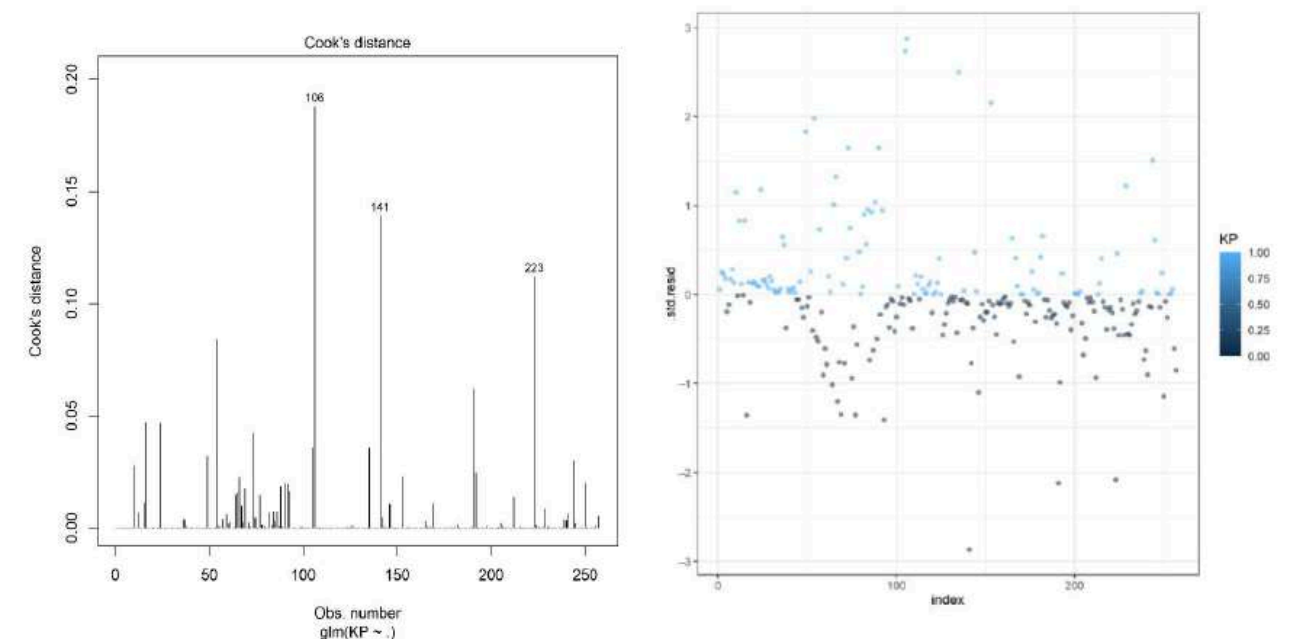
The study entitled “The Application of Binary Logistic Regression in Modeling the Post-COVID-19 Effects on Food Security: In Search of Policy Recommendations in Promoting Sustainable Livelihoods for Food-Insecure Households” provides important insights into the relationship between household economic conditions and sustainable livelihoods after the pandemic. The research identifies key determinants affecting household food security, including household income, education level of household heads, and availability of food reserves. These findings demonstrate that economic capacity and human capital are fundamental factors in building resilience among vulnerable households.



One of the major contributions of this research to SDG 8 is its emphasis on the role of household income as a critical driver of economic stability. The study reveals that higher income levels provide households with greater flexibility in fulfilling their basic needs, including access to sufficient and nutritious food. Conversely, declining income reduces purchasing power and limits households’ ability to cope with economic shocks. Therefore, improving employment opportunities, strengthening income-generating activities, and supporting sustainable livelihoods are essential strategies for achieving inclusive economic growth.

The research also highlights the importance of education as a form of human capital development that supports

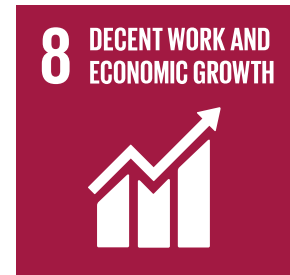
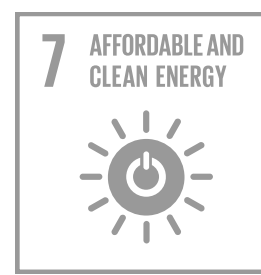
economic resilience. Higher educational attainment among household heads contributes to better decision-making capacity, improved access to economic opportunities, and stronger livelihood strategies. Education enables individuals to acquire knowledge and skills needed to participate in productive employment and adapt to changing economic conditions. This finding aligns with SDG 8, which promotes productive employment and opportunities for decent work through enhanced skills development.



Furthermore, the study demonstrates that food security is closely connected with sustainable livelihood systems. The availability of food stocks serves as an important coping mechanism during periods of economic uncertainty. Households with adequate food reserves are better prepared to withstand external shocks, including income disruption and market instability. This indicates that economic development policies should not only focus on income growth but also strengthen household resilience through integrated strategies involving employment, education, and resource management.

The post-COVID-19 situation provides important lessons regarding the need for inclusive economic recovery. Vulnerable households require targeted interventions that support job creation, entrepreneurship development, access to financial resources, and capacity-building programs. Policies that improve employment quality and income security can reduce household vulnerability while encouraging long-term sustainable economic development.

Therefore, achieving SDG 8 requires collaborative efforts among governments, educational institutions, private sectors, and communities to develop inclusive economic systems. Investments in education, skills development, employment opportunities, and livelihood support programs are essential to ensure that economic growth benefits vulnerable populations and contributes to sustainable development.



INCREASING THE INCOME OF SALT POND FARMERS IN BULU CINDEA VILLAGE THROUGHT THE DEVELOPMENT OF GEOMEMBRANE TECHNOLOGY



Sustainable Development Goal 8 (SDG 8) focuses on promoting inclusive and sustainable economic growth, productive employment, and decent work opportunities for all. In rural communities, achieving SDG 8 requires strategies that improve workers' productivity, increase income stability, and strengthen local economic activities. The article by Rahmi et al. (2025) contributes to SDG 8 by demonstrating how the adoption of geomembrane technology can enhance the productivity and economic welfare of salt pond farmers in Bulu Cindea Village, Indonesia.

Salt farming has traditionally been an important source of livelihood for rural coastal communities. However, conventional salt production methods often face challenges, including low productivity, inconsistent quality, environmental contamination, and vulnerability to climate-related changes. These limitations can reduce farmers' income and restrict their ability to achieve sustainable livelihoods. The implementation of geomembrane technology provides an innovative approach to overcome these challenges by improving production efficiency and creating better economic opportunities for salt farmers.



The findings of this study demonstrate that technological innovation plays an important role in supporting decent work by improving the working conditions and productivity of farmers. Through the introduction of geomembrane technology, salt farmers gained knowledge and skills related to modern salt production systems. The community empowerment program included socialization, training, consultation, and demonstration plots, enabling farmers to understand and apply new production techniques. The improvement in knowledge was reflected in the post-test evaluation, where participants achieved an understanding level of 84%, indicating increased capacity and readiness to adopt technological improvements.

From an economic perspective, geomembrane technology significantly increased salt production and farmers' income. Before implementation, only 88 salt farmers were involved in production, with yields ranging from 4,000–

4,500 kg and monthly income of approximately IDR 15,000,000–17,500,000. After the adoption of geomembrane technology, the number of salt farmers increased to 127 people, production increased to 5,000–7,500 kg, and income reached approximately IDR 21,120,000 per month. These improvements indicate that technological empowerment can generate new economic opportunities, increase productivity, and strengthen rural employment.

Furthermore, geomembrane technology supports sustainable economic growth by improving product quality and market competitiveness. The technology prevents direct contact between salt crystals and soil, reducing contamination and producing cleaner, higher-quality salt. Higher-quality products have greater economic value and provide opportunities for farmers to access wider markets, including potential export markets. Therefore, technological advancement not only increases production quantity but also improves the economic position of farmers within the value chain.



The economic feasibility analysis also highlights the long-term benefits of geomembrane adoption. The study reported that farmers could recover their initial investment within approximately 2.6 months due to increased revenue. With a projected lifespan of 12–15 years, geomembrane technology provides long-term profitability by reducing maintenance costs and maintaining production efficiency. This demonstrates that investment in appropriate technology can support sustainable rural economic development and improve livelihood security.

However, the study also identifies challenges that must be addressed to achieve broader implementation. The high initial investment cost remains a barrier for many farmers with limited financial resources. Therefore, government support, financial assistance, and continuous training programs are needed to ensure equitable access to technological innovation. These interventions are important to ensure that economic growth generated through technology adoption is inclusive and benefits vulnerable rural communities.

UNISMUH HOSTS JOB FAIR; 15 COMPANIES OFFER 286 VACANCIES



<https://news.unismuh.ac.id/2025/06/19/unismuh-gelar-job-fair-15-perusahaan-buka-286-lowongan/>

Emphasizes the importance of promoting productive employment, improving workforce skills, and creating inclusive opportunities for economic participation. Higher education institutions play a crucial role in preparing graduates to enter the labor market by developing relevant competencies, strengthening industry partnerships, and providing access to employment opportunities. The implementation of job preparation programs and career services represents an important strategy to reduce unemployment among graduates and support sustainable economic growth.

The article “Unismuh Holds Job Fair, 15 Companies Provide 286 Job Opportunities” highlights the commitment of Universitas Muhammadiyah Makassar to improving graduate employability through the Orientation of the World of Work and Job Fair 2025. The program involved 1,376 prospective graduates and provided direct access to employment opportunities through collaboration with 15 national and regional companies offering a total of 286 job vacancies. This initiative demonstrates the university’s effort to bridge the gap between higher education outcomes and labor market demands.

One of the main contributions of this program to SDG 8 is strengthening graduates’ readiness to enter the workforce. The transition from university life to professional employment requires not only academic knowledge but also practical skills, professional attitudes, and adaptability. Through career orientation sessions, participants received guidance on workplace expectations, career strategies, and essential competencies needed by industries. This preparation helps graduates become more competitive and increases their ability to access decent employment opportunities.

The involvement of industry partners in the Job Fair also reflects the importance of collaboration between universities and the business sector. Industry participation allows educational institutions to better understand labor market trends and ensure that academic programs remain relevant to current professional requirements. The integration of industry perspectives into curriculum development can improve the alignment

between graduate competencies and workforce needs, supporting more effective employment transitions.

The availability of 286 job opportunities through participating companies provides a practical pathway for graduates to connect directly with potential employers. Beyond recruitment, the event creates a platform for interaction between graduates and industries, enabling students to understand career opportunities, qualification requirements, and professional development pathways. Such initiatives contribute to reducing barriers to employment, particularly for fresh graduates entering competitive labor markets.

From the perspective of SDG 8, this program demonstrates that universities have a strategic role in promoting decent work by developing human capital and expanding access to employment networks. Graduate employability is not only determined by academic achievement but also by the availability of career support systems, industry connections, and opportunities for professional engagement. Through initiatives such as job fairs and career preparation programs, universities can contribute to building a skilled workforce capable of supporting sustainable economic growth.

Furthermore, the program supports the development of adaptive and resilient graduates. The current labor market requires individuals who can respond to technological changes, evolving industry demands, and new workplace challenges. By providing career training and exposure to industry expectations, the university helps graduates develop confidence and preparedness to participate in various economic sectors.

The collaboration between Universitas Muhammadiyah Makassar and industry partners also reflects the importance of multi-stakeholder partnerships in achieving sustainable employment goals. Cooperation between higher education institutions and companies enables the creation of employment ecosystems that benefit graduates, industries, and society. Through continuous collaboration, universities can contribute to reducing graduate unemployment and strengthening regional economic development.

UNISMUH HOSTS JOB FAIR; 15 COMPANIES OFFER 286 VACANCIES



<https://news.unismuh.ac.id/2025/08/25/unismuh-makassar-berdayakan-ibu-pkk-bulujaya-lewat-literasi-agropreneur/>

Sustainable economic growth requires communities to have the capacity to create productive activities, develop entrepreneurship, and generate greater value from local resources. In the context of SDG 8: Decent Work and Economic Growth, community empowerment programs that strengthen business skills and promote value-added production play an important role in building inclusive and resilient local economies.

Through the Community Service Program (PKM), Universitas Muhammadiyah Makassar implemented an agropreneurship literacy program for PKK women in Bulujaya Village, Jeneponto Regency. The program focused on utilizing local yellow corn potential by developing “Lappo”, a popcorn-based product designed to transform agricultural commodities into higher-value products with wider market opportunities.

Many agricultural communities depend on selling raw products, making them vulnerable to price fluctuations during harvest periods. Through product innovation and downstream processing, this program encourages communities to move beyond raw material production and develop independent businesses. By processing corn into packaged products, local resources can generate additional economic value while strengthening household income opportunities.

The program provided training in entrepreneurship, food processing, packaging, business management, and digital marketing. These skills support participants in developing competitive products and expanding market access. The involvement of PKK women also highlights the importance of women’s participation in rural economic development, enabling them to become active contributors to household and community economies.

The development of Lappo demonstrates how agropreneurship can support sustainable rural growth. By improving product quality, introducing appropriate processing technology, and providing production equipment, the program creates a foundation for long-term business development rather than short-term assistance. Digital marketing strategies further enhance opportunities for local products to reach broader consumers.

This initiative also reflects the role of higher education institutions in supporting economic empowerment. Through collaboration between lecturers, students, local government, and community groups, academic knowledge is translated into practical solutions that address local economic challenges.

09

SDG 10 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Advancing innovation, technology development, and sustainable infrastructure through research, intellectual property, and entrepreneurial initiatives.



RESEARCH ON INDUSTRY, INNOVATION AND INFRASTRUCTURE

Strengthening research capacity and innovation ecosystems plays an important role in supporting the achievement of Sustainable Development Goal (SDG) 9: Industry, Innovation and Infrastructure. Through the Institute for Research, Community Service, and Cooperation (LP3M), research activities are continuously encouraged to generate knowledge and technological solutions that address societal challenges while contributing to industrial advancement and sustainable infrastructure development. Research related to SDG 9 covers various emerging and strategic fields, including artificial intelligence, machine learning, digital transformation, smart city development, educational technology, intelligent transportation systems, sustainable construction materials, and other innovative technologies. During the reporting period, 54 scientific publications related to SDG 9 were produced, demonstrating a strong commitment to advancing research-based innovation. These publications reflect ongoing efforts to strengthen technological development, support sustainable industrial transformation, and contribute to the improvement of infrastructure systems through academic excellence and applied research.

PATEN

Strengthening intellectual property capacity is an important step in promoting innovation and technological advancement. Through collaboration with the Directorate General of Intellectual Property (DJKI), the university organized patent drafting education to improve researchers' and lecturers' ability to develop and protect innovative ideas. The programme assisted 49 patent documents and provided training on patent writing, registration procedures, and intellectual property management. This initiative supports SDG 9 by encouraging research commercialization, strengthening innovation ecosystems, and increasing the contribution of academic inventions to industrial and societal development.

OUR IMPACT SNAPSHOT

THE IMPACT RANKINGS

On process

Scopus®

54
Publication

PATENT

49
Patent Documents

30+
P2MW Startup Development

UNIVERSITY SPIN-OFFS

Developing an innovation-driven entrepreneurial ecosystem is an important strategy to support sustainable economic growth and technological advancement. Through entrepreneurship programmes, mentoring activities, business coaching, and institutional support, students are encouraged to transform creative ideas into innovative products and sustainable business ventures with social and economic value.

A key initiative supporting this objective is the Student Entrepreneurial Development Program (Program Pembinaan Mahasiswa Wirausaha/P2MW). This programme provides selected student startup teams with entrepreneurship training, business mentoring, funding support, product development assistance, business legality facilitation, and opportunities for market expansion. Through this support system, students are guided to improve product quality, strengthen business management capabilities, validate market opportunities, and increase the commercial potential of their innovations.

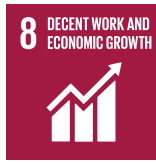
One notable example is VirtuPhyLab, a Virtual Reality (VR)-based educational platform developed to enhance physics laboratory learning. Through participation in the P2MW programme, the startup successfully developed its initial Minimum Viable Product (MVP) into a more comprehensive educational solution by improving product features, conducting user testing, expanding institutional collaborations, and initiating copyright registration as part of its intellectual property protection efforts. The team continues to strengthen its marketing strategies and partnership networks to support long-term sustainability and wider adoption of the innovation.

Beyond VirtuPhyLab, various student startups continue to develop innovations in digital technology, agricultural technology, creative industries, and other emerging sectors. These initiatives demonstrate a commitment to fostering an entrepreneurial environment that supports innovation, technology development, and the creation of impactful products and services aligned with SDG 9: Industry, Innovation and Infrastructure.



Supporting student innovation and entrepreneurship through startup development.

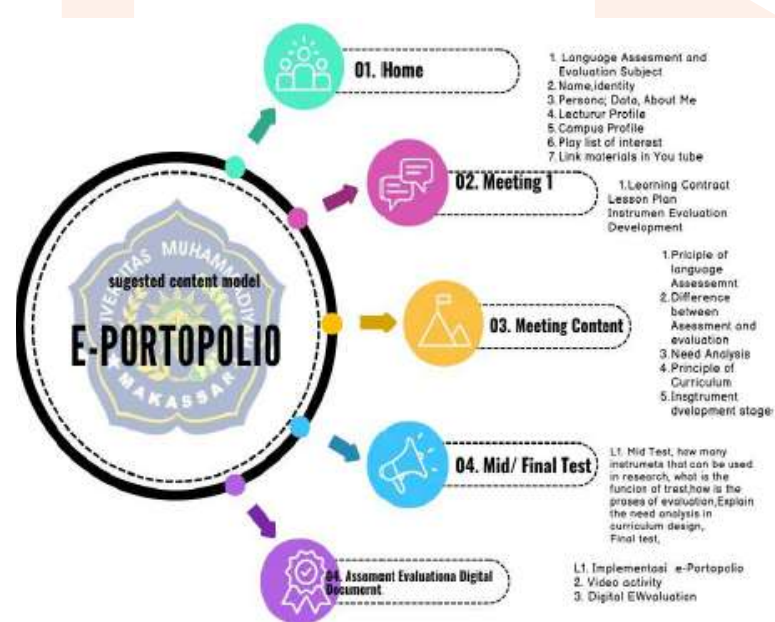
THE USE OF E-PORTFOLIO AS INNOVATIVE CREATION OF EFL STUDENTS IN LANGUAGE ASSESSMENT



Innovation and digital transformation play an important role in building resilient educational systems and preparing students with relevant skills for the future. In line with Sustainable Development Goal 9 (SDG 9): Industry, Innovation, and Infrastructure, higher education institutions are expected to develop innovative learning environments by utilizing technology, improving digital infrastructure, and encouraging creativity among students.

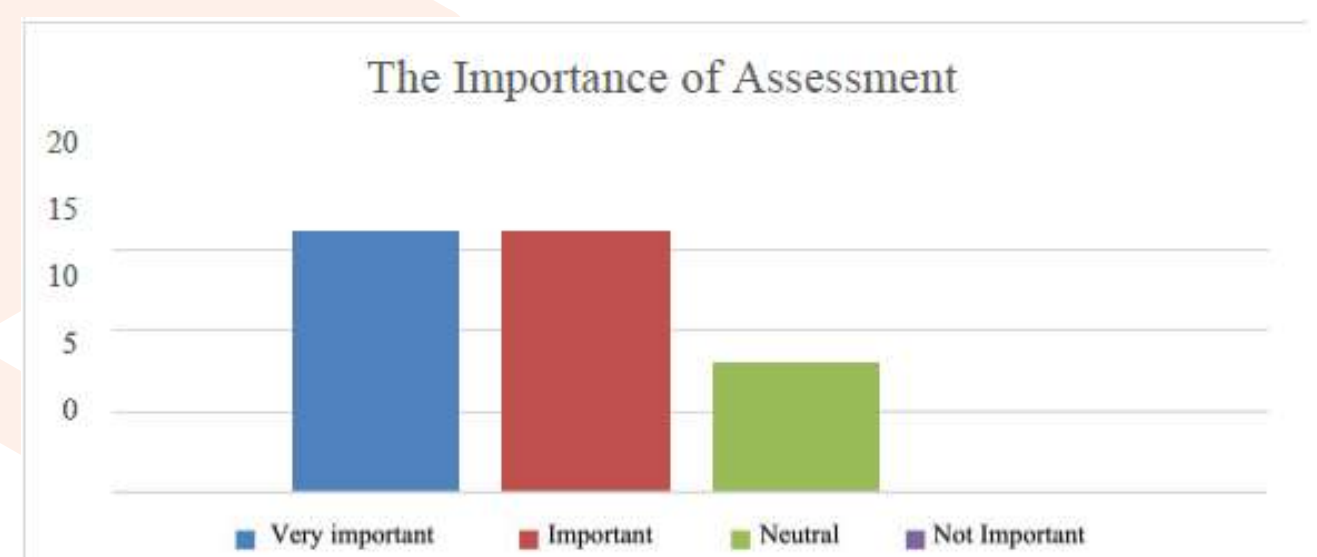
The research article entitled “The Use of E-Portfolio as Innovative Creation of EFL Students in Language Assessment” highlights an educational innovation developed by researchers from Universitas Muhammadiyah Makassar. The study explores the implementation of electronic portfolios (e-portfolios) as a digital-based assessment tool to enhance students’ creativity, learning engagement, and language competencies. The research demonstrates how digital technology can be integrated into academic processes to support innovative learning practices and improve educational quality.

The development of e-portfolios represents an effort to transform conventional assessment methods into more flexible, interactive, and technology-oriented approaches. Unlike traditional paper-based portfolios, e-portfolios allow students to collect, organize, and present various forms of academic work, including written assignments, images, videos, and other digital materials. This digital platform provides students with opportunities to document their learning progress, reflect on their achievements, and demonstrate their creativity through innovative academic products.



From the perspective of SDG 9, this initiative contributes to strengthening digital infrastructure and innovation capacity within higher education. The use of platforms such as Google Sites for developing e-portfolios demonstrates the utilization of accessible digital technologies to support learning activities. By introducing technology-based assessment systems, universities encourage students and lecturers to adapt to digital transformation while developing skills that are increasingly important in modern professional environments.

The research involved 40 undergraduate students from the English Education Program at Universitas Muhammadiyah Makassar who participated in the development and implementation of e-portfolios. Through a research and development approach, students were guided to create digital portfolios over a 16-week learning period. The process included designing digital content, uploading learning materials, receiving feedback, and reflecting on their academic development. This approach shows how innovation in educational infrastructure can create a more student-centered and technology-supported learning ecosystem.

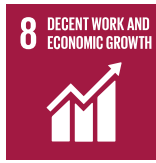


The findings indicate that e-portfolio implementation positively influenced students’ learning experiences, particularly in improving creativity, self-reflection, and digital skills. The study found that students showed increased performance after using the e-portfolio approach, with the experimental group demonstrating improved learning outcomes compared with conventional learning methods. The integration of digital tools allowed students to actively participate in creating learning materials, managing academic achievements, and developing independent learning abilities.

Beyond improving academic assessment, e-portfolios also represent an innovation ecosystem that connects education, technology, and future employability. Students are not only evaluated based on final results but also through their learning processes, creativity, problem-solving abilities, and ability to utilize digital platforms. These competencies are essential in supporting graduates who are capable of adapting to technological changes and contributing to innovation-driven industries.

The research also highlights the importance of collaboration between lecturers, students, and digital learning systems in ensuring successful technology adoption. Effective implementation requires adequate digital access, guidance, and continuous support so that technological innovation can be utilized optimally. The study identified challenges such as limited internet access and students’ initial difficulties in adapting to e-portfolios, indicating the need for continuous improvement of digital infrastructure and digital literacy development.

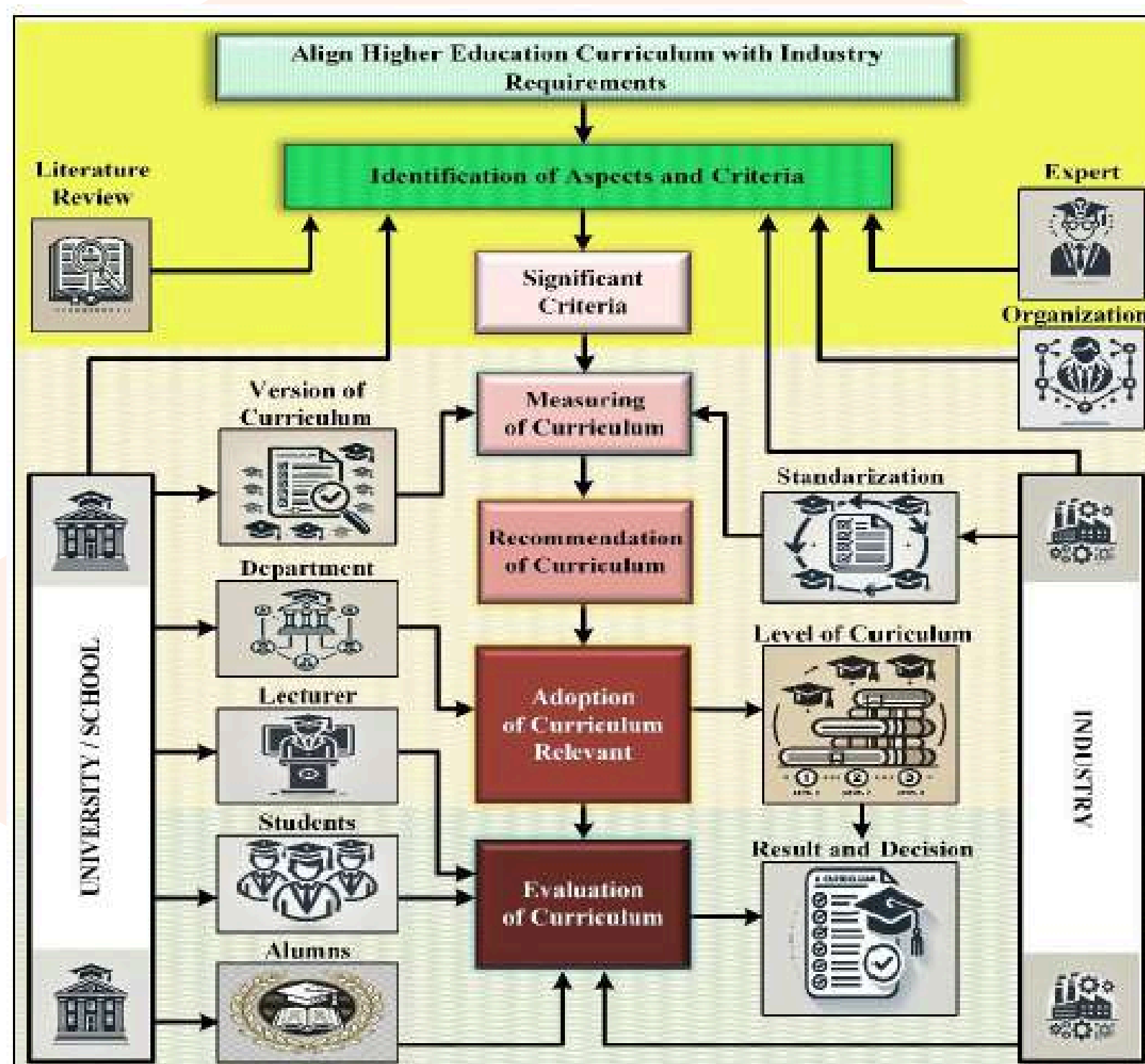
UTILIZING MACHINE LEARNING-BASED DECISION-MAKING TO ALIGN HIGHER EDUCATION CURRICULUM WITH INDUSTRY REQUIREMENTS



The implementation of machine learning-based decision-making frameworks in higher education contributes to Sustainable Development Goal 9 (SDG 9): Industry, Innovation, and Infrastructure by strengthening innovation capacity and supporting technology-driven educational transformation. The article “Utilizing Machine Learning-Based Decision-Making to Align Higher Education Curriculum with Industry Requirements” highlights how artificial intelligence (AI) and machine learning (ML) can help universities develop curricula that are more adaptive to industrial changes and workforce needs.

The involvement of 17 industry sectors in curriculum evaluation also demonstrates the importance of collaboration between academia and industry in developing innovation-oriented education systems.

The findings show that technology integration, curriculum relevance, skill development, and market responsiveness are important factors in preparing graduates for Industry 4.0. The hybrid SSO-SVM model further enhances the evaluation process by enabling predictive analysis and more accurate curriculum classification. This demonstrates that artificial



This study introduces a data-driven framework that integrates Machine Learning with Multi-Criteria Decision Making (MCDM) methods, including SWARA, Lq-ROFNs, MABAC, SVM, and SSO, to evaluate curriculum relevance more systematically. Unlike conventional approaches that rely mainly on manual assessments and expert opinions, this framework uses data analysis to identify curriculum gaps and provide evidence-based recommendations for future educational development.

From the SDG 9 perspective, the application of machine learning strengthens digital infrastructure within higher education institutions. By analyzing data from students, graduates, academic records, and industry stakeholders, the system helps universities improve decision-making and establish stronger connections with industrial sectors.

intelligence can support universities in anticipating future industry demands rather than only responding to existing changes.

Moreover, this research highlights that sustainable innovation depends not only on advanced technology but also on skilled human resources. By aligning educational programs with industry requirements, universities can produce graduates with digital competencies, technical skills, and adaptability needed in modern workplaces. However, the implementation of machine learning systems also requires adequate digital infrastructure, reliable data, ethical considerations, and transparent decision-making processes. Continuous improvement and responsible technology management are essential to ensure that digital innovation contributes effectively to sustainable industrial development.



10

SDG 10 REDUCED INEQUALITIES

Advancing inclusion and equal opportunities through education, research, and community empowerment.



RESEARCH ON REDUCED INEQUALITIES

Reducing inequalities is advanced through multidisciplinary research that addresses inclusive education, gender equality, disability inclusion, human rights, migrant workers' rights, community empowerment, and equitable public policies. By integrating perspectives from various academic disciplines, research generates evidence-based solutions that respond to social, educational, and economic disparities while supporting national development priorities. According to the Scopus SDG Mapping, the University produced 39 Scopus-indexed publications related to SDG 10. These studies contribute to policy recommendations, strengthen collaboration with governments and communities, and promote inclusive development that advances equal opportunities and sustainable social progress at local, national, and global levels.

FIRST-GENERATION STUDENTS

Expanding access to higher education for first-generation students is an important strategy for promoting social mobility and reducing educational inequalities. Students who are the first in their families to attend university often encounter academic, social, and financial challenges during their transition to higher education. To support their success, comprehensive services are provided through academic advising, counselling, leadership development, student organizations, and capacity-building programmes. Institutional data show that 1,171 of 3,136 newly admitted students (23.7%) are first-generation students, demonstrating a strong commitment to widening participation and creating equitable educational opportunities for learners from diverse socio-economic backgrounds.

STUDENTS FROM DEVELOPING COUNTRIES

Internationalization promotes equitable access to higher education by welcoming students from developing countries and fostering an inclusive multicultural learning environment. Through the UNISMUH MAKERRA (Rector's Scholarship Program), international students receive tuition support, accommodation, Indonesian language training, cultural orientation, and continuous academic assistance. These initiatives facilitate successful adaptation while encouraging intercultural exchange among students and staff. During the reporting period, the University enrolled 23 students from developing countries, comprising 22 students from Sudan and one student from Yemen. Their participation strengthens global engagement and reflects the University's commitment to expanding inclusive educational opportunities across national boundaries.

OUR IMPACT SNAPSHOT

THE IMPACT
RANKINGS
On process

Scopus®
39
Publication

1,171
First-
generation
Students

23
International
Students

PROPORTION OF STUDENTS AND STAFF WITH DISABILITIES

Inclusive education is promoted by ensuring that students with disabilities have equal opportunities to participate fully in academic and campus life. Institutional policies provide adaptive learning services, academic mentoring, counselling, accessible learning resources, and continuous improvements to campus facilities and infrastructure. Capacity-building programmes also equip academic and administrative staff with the knowledge required to deliver equitable, student-centred services. According to institutional data, nine students with disabilities are currently enrolled across various study programmes. These initiatives demonstrate a sustained commitment to removing barriers, promoting accessibility, and creating an inclusive learning environment where every student can achieve academic success and personal development.

MEASURES AGAINST DISCRIMINATION

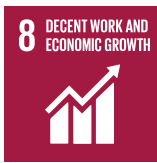
A discrimination-free academic environment is maintained through institutional policies that promote diversity, equality, inclusion, and mutual respect across all aspects of university life. The Inclusive Education Policy and Guidelines ensure equitable access to admissions, teaching, student services, campus facilities, and extracurricular activities regardless of gender, ethnicity, religion, nationality, disability, or socio-economic background. Academic mentoring, counselling, accessible learning resources, and reasonable adjustments further support students requiring additional assistance. Continuous staff training strengthens institutional capacity to deliver inclusive services while fostering a campus culture that values diversity, protects equal rights, and empowers every member of the academic community to reach their full potential.



Supporting inclusive learning and equal educational opportunities.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>

REDUCING INEQUALITIES THROUGH THE PROTECTION OF VULNERABLE MIGRANT WORKERS

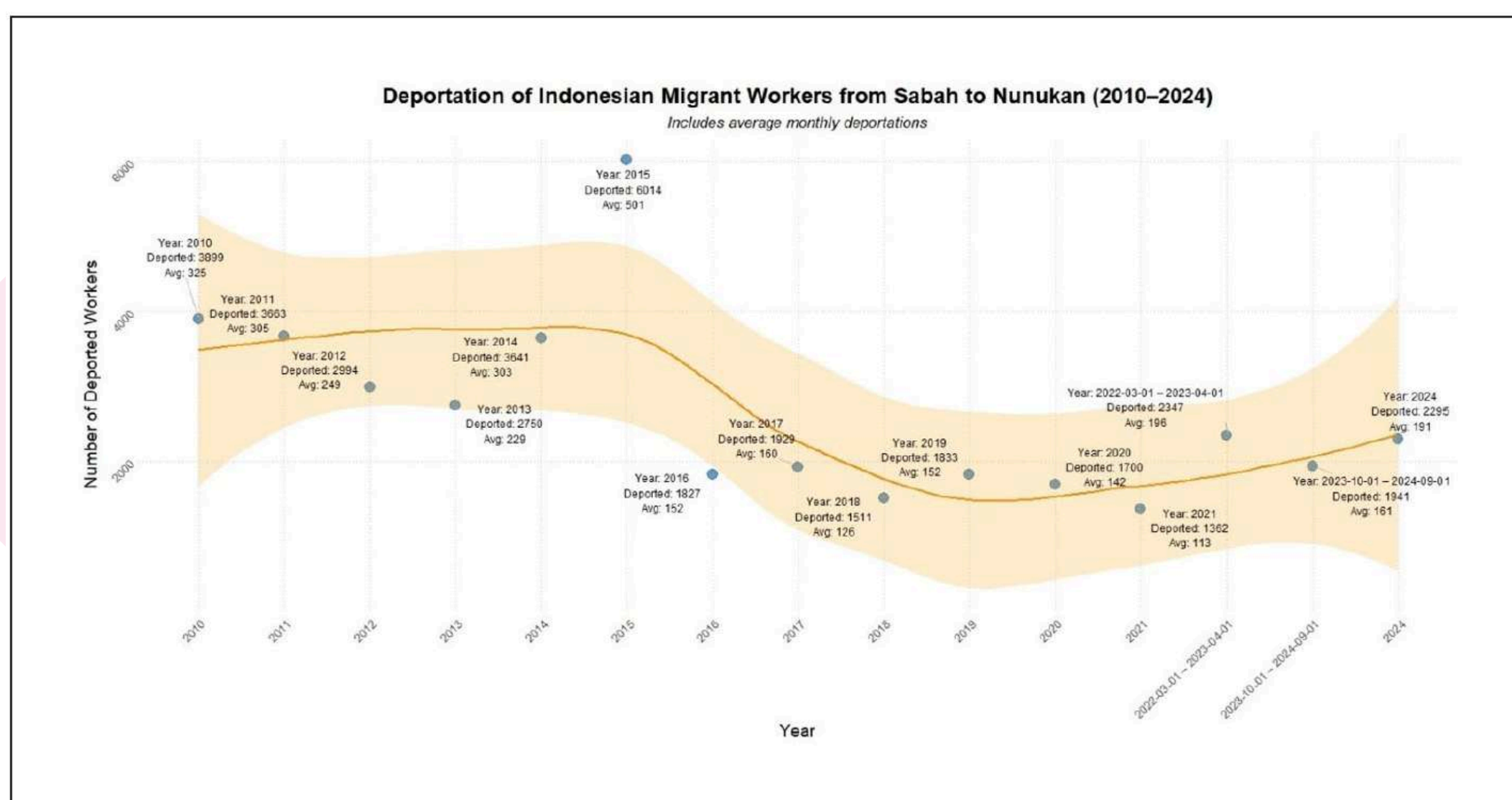


Reducing inequality requires ensuring that all individuals, regardless of social, economic, or legal status, have equal access to protection, opportunities, and fundamental rights. In line with Sustainable Development Goal 10 (SDG 10): Reduced Inequalities, addressing the vulnerabilities experienced by marginalized groups, including migrant workers, is essential to creating a more inclusive and equitable society.

The study “From Palm Plantations to Detention Centers: Deportation, Exploitation, and the Vulnerability of Undocumented Indonesian Migrant Workers in Sabah” highlights the challenges faced by undocumented

protections. This creates a situation where workers are economically needed but socially marginalized, limiting their ability to access fair wages, safe working environments, and essential services.

From the perspective of SDG 10, improving migration governance and strengthening worker protection are important steps toward reducing inequality. Providing accessible legal migration channels, improving information about safe migration procedures, and ensuring legal assistance for vulnerable workers can reduce the barriers that prevent migrants from achieving equal opportunities. The study highlights the importance



Indonesian migrant workers in Malaysia. The research demonstrates that undocumented status is not merely caused by the absence of legal documents but is also influenced by structural barriers, limited access to formal migration pathways, and unequal protection systems that place migrant workers in vulnerable positions.

Many Indonesian migrant workers in Sabah experience inequality through limited access to legal protection, healthcare services, and decent working conditions. Their undocumented status increases the risk of exploitation, workplace insecurity, detention, and deportation. The study emphasizes that vulnerability is produced through a combination of economic pressures, complicated migration procedures, and weak protection mechanisms rather than individual choices alone.

The research also reveals how unequal migration governance can reinforce social and economic disparities. While migrant workers contribute significantly to sectors such as palm oil plantations, construction, and domestic services, many remain excluded from adequate labor

of shifting from restrictive approaches toward more inclusive policies that prioritize human dignity and social protection.

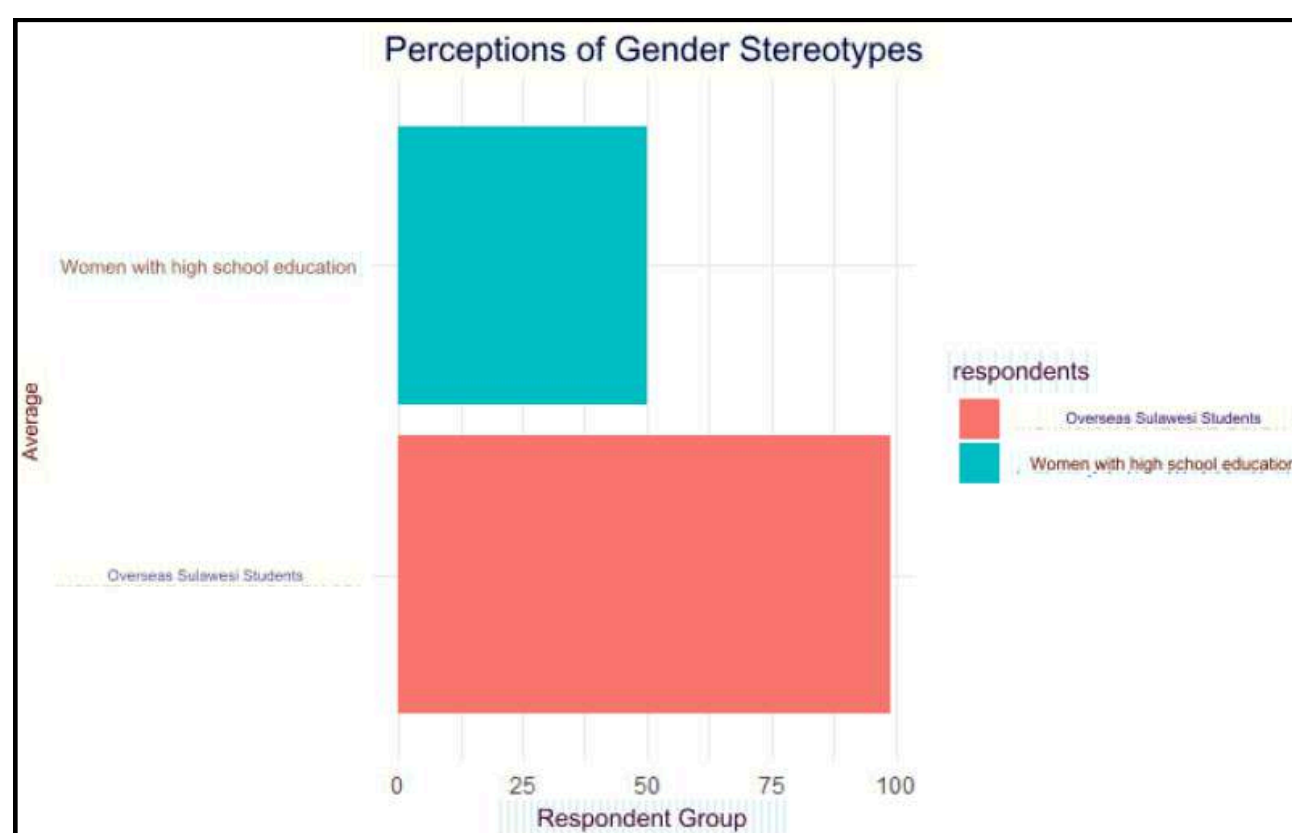
The issue also reflects the importance of collaboration among governments, civil society organizations, and international institutions. Effective protection of migrant workers requires cooperation between countries of origin and destination to ensure fair migration systems, stronger monitoring mechanisms, and better access to support services. Such partnerships are aligned with SDG 10 by promoting inclusion and reducing inequalities across borders.

Reducing inequality among migrant communities contributes to broader sustainable development outcomes. Protecting migrant workers not only improves individual well-being but also supports economic stability, social inclusion, and more equitable labor systems. By recognizing vulnerable groups and addressing structural barriers, societies can move toward development models that leave no one behind.

REDUCING INEQUALITIES THROUGH EDUCATION AND THE ELIMINATION OF GENDER STEREOTYPES



Reducing inequalities requires creating equal opportunities for all individuals to access education, participate in society, and develop their potential without being limited by gender-based barriers. In accordance with Sustainable Development Goal 10 (SDG 10): Reduced Inequalities, promoting social inclusion and eliminating discriminatory practices are essential steps toward building a fair and equitable society. Education plays a crucial role in this process because it can transform perceptions, challenge social norms, and empower marginalized groups, particularly women.



The study “Achieving Equality through Education as a Response to Gender Stereotypes in Women: A Quantitative Analysis” highlights the important relationship between educational attainment and the reduction of gender inequality. The research examines how education influences women’s perceptions and experiences regarding gender stereotypes, using quantitative analysis among female students from Sulawesi, Indonesia, and women with high school educational backgrounds. The findings demonstrate that education can become an effective instrument for challenging traditional gender expectations and encouraging more inclusive social perspectives.

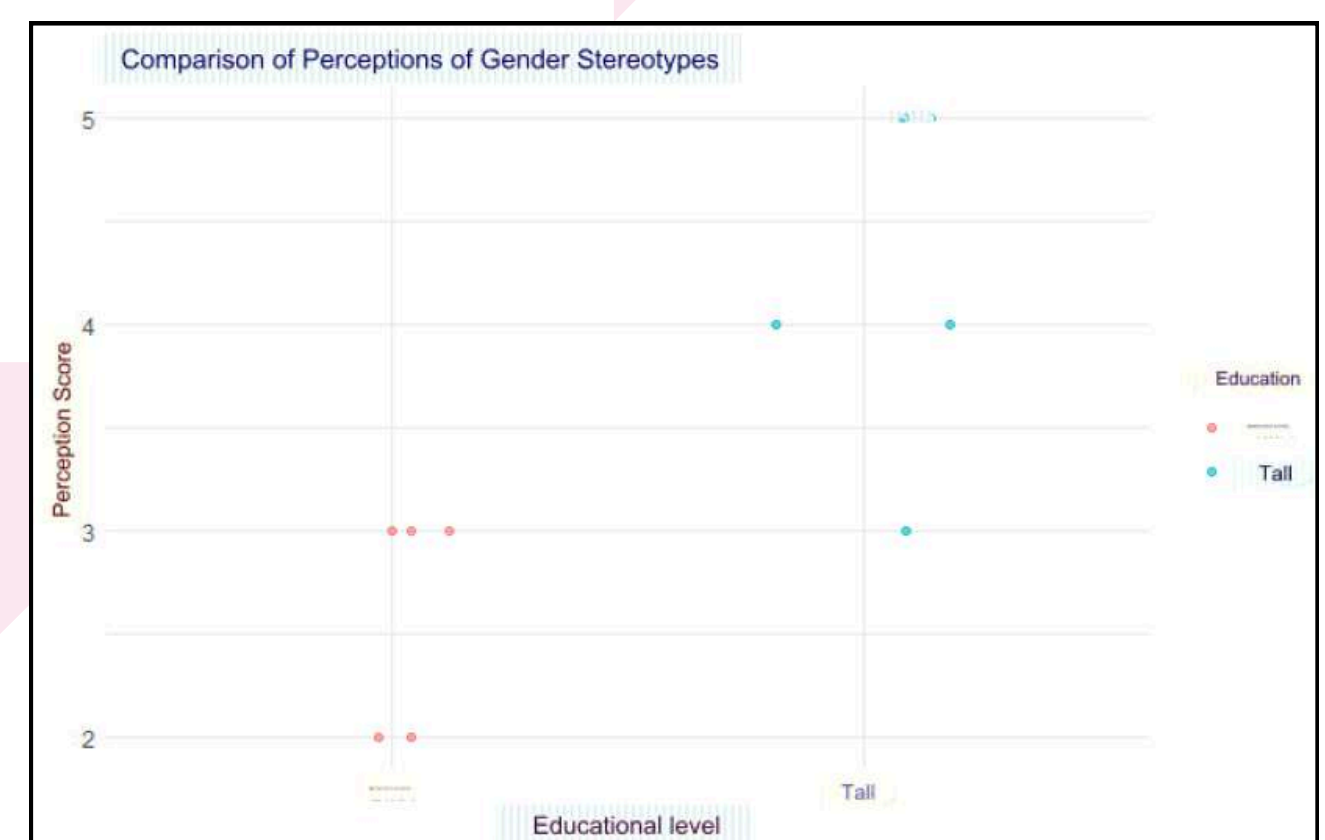
Gender stereotypes remain one of the significant factors contributing to inequality because they restrict individual choices and opportunities based on socially constructed assumptions about the roles of men and women. Traditional views often associate women primarily with domestic responsibilities while limiting their participation in public sectors, leadership positions, and professional fields. Such stereotypes create unequal access to resources, decision-making opportunities, and personal development.

The study reveals that educational background influences how women understand and respond to gender stereotypes. Women with greater educational exposure

tend to develop more critical perspectives toward traditional gender roles and are more capable of questioning discriminatory assumptions. Education provides knowledge, confidence, and awareness that enable women to recognize inequality and actively participate in social transformation.

The research findings show differences between female students from Sulawesi studying in Java and women with high school educational backgrounds. Most female students with higher educational experiences reported that they were less affected by gender stereotypes and had more inclusive views regarding women's participation in public spaces. Meanwhile, women with high school educational backgrounds more frequently reported experiencing gender stereotypes and discrimination in their daily lives. These differences indicate that educational access can influence awareness, confidence, and resistance toward unequal gender norms.

From the perspective of SDG 10, these findings emphasize that expanding access to quality education is not only an educational objective but also a strategy for reducing social inequality. Equal educational opportunities allow women to overcome structural limitations, improve their skills, and participate more actively in economic, social, and professional environments. Through education, women can become agents of change who contribute to creating more inclusive communities.



However, the study also indicates that education alone cannot completely eliminate gender stereotypes. Even among respondents with higher education levels, some traditional perceptions regarding household roles, emotional characteristics, and physical abilities of men and women remain present. This suggests that reducing inequality requires broader social interventions, including awareness programs, gender-sensitive policies, and cultural transformation that challenge discriminatory beliefs.

UNISMUH MAKASSAR TO WELCOME 23 INTERNATIONAL STUDENTS THIS YEAR



<https://news.unismuh.ac.id/2024/06/12/unismuh-makassar-bakal-terima-23-mahasiswa-internasional-tahun-ini/?utm>

Reducing inequalities requires creating an inclusive environment where individuals from diverse social, cultural, and national backgrounds have equal opportunities to access quality education. In line with Sustainable Development Goal 10 (SDG 10): Reduced Inequalities, higher education institutions play an important role in promoting inclusivity by providing equitable learning opportunities, encouraging cultural diversity, and strengthening international collaboration.

The initiative to welcome 23 international students from Sudan and Yemen for the 2024–2025 academic year represents a commitment to creating a more inclusive and globally connected educational environment. Through international student admission, the university expands access to higher education beyond national boundaries and provides opportunities for students from different countries to pursue academic development in a supportive environment.

Internationalization of higher education contributes to reducing inequalities by ensuring that educational opportunities are not limited by geographical origin or nationality. Students from different backgrounds can access academic resources, professional networks, and learning experiences that may not be equally available in their home countries. This approach reflects the principle of inclusive education, where diversity is recognized as a strength in creating a more equitable academic community.

To support international students, various adaptation and empowerment programs have been implemented, including cultural activities and community engagement programs such as Makassar Academic and Cultural Heritage Activity (MACCA) and Makassar Collaborative and Community Empowerment Activity (MACORA). These programs help international students integrate into the local community, understand Indonesian culture, and develop meaningful interactions with students and communities from different backgrounds.

The university also provides academic and social support through structured preparation programs. International

students are required to participate in Bahasa Indonesia for Foreign Speakers (BIPA) and local cultural learning activities before joining regular academic classes. This approach ensures that students are equipped with sufficient language skills and cultural understanding, allowing them to participate equally in the learning process and reducing barriers caused by linguistic and cultural differences.

From the perspective of SDG 10, providing scholarships and educational support for qualified international students demonstrates an effort to improve access to higher education for individuals from diverse socioeconomic and national backgrounds. By offering full scholarships covering development fees and tuition costs, the program helps reduce financial barriers that may prevent talented students from continuing their education abroad.

Furthermore, the presence of international students contributes to a more inclusive campus environment by encouraging intercultural exchange and mutual understanding. Interaction between local and international students promotes respect for cultural differences, reduces social barriers, and strengthens global citizenship values within the academic community.

This initiative also highlights the role of universities in addressing inequality through global partnerships and educational cooperation. Internationalization is not only focused on increasing institutional competitiveness but also on creating a learning ecosystem where students from different regions can access opportunities, share knowledge, and contribute to sustainable development.

Through the integration of inclusive admission policies, scholarship support, cultural adaptation programs, and international collaboration, this initiative demonstrates how higher education can become a platform for reducing inequalities. By ensuring that diverse groups have opportunities to participate in quality education, universities contribute to building a more inclusive and equitable society.

DEAN OF FAI UNISMUH DISCUSSES CHARACTER EDUCATION AT UM MAUMERE



<https://news.unismuh.ac.id/2026/07/06/dekan-fai-unismuh-bahas-pendidikan-karakter-di-um-maumere/>

Reducing inequalities requires more than ensuring equal access to education; it also involves developing individuals who are able to respect diversity, contribute positively to society, and participate responsibly in social life. In line with Sustainable Development Goal 10 (SDG 10): Reduced Inequalities, higher education institutions have an important role in promoting inclusive values, strengthening social responsibility, and developing graduates who are prepared to contribute to a more equitable society.

The guest lecture entitled “Student Character Education Strategies in Muhammadiyah Higher Education”, held by Universitas Muhammadiyah Maumere and featuring the Dean of the Faculty of Islamic Studies (FAI) Universitas Muhammadiyah Makassar, Dr. Amirah Mawardi, S.Ag., M.Si., represents an effort to strengthen inclusive character development among university students. The activity focused on integrating ethical values, social awareness, and academic responsibility as important foundations for developing students who are not only academically competent but also socially responsible.

Character education contributes to SDG 10 by addressing social inequalities that arise from differences in values, attitudes, and opportunities for participation. Education that promotes integrity, empathy, responsibility, and respect for others can help create communities where individuals from different backgrounds are treated fairly and have equal opportunities to contribute.

During the session, Amirah emphasized that character development should not be limited to personal morality but should also prepare students to become active contributors to society. Through the integration of Al-Islam and Kemuhammadian (AIK) values, students are encouraged to develop intellectual capacity alongside social awareness, leadership skills, independence, and concern for community issues.

From the perspective of reducing inequalities, this approach highlights the importance of education as a tool

for social empowerment. Students are encouraged to understand social challenges, participate in community engagement activities, and apply their knowledge to address real-world problems. This strengthens their ability to become agents of positive change and supports the development of more inclusive communities.

The program also emphasizes the importance of creating an inclusive academic culture through role models, student organizations, community service, and ethical digital engagement. By encouraging students to practice responsible communication, respect different perspectives, and contribute to social improvement, higher education institutions can reduce social barriers and strengthen relationships among diverse groups.

Furthermore, the discussion on ethical digital literacy reflects the changing nature of inequality in the digital era. Unequal access to responsible digital knowledge can contribute to misinformation, social polarization, and exclusion. By promoting responsible technology use, students are encouraged to utilize digital platforms for education, knowledge sharing, and constructive social engagement rather than for spreading harmful content or discrimination.

The collaboration between Universitas Muhammadiyah Maumere and Universitas Muhammadiyah Makassar also demonstrates the importance of institutional partnerships in promoting inclusive education. Through knowledge exchange between Muhammadiyah higher education institutions, character education initiatives can be strengthened and expanded to reach broader academic communities.

This initiative shows that reducing inequalities is not only achieved through providing educational access but also through developing individuals who understand social responsibility and respect human dignity. By integrating character education into academic environments, universities contribute to building societies that are more inclusive, ethical, and resilient.

11

SDG 11 SUSTAINABLE CITIES AND COMMUNITIES

Advancing sustainable cities through innovation, collaboration, and community engagement.



RESEARCH ON SUSTAINABLE CITIES AND COMMUNITIES

Research on sustainable cities and communities focuses on urban resilience, disaster risk reduction, sustainable infrastructure, environmental management, and community development. Studies have explored urban fire resilience, healthy city development, flood mitigation, stakeholder collaboration, and sustainable spatial planning to provide evidence-based recommendations for policymakers and local communities. The research also encourages interdisciplinary collaboration and innovation in addressing urban challenges while supporting sustainable public policies. These research activities contribute to improving public safety, strengthening urban resilience, and promoting more inclusive, adaptive, and sustainable cities across Indonesia.

SUPPORT OF ARTS AND HERITAGE

Support for arts and heritage is provided through educational activities, community engagement programmes, cultural events, and partnerships that promote local traditions and regional identity. These initiatives encourage cultural preservation, strengthen community participation, and increase public appreciation of Indonesia's diverse cultural heritage. Various exhibitions, cultural festivals, educational programmes, and collaborative activities provide opportunities for students and communities to preserve local values while promoting creativity and cultural diversity. By integrating arts and heritage into education and community service, these initiatives contribute to social cohesion, sustainable regional development, and the preservation of cultural identity for future generations.

EXPENDITURE ON ARTS AND HERITAGE

Continuous investment in cultural and heritage initiatives supports the preservation of local traditions while expanding opportunities for public participation and creative expression. Institutional resources are allocated to community programmes, cultural exhibitions, educational events, heritage conservation, and collaborative activities that reinforce cultural diversity as an essential component of sustainable cities and communities.

OUR IMPACT SNAPSHOT

THE IMPACT
RANKINGS
On process

Scopus®
49
Publication

16
Community
Service
Activities 2025

16
International
Collaborations
2025

SUSTAINABLE PRACTICES

Sustainable practices are implemented through research, education, campus operations, and community engagement to support resilient and environmentally responsible urban development. Initiatives include disaster preparedness, environmental conservation, collaborative governance, and sustainable infrastructure planning. Partnerships with government institutions, industry, and local communities strengthen the implementation of sustainable solutions while promoting public safety, environmental protection, and long-term urban resilience. These initiatives also encourage responsible resource management, improve environmental awareness, and foster active community participation in creating healthier, safer, more inclusive, and sustainable urban environments for future generations.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>



Creating safer cities and stronger communities through science, collaboration, and sustainable innovation.

SMART GOVERNANCE: THE FIRST EXPERIENCE OF THE TWO METROPOLITAN CITIES IN INDONESIA

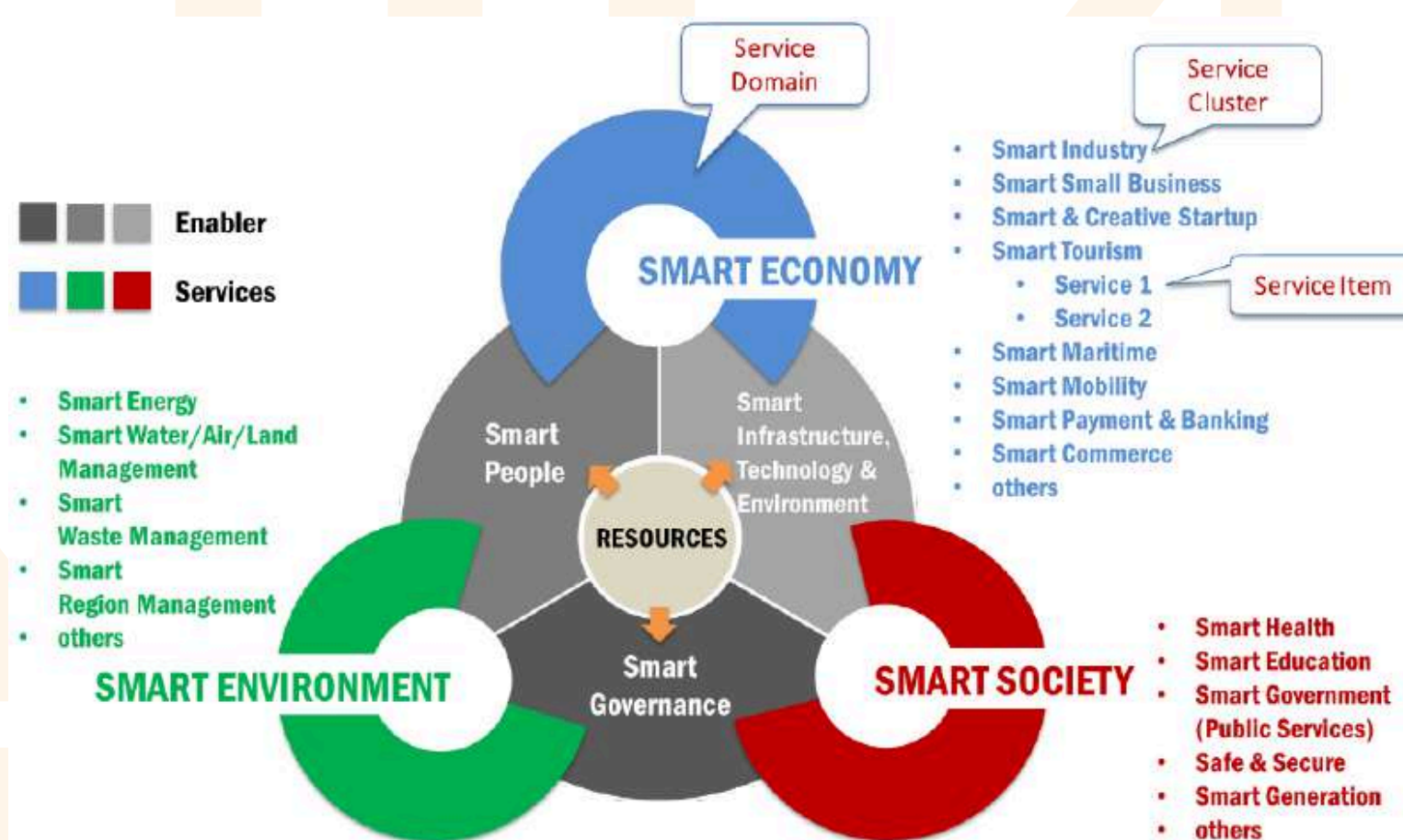


Nasrulhaq and his team conducted research entitled Smart Governance: The First Experience of the Two Metropolitan Cities in Indonesia (2025), which contributes to Sustainable Development Goal (SDG) 11: Sustainable Cities and Communities by examining the implementation of smart governance practices in metropolitan areas. The study focuses on how digital transformation, institutional innovation, and collaborative governance can improve urban management and strengthen the sustainability of cities.

The research analyzes the experiences of two metropolitan cities in Indonesia, namely Bandung City and Makassar City, which were among the first cities involved in the national Movement Towards 100 Smart Cities initiative launched by the Indonesian government in 2017. Through a qualitative

public service delivery, increasing government transparency, and enabling more efficient management of urban resources. Digital-based governance systems allow governments to respond more effectively to community needs while encouraging greater public participation in urban development processes.

Furthermore, the study emphasizes that each city requires a contextual approach in implementing smart governance. The experience of Makassar demonstrates the importance of integrating local wisdom with technological innovation, while Bandung highlights the role of community-based initiatives and innovation-driven governance. These findings show that sustainable urban development cannot rely solely on technological advancement but must consider social conditions, institutional readiness, and collaboration among multiple



research approach, the study collected data through interviews with government officials and stakeholders, expert discussions, direct observations, and analysis of relevant policy documents and literature.

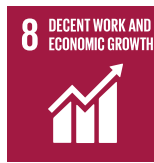
The findings identify three main dimensions that shape smart governance implementation: policy arrangements, bureaucratic management, and public services. These dimensions demonstrate that smart governance is not limited to the adoption of information and communication technology (ICT), but also involves institutional transformation, stakeholder collaboration, citizen participation, and improved decision-making processes. The research highlights that effective smart cities require integration between technological innovation and human capacity to create responsive and inclusive urban governance. In the context of SDG 11, this research provides important insights into the development of sustainable and resilient urban communities. The implementation of smart governance supports cities in improving

stakeholders.

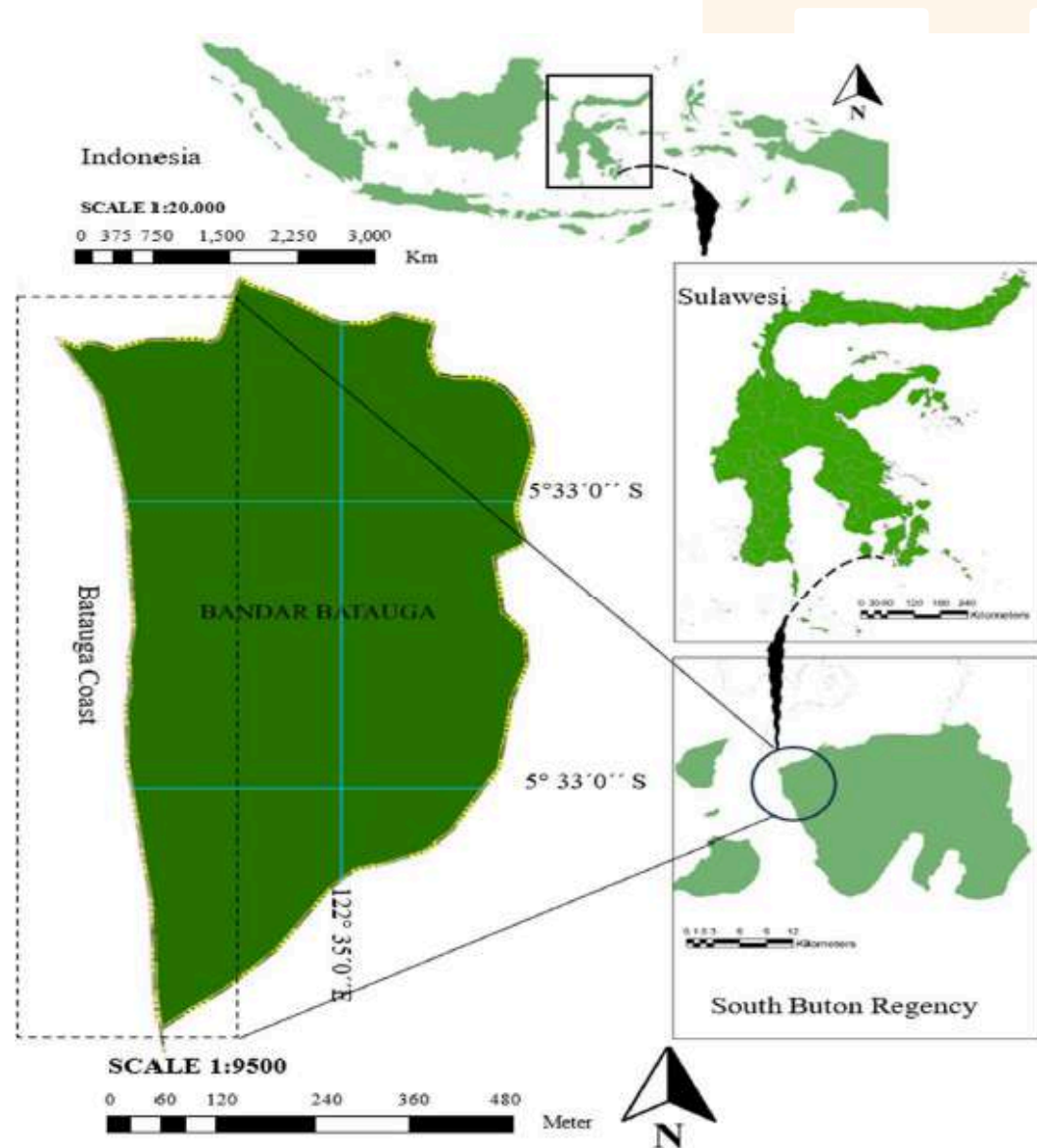
The research also supports SDG 16 (Peace, Justice, and Strong Institutions) and SDG 17 (Partnerships for the Goals) by demonstrating the importance of accountable institutions, multi-stakeholder collaboration, and coordinated governance mechanisms in achieving sustainable urban development. Smart governance creates opportunities for governments, communities, academic institutions, and private sectors to work together in addressing complex urban challenges.

Through this study, Unismuh researchers contribute to the advancement of sustainable city development by providing evidence-based recommendations for improving urban governance practices. The findings serve as a reference for metropolitan cities in developing countries seeking to implement smart city strategies that are adaptive, inclusive, and aligned with sustainable development principles.

STUDY OF COASTAL LAND CHANGE IN SAND MINING ACTIVITIES IN BANDAR BATAUGA VILLAGE, SOUTH BUTON REGENCY, INDONESIA



Zulkifli Mappasomba and Romiyatno Suleman conducted research entitled Study of Coastal Land Change in Sand Mining Activities in Bandar Batauga Village, South Buton Regency, Indonesia (2024), which contributes significantly to SDG 14: Life Below Water through its focus on coastal ecosystem protection, sustainable management of marine and coastal resources, and mitigation of environmental degradation caused by human activities. The research examines the impact of sand mining activities on coastal land changes and evaluates strategies to reduce environmental risks in vulnerable coastal settlements.

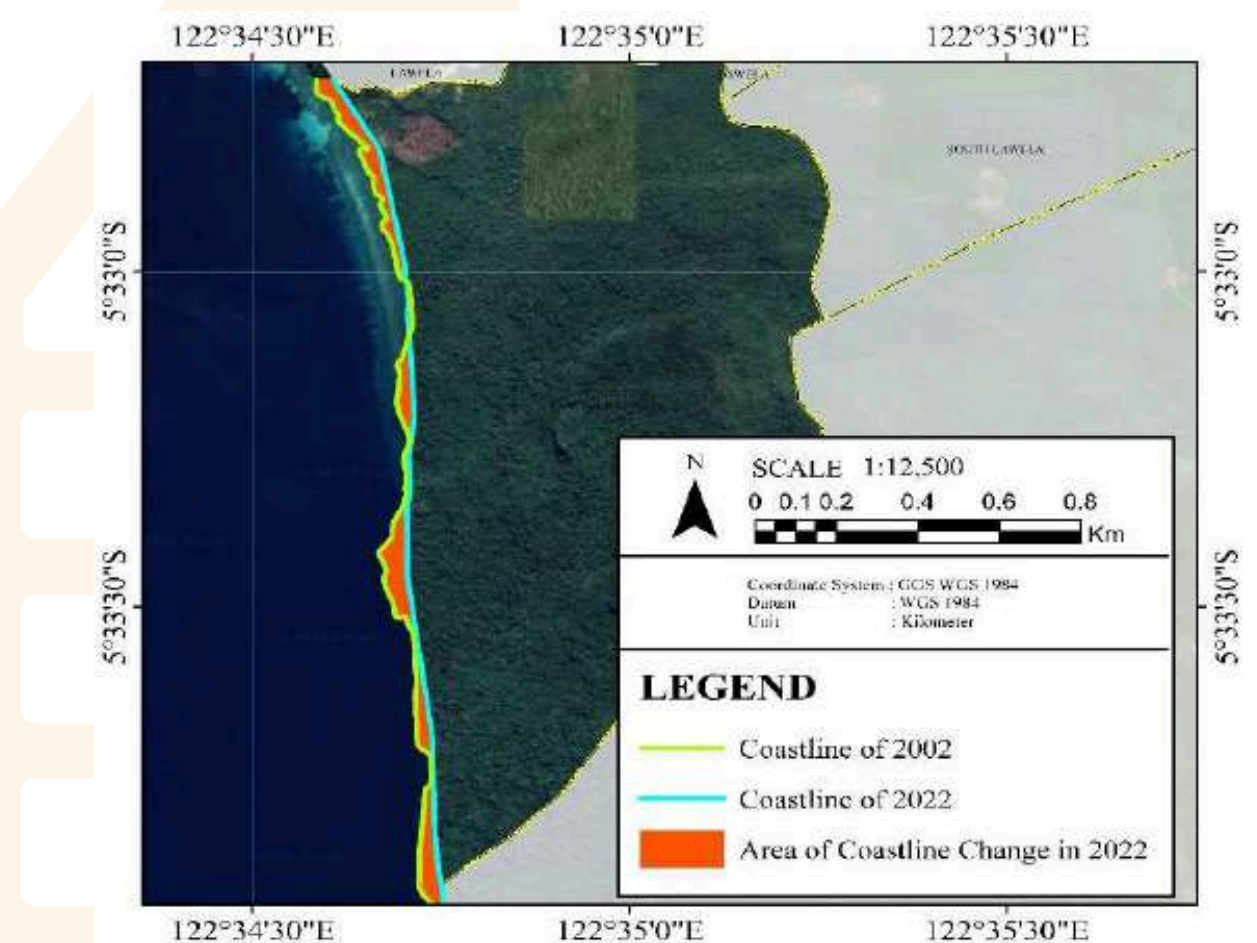


Coastal areas represent important ecological and socio-economic systems that support biodiversity, natural protection, and community livelihoods. However, uncontrolled resource exploitation, particularly sand mining, can accelerate coastal degradation through erosion, abrasion, and disruption of coastal ecosystems. This study highlights the environmental challenges experienced in Bandar Batauga Village, South Buton Regency, where sand mining activities have occurred for several decades and have contributed to significant changes in coastal morphology.

The research employed a combination of quantitative and qualitative approaches to analyze coastal land changes and develop appropriate mitigation strategies. Coastal change analysis was conducted using ArcGIS 10.3.1 to evaluate shoreline changes, while interviews with local communities, mining actors, and government stakeholders were conducted to understand the socio-economic impacts of sand mining activities. The study also applied statistical forecasting methods, including Single Moving Average (SMA) and Double Moving Average (DMA), to predict future coastal changes until 2050.

The findings revealed significant environmental changes caused by sand mining activities. The study identified that coastal erosion had reached 511.3 m² in 2022, with projections indicating that erosion could increase up to 1,157.22 m² by 2050 if mitigation efforts are not implemented. These findings demonstrate the urgency of sustainable coastal management to prevent further degradation and protect coastal communities that depend on marine and coastal resources.

Beyond assessing physical environmental changes, the research also examined social and economic dimensions associated with sand mining. The study found that sand mining provides economic benefits for local communities by generating income opportunities, but at the same time creates long-term environmental risks that threaten the sustainability of coastal settlements. This condition highlights the need for balanced development strategies that consider both community welfare and environmental conservation.



To address these challenges, the research applied the Analytic Hierarchy Process (AHP) approach to formulate coastal mitigation strategies based on social, economic, physical, and biotic environmental factors. The proposed strategies emphasize strengthening environmental governance, improving institutional capacity, increasing community awareness, enhancing monitoring systems, and providing alternative livelihood opportunities to reduce dependence on environmentally harmful activities. This research contributes to SDG 14 by providing scientific evidence for sustainable coastal resource management and ecosystem protection. Through spatial analysis, environmental assessment, and mitigation planning, the study supports efforts to maintain coastal resilience and prevent further degradation of marine ecosystems. The findings can serve as a reference for policymakers and local stakeholders in developing integrated coastal management strategies.

CREATIVITY AND AWARENESS: UNISMUH STUDENTS INTRODUCE SOUTH SULAWESI CULTURE THROUGH PAINTING ACTIVITIES



<https://kabarmakassar.com/news/kreativitas-dan-kepedulian-mahasiswa-unismuh-kenalkan-budaya-sulsel-lewat-kegiatan-melukis>

Cultural heritage represents an important element in building sustainable and inclusive communities. Preserving local traditions, historical identity, and cultural expressions plays a significant role in maintaining social cohesion and strengthening community identity. Through creative and educational activities, cultural values can be introduced to younger generations while encouraging broader public appreciation of local heritage.

The student-led initiative entitled “Melukis Warna Budaya” reflects a commitment to promoting South Sulawesi cultural awareness through artistic expression. The activity was organized by students of the Communication Science Program, Faculty of Social and Political Sciences, at Universitas Muhammadiyah Makassar, and was held at Benteng Somba Opu, one of the historical cultural locations in South Sulawesi. The event carried the theme “Rayakan Imajinasi, Rangkul Tradisi Bersama Anak Bangsa, di Kanvas Budaya”, emphasizing the connection between creativity, education, and cultural preservation.

The activity introduced South Sulawesi culture through painting, allowing participants to explore cultural elements beyond commonly known symbols such as traditional foods. Through visual arts, participants were encouraged to recognize various forms of cultural identity, including traditional houses, regional songs, and other cultural characteristics that represent the diversity of South Sulawesi.

The program involved 25 children from Panti Asuhan Bustanul Islamiyah, who participated in painting activities while receiving cultural education from students. This approach demonstrates that cultural preservation can be integrated with community engagement and informal education. By involving children in creative activities, the program creates an opportunity for younger generations to develop appreciation and awareness of local heritage from an early age.

In addition to painting activities, the event included an exhibition featuring approximately 10 paintings with South Sulawesi cultural themes, as well as collaboration with artists from the UKM Seni UNM through the presentation of Colli’ Pakue artworks. The combination of student creativity, community participation, and artistic exhibition created a public space where cultural knowledge could be shared and appreciated collectively.

This initiative contributes to SDG 11: Sustainable Cities and Communities by supporting cultural sustainability and strengthening community identity through preservation of local heritage. Sustainable communities are not only developed through physical infrastructure and environmental management but also through maintaining cultural values, historical awareness, and social connections among community members.

Furthermore, the activity supports SDG 4: Quality Education by providing experiential learning opportunities outside formal classrooms. Students involved in the program developed skills in communication, event management, and community engagement, while participating children gained cultural knowledge through interactive learning methods.

The initiative also aligns with SDG 10: Reduced Inequalities by creating inclusive cultural spaces where children from different social backgrounds can participate in educational and artistic activities. By involving children from an orphanage, the program demonstrates that access to cultural education and creative development should be available for all members of society.

Through collaboration between students, community groups, and cultural actors, this activity also reflects the principles of SDG 17: Partnerships for the Goals. The involvement of different stakeholders demonstrates that cultural preservation requires collective efforts involving educational institutions, communities, and creative sectors.

12

SDG 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Responsible consumption and sustainable production through sustainable governance, research, resource-efficient campus operations, and community engagement. Guided by its I-GIFt vision, the university advances waste reduction, and circular economy practices.



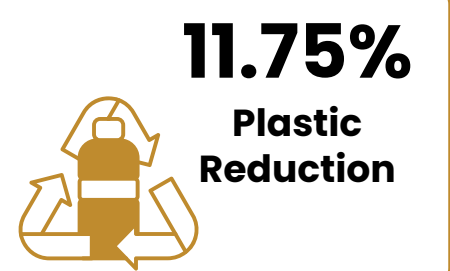
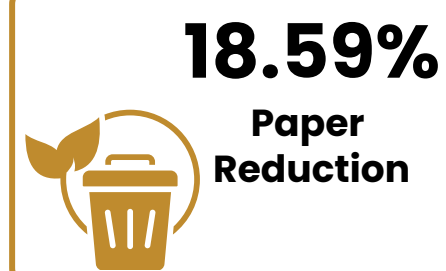
RESEARCH ON RESPONSIBLE CONSUMPTION AND PRODUCTION

Research activities contribute to sustainable resource management through interdisciplinary studies on environmental conservation, sustainable community development, waste management, circular economy, and green innovation. Research outcomes support evidence-based policies while empowering communities to adopt environmentally responsible production and consumption practices. Through collaboration with national and international partners, scientific contributions continue to expand, strengthening sustainable development, promoting responsible resource utilization beyond the campus environment, and fostering long-term environmental resilience and sustainable societal transformation.

PROPORTION OF RECYCLED WASTE

Integrated recycling and organic waste utilization programmes continue to improve waste recovery and resource efficiency across campus. Plastic waste is transformed into handicrafts and reusable products, while organic waste from canteens and campus green areas is processed into compost, liquid organic fertilizer, planting media, and animal feed. During the reporting period, organic waste generation decreased from 64 tons to 55 tons, with approximately 7 tons successfully processed into valuable products, demonstrating a strong commitment to circular resource management and sustainable campus operations.

OUR IMPACT SNAPSHOT



PUBLICATION OF A SUSTAINABILITY REPORT

Institutional transparency is strengthened through the annual publication of Sustainability Reports, SDGs Reports, and GreenMetric Reports. These reports document environmental performance, resource consumption, waste management achievements, sustainability indicators, and continuous improvements aligned with international sustainability assessment frameworks. Annual reporting enables stakeholders to monitor institutional progress while strengthening accountability and evidence-based decision-making for sustainable campus development. Reports can be accessed via: <https://sdgs.unismuh.ac.id/>



SOURCES:

- Scopus Website
- <https://news.unismuh.ac.id>



Transforming Waste into Value through Innovation and Sustainability.



OPERATIONAL MEASURES

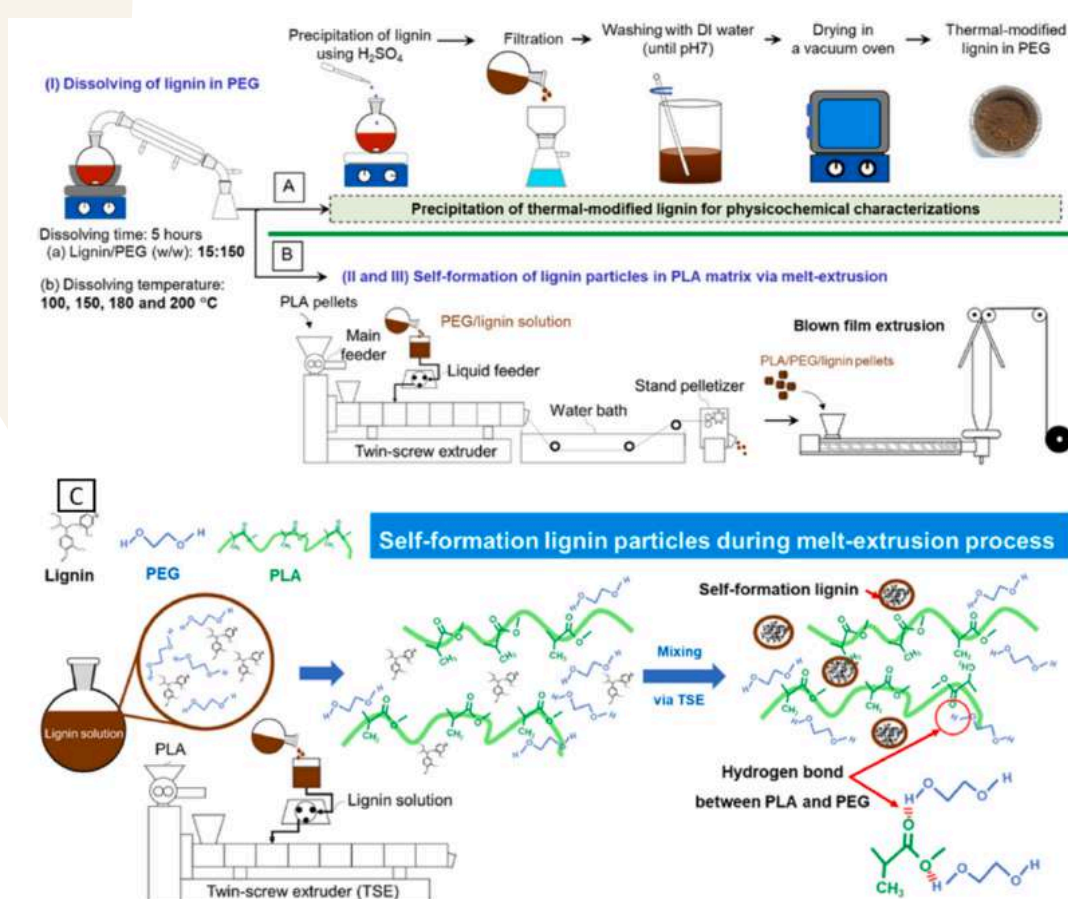
Comprehensive operational measures are implemented based on the 3R principles (Reduce, Reuse, Recycle). Paper consumption has been significantly reduced through digital administration, e-learning, electronic correspondence, digital quality assurance systems, and online research management. Campus-wide initiatives also promote the Zero Plastic Initiative by providing refillable water dispensers, encouraging the use of reusable tumblers, conducting environmental awareness campaigns, and operating waste segregation systems supported by Waste Bank activities and standardized waste management procedures.

SUSTAINABLE FOOD PRESERVATION THROUGH LIGNIN-BASED ANTIOXIDANT MATERIALS FOR RESPONSIBLE CONSUMPTION AND PRODUCTION



The increasing global demand for food has raised concerns regarding resource efficiency, food waste, and environmental sustainability. Food deterioration caused by oxidation during processing, storage, and distribution is one of the major factors contributing to reduced food quality and increased waste. Therefore, sustainable preservation strategies that extend shelf life while minimizing environmental impacts are essential to support SDG 12: Responsible Consumption and Production.

The review article entitled “Minimizing food oxidation using aromatic polymer: From lignin into nano-lignin” highlights the potential of lignin, an abundant biopolymer derived from plant biomass, as a sustainable antioxidant material for food applications. The study shows that lignin and nano-lignin can reduce oxidative reactions, improve food preservation, and support the development of environmentally friendly packaging systems. These applications align with SDG 12 by promoting efficient resource utilization, reducing food waste, and encouraging the use of renewable materials.



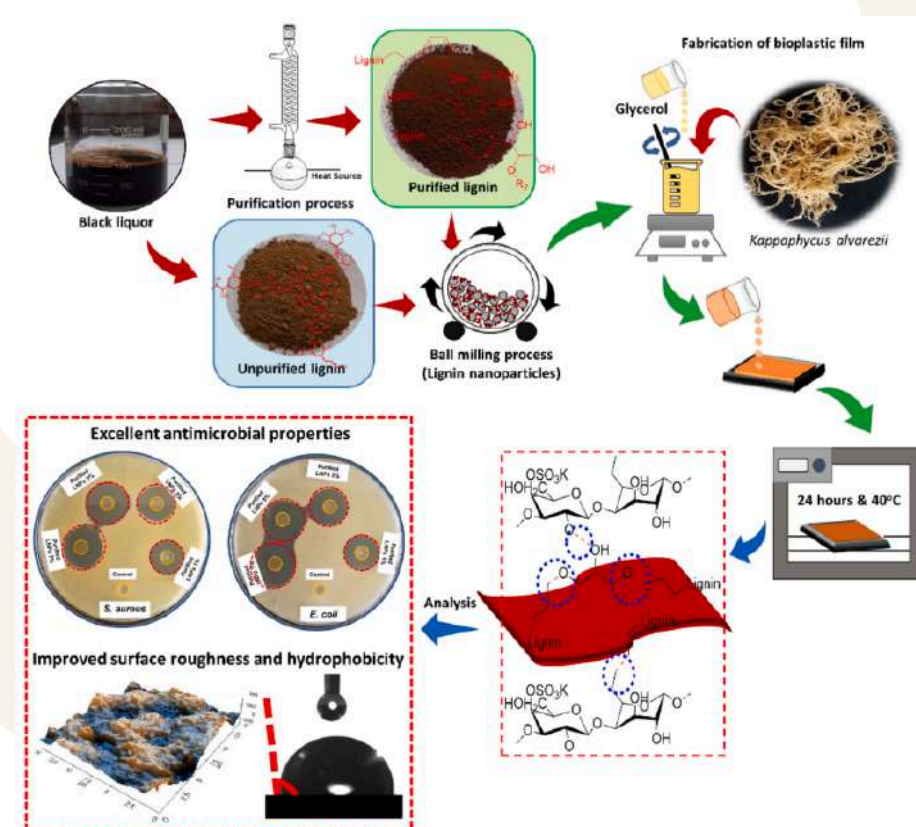
Food oxidation causes nutritional loss, undesirable flavor changes, discoloration, and reduced consumer acceptance, ultimately increasing food waste. The use of lignin as a natural antioxidant provides an alternative to synthetic antioxidants, which may raise environmental and health concerns. Lignin offers advantages such as biodegradability, renewable availability, low cost, and the ability to transform biomass waste into valuable products. This process reflects the concept of a circular economy by converting industrial by-products into functional materials.

Lignin contributes to food sustainability through its antioxidant properties, mainly from phenolic compounds that can neutralize free radicals and inhibit oxidative damage. By protecting food components such as lipids and proteins, lignin-based materials help maintain quality

and extend shelf life, reducing the amount of food discarded during storage and distribution.

The development of nano-lignin further improves the potential of lignin-based technologies. Smaller particle sizes increase surface area and enhance antioxidant activity, allowing more efficient protection against oxidation with lower material usage. This advancement supports the creation of more effective and sustainable food preservation systems.

In addition, lignin-based active packaging offers an environmentally friendly alternative to conventional plastic packaging. Incorporating lignin into biodegradable packaging materials can provide antioxidant, UV-protective, and barrier properties that help maintain food quality while reducing dependence on fossil-based materials. This approach supports responsible production by combining food preservation with environmental protection.

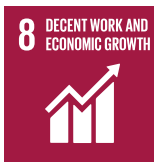


The utilization of lignin also strengthens circular production systems by converting biomass residues from industries such as pulp and biorefineries into high-value applications. Instead of being used only as fuel, lignin can be transformed into functional materials that reduce reliance on non-renewable resources.

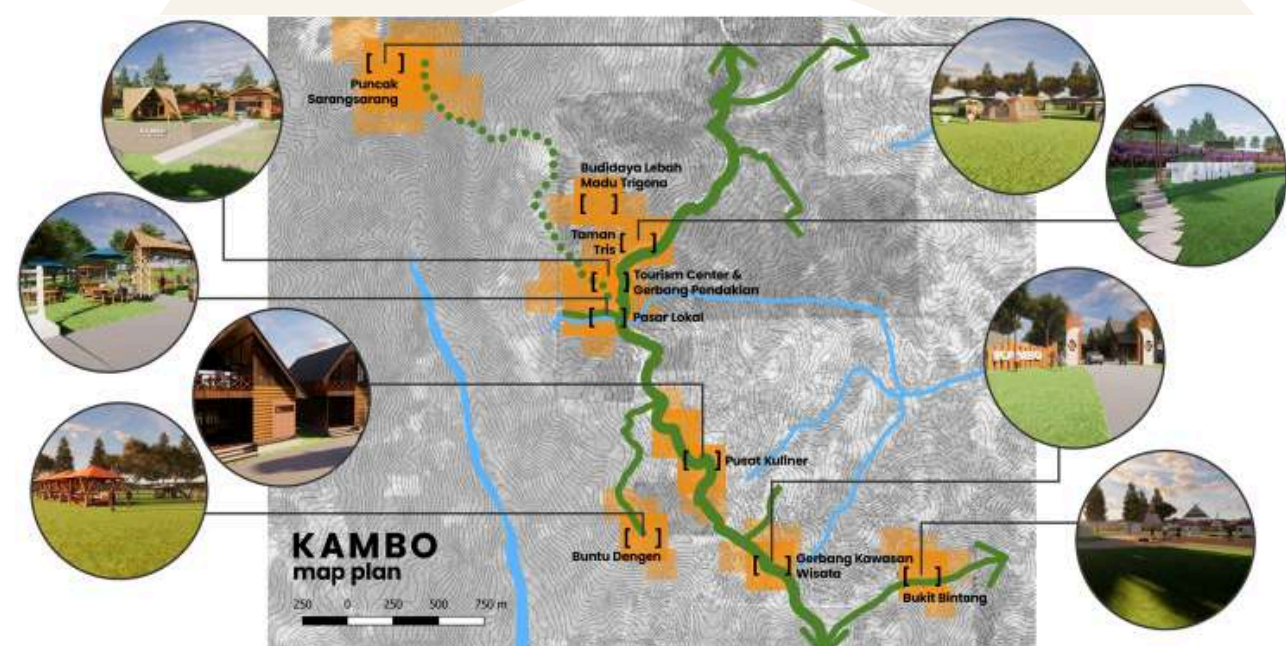
Despite its potential, further research is needed to improve lignin processing, scalability, food safety, and compatibility with packaging systems. Future developments should focus on environmentally friendly extraction methods, cost efficiency, and regulatory approval to support wider industrial application.

The lignin and nano-lignin-based antioxidant systems represent a promising approach to achieving SDG 12: Responsible Consumption and Production. By reducing oxidation, extending food shelf life, minimizing waste, and utilizing renewable biomass resources, lignin-based innovations contribute to a more sustainable and efficient food system.

PROMOTING RESPONSIBLE TOURISM DEVELOPMENT THROUGH PARTICIPATORY PLANNING AND SUSTAINABLE RESOURCE MANAGEMENT



Sustainable development requires changes in how resources are utilized and managed across different sectors, including tourism. While tourism can generate economic benefits, uncontrolled development may lead to environmental degradation, excessive resource use, and social challenges. Therefore, responsible tourism planning that balances economic growth, environmental protection, and community participation is essential to achieving SDG 12: Responsible Consumption and Production. The article “Kambo Tourism Village Masterplan: Community Participation in Tourism Development” highlights how participatory approaches can support sustainable tourism by optimizing local resources and promoting responsible management practices.



The study emphasizes that tourism development should not only focus on increasing visitor numbers but also consider the sustainability of natural resources, cultural identity, and community welfare. Through a co-design approach, local communities, governments, academics, and other stakeholders participate in developing tourism strategies. This approach supports SDG 12 by encouraging efficient resource use, shared responsibility, and sustainable decision-making.

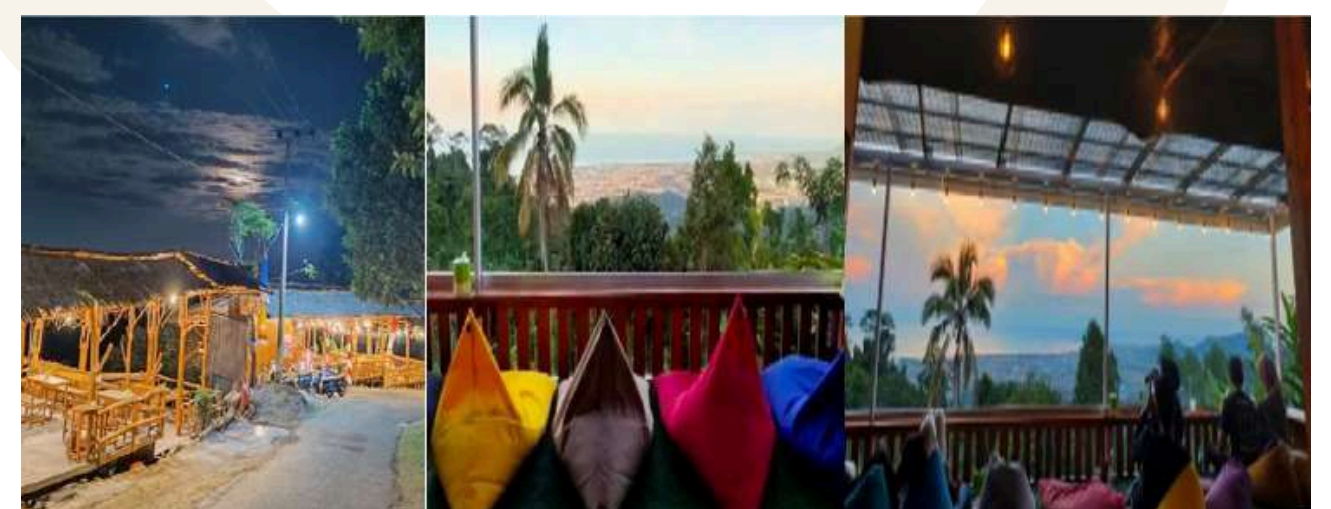
One of the key contributions of this research is the promotion of sustainable resource utilization through community-based tourism planning. The Kambo Tourism Village development process focuses on utilizing existing local potential, including agricultural resources, cultural heritage, landscapes, and community skills. By maximizing local assets, the approach reduces dependence on external resources and supports more responsible production practices.

Community participation also encourages more responsible tourism activities. By involving local residents in planning and management, tourism development can better adapt to environmental conditions and community needs. This involvement strengthens a sense of ownership, encouraging communities to protect local resources and maintain tourism sustainability for future generations.

The study also shows that sustainable tourism can support an inclusive local economy. Through tourism services, culinary businesses, and creative industries, communities can transform local resources into economic opportunities. The development of Kambo Tourism Village has contributed to increased local economic activities while strengthening community capacity and reducing dependence on external economic sources.

Another important aspect of this research is the role of collaboration and sustainable governance. Using the Delphi Consensus Method and Analytic Hierarchy Process (AHP), the study identified community participation and sustainability as key priorities in tourism development. These findings demonstrate that sustainable tourism requires cooperation among communities, governments, academic institutions, and private sectors.

The Kambo Tourism Village masterplan integrates environmental, economic, and social sustainability principles. Environmental aspects focus on protecting natural resources, economic aspects ensure long-term benefits for communities, and social aspects strengthen participation and cultural preservation. These elements reflect the objectives of SDG 12, which promotes development practices that meet present needs without compromising future resources.



Furthermore, community empowerment through tourism training and the development of Tourism Awareness Groups (Pokdarwis) improves local capacity in managing tourism activities. Empowered communities are better prepared to implement sustainable practices and balance economic benefits with environmental conservation.

Although sustainable tourism provides significant opportunities, continuous monitoring and adaptation are needed to ensure that tourism growth remains within environmental and social limits. Maintaining a balance between attracting visitors, protecting ecosystems, and preserving local values is essential for long-term sustainability.

13

SDG 13
CLIMATE
ACTION

Integrated policies on renewable energy, energy efficiency, green infrastructure, and sustainable campus operations strengthen climate resilience while supporting transparency, continuous improvement, and global climate action.



RESEARCH ON CLIMATE ACTION

Research activities actively promote interdisciplinary studies that support climate change mitigation, renewable energy development, sustainable infrastructure, water conservation, and environmentally responsible technologies. Research conducted by university scholars contributes practical solutions for reducing environmental impacts, improving resource efficiency, and strengthening climate resilience across multiple sectors. Recent studies include sustainable irrigation technologies that improve water-use efficiency and climate adaptation in agriculture, as well as environmentally friendly asphalt innovations that reduce dependence on fossil-based materials while supporting circular economy principles.



ENVIRONMENTAL EDUCATION MEASURES

Climate awareness is integrated into education, research, and campus engagement through sustainability campaigns, environmental training, green-campus initiatives, and experiential learning activities. Students participate in environmental conservation programmes, urban farming, waste-reduction campaigns, and renewable-energy awareness initiatives that strengthen climate literacy and responsible environmental behaviour. These educational efforts cultivate graduates who are capable of contributing innovative and sustainable solutions to climate challenges at local, national, and global levels.

SOURCES:

- Scopus Website
- <https://news.unismuh.ac.id>

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Energy
Efficient
Appliances

LOW-CARBON ENERGY USE

Energy efficiency continues to improve through the deployment of modern low-carbon technologies across seven campus locations. All campus lighting has transitioned to LED technology, while energy-efficient air conditioners, automated water-tank systems, motion-sensor lighting, intelligent elevators, and smart building management optimize electricity consumption. Renewable energy utilization has begun through solar-powered street lighting, with a strategic roadmap to expand rooftop solar photovoltaic systems across campus buildings in support of long-term carbon reduction targets.

CARBON NEUTRALITY

Carbon reduction initiatives are advanced through a combination of renewable energy utilization, energy-efficient technologies, digital transformation, and sustainable campus operations. Solar-powered street lighting, campus-wide LED lighting systems, motion-sensor technologies, smart administrative systems, and paperless correspondence collectively reduce electricity demand and greenhouse gas emissions. Greenhouse facilities, urban farming initiatives, and sustainable landscape management further contribute to lowering indirect emissions while promoting environmental stewardship across campus activities.

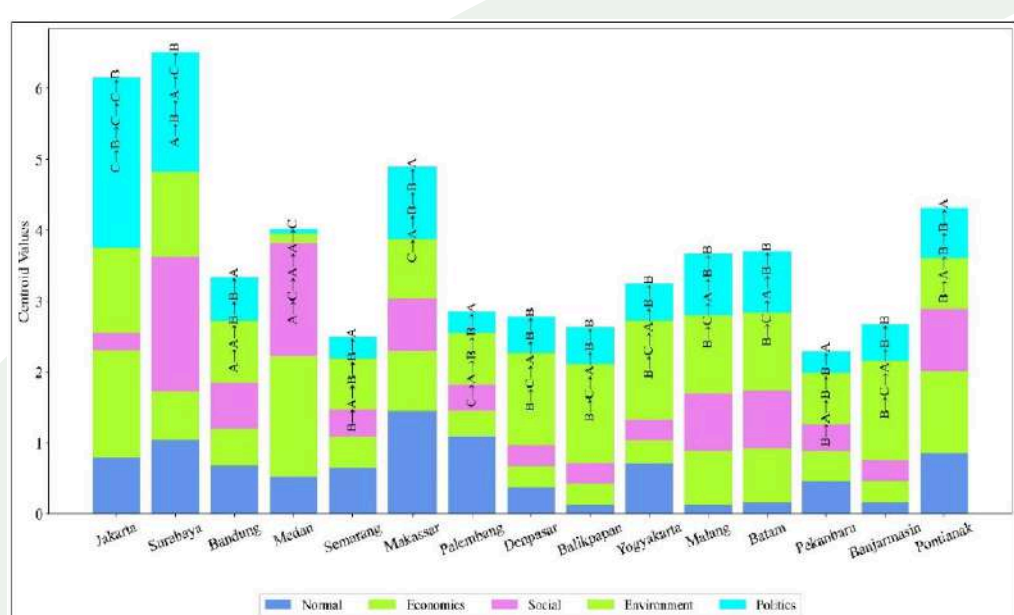


Strengthening climate resilience through renewable energy, smart infrastructure, environmental innovation, and collaborative climate action.

A MACHINE LEARNING-DRIVEN FRAMEWORK FOR EVALUATING AND CLUSTERING CITY-LEVEL CARBON TRADING STRATEGIES



Climate change has become one of the most critical global challenges, requiring effective strategies to reduce carbon emissions and strengthen climate resilience. Rapid urbanization and increasing energy consumption have made cities major contributors to greenhouse gas emissions. Therefore, developing adaptive and data-driven climate policies is essential to support the achievement of Sustainable Development Goal 13 (SDG 13): Climate Action. The article entitled “A Machine Learning-Driven Framework for Evaluating and Clustering City-Level Carbon Trading Strategies” presents an innovative approach by integrating machine learning and decision-support methods to improve carbon trading strategies and support more effective climate governance.



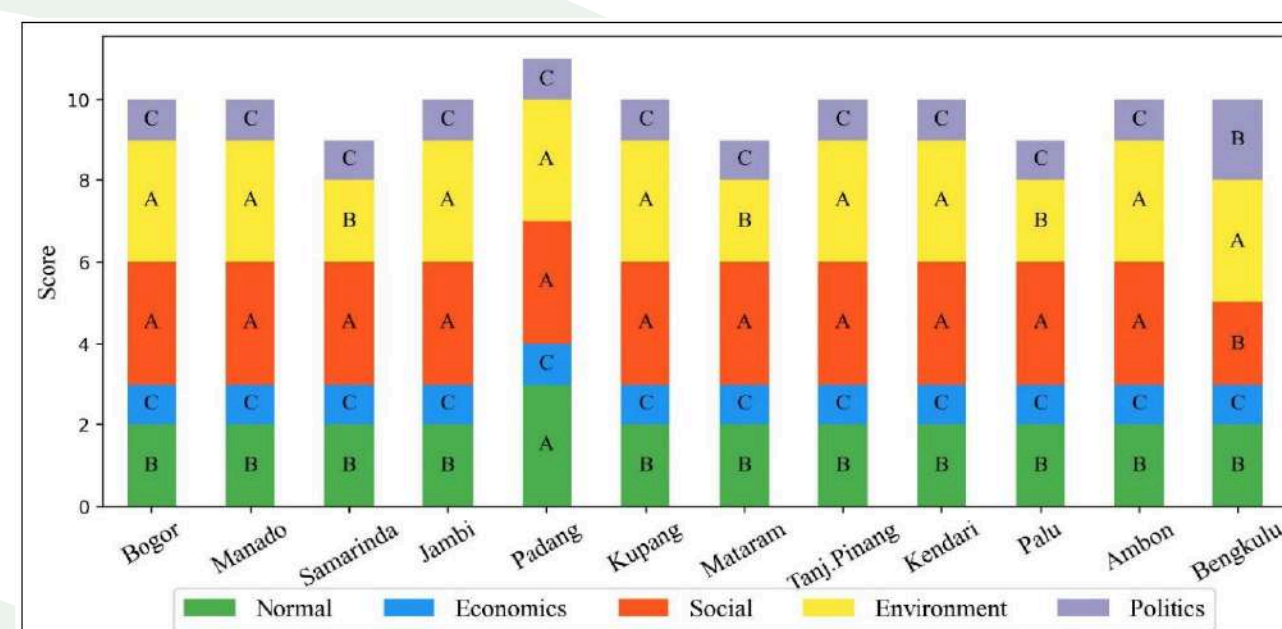
The study highlights that carbon trading mechanisms can serve as an important policy instrument for reducing emissions by creating economic incentives for low-carbon development. Through carbon trading systems, cities can encourage industries and organizations to reduce their carbon footprint while promoting cleaner technologies. This approach aligns with SDG 13 by supporting emission reduction efforts through market-based solutions and strengthening climate mitigation strategies.

One of the main contributions of this research to SDG 13 is the development of a comprehensive framework for evaluating city-level carbon policies. The study combines Multi-Objective Optimization (MOO), Multi-Criteria Decision Making (MCDM), Particle Swarm Optimization-Self Organizing Maps (PSOM), and Random Forest algorithms to analyze economic, social, environmental, and political factors related to carbon trading strategies. This integrated approach allows policymakers to identify different climate challenges among cities and design strategies that are more adaptive to local conditions.

The research also emphasizes the importance of considering urban differences in climate action planning. Cities have different levels of economic development, infrastructure readiness, energy efficiency, and environmental capacity. By clustering cities based on their characteristics, the proposed framework helps identify suitable carbon management strategies for different urban contexts. This supports SDG 13 because climate

actions become more targeted, efficient, and responsive rather than applying the same approach to all regions.

Another significant contribution is the role of technology and artificial intelligence in strengthening climate decision-making. Traditional climate policy evaluations often depend on historical data and may not fully capture complex interactions between economic growth, emissions, and urban development. The application of machine learning in this study provides a more flexible method to predict and evaluate carbon trading strategies, enabling policymakers to make evidence-based decisions for emission reduction and climate adaptation.



The study also demonstrates that effective climate action requires integration between environmental goals and socio-economic considerations. The framework evaluates multiple indicators, including energy efficiency, per capita emissions, renewable energy adoption, green infrastructure, climate resilience planning, and regulatory support. This multidimensional approach reflects the principle of SDG 13, where climate action should not only focus on reducing emissions but also consider sustainable economic development and social impacts.

Furthermore, the implementation of carbon trading strategies contributes to the transition toward a low-carbon economy. By encouraging industries and cities to improve energy efficiency and adopt cleaner technologies, carbon markets can reduce dependence on fossil fuels and support sustainable innovation. The research shows that stronger regulatory frameworks and effective policy evaluation are necessary to ensure that carbon trading systems achieve meaningful environmental outcomes.

However, the implementation of data-driven carbon policies still faces several challenges. Differences in data availability, technological capacity, regulatory systems, and local economic conditions may influence the effectiveness of climate strategies. Therefore, continuous improvement in data management, policy monitoring, and collaboration among governments, industries, and researchers is required to maximize the impact of carbon trading initiatives.

REDUCING THE ENVIRONMENTAL IMPACT OF ASPHALT EMULSION PRODUCTION FROM PETROLEUM BITUMEN UTILIZING BUTON ISLAND NATURAL ASPHALT IN VARIOUS SCENARIOS

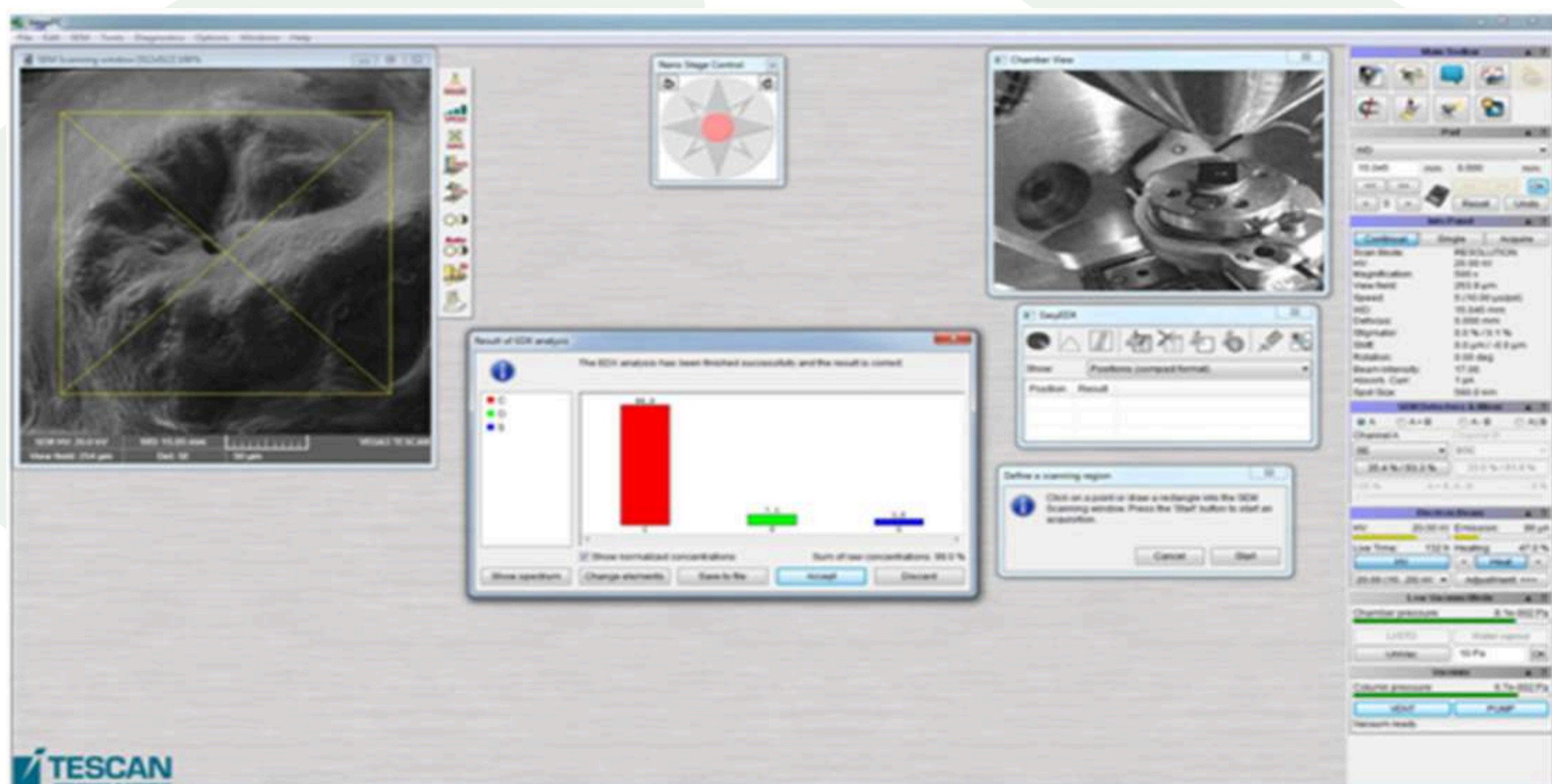


Climate change has become a global challenge due to rising greenhouse gas emissions, excessive fossil fuel consumption, and unsustainable resource exploitation. The construction sector, particularly asphalt production, contributes to this issue through high energy use and dependence on petroleum-based materials. Therefore, developing sustainable construction materials is important to support Sustainable Development Goal 13 (SDG 13): Climate Action. The article “Reducing the Environmental Impact of Asphalt Emulsion Production from Petroleum Bitumen utilizing Buton Island Natural Asphalt in Various Scenarios” contributes to SDG 13 by introducing Buton natural asphalt as an alternative material to reduce the environmental impact of petroleum-based asphalt production.

pavement production at lower temperatures compared with conventional hot mix asphalt, which can reduce energy consumption and emissions during manufacturing.

Another important contribution of this study is the use of a Life-Cycle Assessment (LCA) approach to evaluate environmental impacts throughout the production process. This approach provides a broader understanding of resource use, energy consumption, and potential emissions, supporting more sustainable decision-making in infrastructure development.

The findings demonstrate that sustainable materials can achieve both environmental and technical benefits. The



The study highlights that conventional asphalt production relies heavily on petroleum bitumen, a non-renewable resource that contributes to carbon emissions during extraction and processing. By utilizing Extracted Bitumen from Buton Rock Asphalt (EBBRA) as a substitute, this research promotes resource efficiency and reduces dependence on fossil-based materials. The results show that Buton natural asphalt can be successfully used as the solid component of asphalt emulsion while meeting ASTM and Indonesian National Standard (SNI) requirements. The optimum formulation was achieved using 57.4% EBBRA and 5% kerosene in the solid phase. This research also supports climate mitigation through the concept of a circular economy. The utilization of locally available Buton asphalt helps maximize natural resources while reducing the environmental impacts associated with petroleum extraction. In addition, the application of asphalt emulsion technology enables

optimized EBBRA-based asphalt emulsion fulfilled the requirements of SNI 4798:2011, indicating that environmentally friendly alternatives can maintain performance quality while reducing ecological impacts. However, further improvements are needed regarding production technology, standardization, and industrial implementation to support wider adoption.

This article contributes to SDG 13 by presenting an innovative solution for reducing the carbon footprint of asphalt production through the replacement of petroleum bitumen with Buton natural asphalt. The combination of sustainable materials, low-temperature asphalt technology, and life-cycle evaluation shows how engineering innovations can support climate action and the development of more resilient and environmentally responsible infrastructure systems.

14

SDG 14 LIFE BELOW WATER

Advancing aquatic ecosystem conservation, sustainable aquaculture, research, education, and community action for a healthier ocean and sustainable blue future.



RESEARCH ON LIFE BELOW WATER

Research on aquatic ecosystems advances sustainable fisheries, aquaculture innovation, marine biodiversity, and blue carbon development. According to the Scopus SDG Mapping, the University produced 31 Scopus-indexed publications related to SDG 14, making research its strongest contribution to this goal. Studies focus on probiotic supplementation for Nile tilapia, microbial pre-digestion technologies to improve feed efficiency in barramundi and vannamei shrimp, fish digestive health, and sustainable aquaculture systems. Research on Kappaphycus seaweed cultivation also demonstrates significant potential for carbon sequestration and blue carbon development while supporting sustainable coastal livelihoods and evidence-based fisheries management.

SUPPORTING AQUATIC ECOSYSTEMS

Support for aquatic ecosystems is strengthened through research implementation, community engagement, and collaboration with coastal communities and government agencies. Research findings are translated into practical solutions that promote environmentally responsible aquaculture, fish health management, and sustainable fisheries development. Community programmes include vannamei shrimp cultivation training using the Recirculating Aquaculture System (RAS), which enhances production efficiency while reducing environmental impacts. These initiatives encourage sustainable resource management, improve coastal livelihoods, strengthen ecosystem resilience, and demonstrate the University's commitment to applying scientific knowledge that supports long-term conservation of aquatic ecosystems and marine biodiversity.

WATER-SENSITIVE WASTE DISPOSAL

The university implements environmentally responsible waste management practices to minimize pollution affecting rivers, coastal environments, and aquatic ecosystems. Integrated operational measures include waste segregation, recycling, wastewater management, and initiatives to reduce plastic consumption across campus. Organic waste is processed through sustainable methods while hazardous waste is managed according to environmental standards to prevent water contamination. These initiatives encourage responsible resource use, improve environmental quality, strengthen awareness of aquatic ecosystem protection, and support the long-term sustainability of freshwater and marine environments.

OUR IMPACT SNAPSHOT

THE IMPACT RANKINGS
On process

Scopus®
31
Publication

127
Active
Students

17
Aquaculture
Lecturers

EDUCATION RELATED TO AQUATIC ECOSYSTEMS

Education on aquatic ecosystems is integrated into academic curricula through laboratory activities, fieldwork, interdisciplinary learning, and environmental education programmes. Students gain practical experience in aquaculture production, water quality management, fish health monitoring, and ecosystem conservation while developing scientific and technical competencies. Community outreach complements classroom learning through sustainable fisheries education, environmentally friendly aquaculture training, and mangrove conservation awareness programmes involving coastal communities and local stakeholders. These initiatives strengthen ecological literacy, encourage responsible management of aquatic resources, and prepare graduates to contribute to sustainable fisheries, marine conservation, and coastal ecosystem resilience.



Conserving and sustainably using the oceans, seas and marine resources for sustainable development.

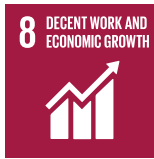
MAINTAINING A LOCAL ECOSYSTEM

The contributes to maintaining local aquatic ecosystems through biodiversity conservation, sustainable aquaculture, habitat restoration, and community-based environmental programs. Research, education, and community engagement are integrated to promote responsible management of coastal and freshwater resources while strengthening ecosystem resilience. Collaborative partnerships with local governments, environmental organizations, and surrounding communities encourage conservation practices and increase public awareness of aquatic ecosystem protection. These initiatives support the preservation of local biodiversity, improve ecosystem health, and reinforce the university's commitment to sustainable environmental development for future generations.

SOURCES:

- Scopus Website
- <https://news.unismuh.ac.id>

COMMUNITY-BASED VANAME SHRIMP CULTIVATION TRAINING SUPPORTING COASTAL LIVELIHOODS AND SUSTAINABLE AQUACULTURE



<https://news.unismuh.ac.id/2025/08/28/unismuh-latih-nelayan-lette-budidaya-udang-vaname-dengan-sistem-ras/?utm>

Sustainable aquaculture has become increasingly important in supporting food security, protecting aquatic ecosystems, and strengthening the economic resilience of coastal communities. As fisheries resources face growing pressure from environmental degradation, climate change, and unsustainable production practices, higher education institutions play a crucial role in promoting environmentally responsible aquaculture technologies and ecosystem stewardship.

Universitas Muhammadiyah Makassar contributes to these efforts through community engagement programmes that translate scientific knowledge into practical solutions for local communities. One notable example is the implementation of Vaname shrimp cultivation training using the Recirculating Aquaculture System (RAS) for fishermen in Lette Village, South Sulawesi.

The programme introduced community members to water-efficient aquaculture systems that minimize environmental impacts while maintaining high production performance. Unlike conventional shrimp farming systems, RAS technology continuously recirculates and treats water within the production cycle, significantly reducing water consumption, waste discharge, and nutrient pollution entering surrounding aquatic ecosystems.

Through practical demonstrations and technical assistance, participants gained knowledge regarding water quality management, feed efficiency, disease prevention, and environmentally sustainable aquaculture practices. The programme therefore not only improves production capacity but also strengthens environmental awareness among coastal communities.

The initiative reflects Universitas Muhammadiyah Makassar's commitment to balancing economic productivity with ecosystem protection. By promoting sustainable aquaculture technologies among fishing communities, the University contributes to protecting marine ecosystems while supporting resilient coastal livelihoods and community-based fisheries development. Furthermore, this programme demonstrates how universities can serve as catalysts for sustainable coastal development through research translation, community empowerment, and collaborative engagement with local stakeholders. The activity directly supports SDG 14 by encouraging responsible aquaculture production and reducing environmental pressures on marine and coastal ecosystems.

PROMOTING SUSTAINABLE AQUACULTURE THROUGH GOOD FISH FARMING PRACTICES IN INDONESIA



<https://news.unismuh.ac.id/2024/08/17/pkm-dosen-unismuh-di-sidrap-sosialisasi-cara-budidaya-ikan-yang-baik/?utm>

Recognition of the importance of sustainable aquaculture has driven efforts to support food security, protect aquatic ecosystems, and improve the livelihoods of local communities. However, many small-scale fish farmers continue to rely on traditional cultivation methods that often result in low productivity, inefficient resource use, and increased environmental pressure on surrounding aquatic ecosystems.

To address these challenges, Universitas Muhammadiyah Makassar implemented a Community Partnership Programme (PKM) focusing on the dissemination of Good Fish Farming Practices (Cara Budidaya Ikan yang Baik/CBIB) among local fish farmers in Sidrap Regency, South Sulawesi.

The programme was implemented through collaboration with Kelompok Tani Mandiri Fish and funded by the Directorate General of Higher Education, Research, and Technology (Kemendikbudristek) 2024 Community Service Grant Scheme. The initiative aimed to strengthen farmers' understanding of environmentally responsible aquaculture production systems capable of improving both productivity and environmental sustainability.

The programme adopted a comprehensive capacity-building approach consisting of five major stages: socialization, technical training, technology implementation, mentoring and evaluation, and

sustainability planning. Participants received training on Good Fish Farming Practices (CBIB), locally produced fish feed formulation, aquaponic systems, farm business recording, and environmentally friendly aquaculture management.

As part of the technology transfer process, the programme introduced biofloc technology and jet aerator systems to improve water quality, enhance feed efficiency, and increase fish production while minimizing waste discharge into aquatic environments. The integration of aquaponics further contributed to nutrient recycling and reduced environmental impacts associated with conventional fish farming systems.

The programme also incorporated pre-test and post-test assessments to evaluate participant understanding and ensure effective knowledge transfer. Through continuous mentoring and technical assistance, local fish farmers were encouraged to independently continue sustainable aquaculture practices beyond the duration of the project.

This initiative demonstrates how universities can translate scientific knowledge into practical solutions that simultaneously support economic resilience and environmental protection. By promoting environmentally responsible aquaculture technologies, Universitas Muhammadiyah Makassar contributes directly to sustainable fisheries development, aquatic ecosystem conservation, and resilient rural livelihoods.

15

SDG 15 LIFE ON LAND

Protecting terrestrial ecosystems through biodiversity conservation, sustainable land management, research, education, and community engagement for a greener and more resilient future.



RESEARCH ON LIFE ON LAND

Research on life on land focuses on biodiversity conservation, sustainable forest management, watershed restoration, ecosystem resilience, and responsible land use. Through interdisciplinary research, the university addresses land degradation, deforestation, soil conservation, and environmental sustainability by developing evidence-based solutions for terrestrial ecosystem protection. Research outcomes contribute to improving land management practices, strengthening biodiversity conservation, mitigating environmental risks, and supporting sustainable natural resource governance. These initiatives provide scientific recommendations for policymakers, local communities, and environmental stakeholders while promoting long-term ecosystem resilience and sustainable development across Indonesia.

SUPPORTING LAND ECOSYSTEMS THROUGH ACTION

The university actively supports terrestrial ecosystem conservation through tree planting, habitat restoration, watershed protection, biodiversity conservation, and campus greening initiatives. Collaborative programs with government institutions, local communities, and environmental organizations strengthen ecosystem restoration while encouraging public participation in sustainable land management. Community service activities also promote environmental awareness, conservation practices, and responsible use of natural resources. These actions contribute to preserving biodiversity, improving ecosystem resilience, enhancing environmental quality, and supporting sustainable land management for the benefit of present and future generations.

LAND-SENSITIVE WASTE DISPOSAL

The university implements environmentally responsible waste management practices to minimize the impact of waste on terrestrial ecosystems. Waste segregation, recycling programs, composting, and proper hazardous waste handling are integrated into campus operations to reduce soil pollution and protect biodiversity. Sustainable operational measures also encourage resource efficiency, reduce single-use plastics, and promote environmentally responsible behavior among students and staff. By applying sustainable waste management principles, the university supports healthier land ecosystems, strengthens environmental protection, and contributes to long-term sustainability through responsible campus operations.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>

OUR IMPACT SNAPSHOT

THE IMPACT RANKINGS
On process

Scopus®
19
Publication

1
Green Campus
Policy

1
Waste
Management

EDUCATION RELATED TO LAND ECOSYSTEMS

The university integrates biodiversity conservation, sustainable land management, forestry, ecosystem restoration, and environmental stewardship into its academic programs and learning activities. Students are encouraged to participate in field-based education, conservation campaigns, research projects, and community engagement initiatives that strengthen ecological awareness and practical skills. Through interdisciplinary learning, academic programs foster environmental responsibility while preparing graduates to address challenges related to land degradation, biodiversity loss, and sustainable resource management. These educational initiatives cultivate future professionals committed to protecting terrestrial ecosystems and advancing sustainable development.



Protecting biodiversity and restoring ecosystems through research, education, collaboration and sustainable environmental action.

STRENGTHENING COMMUNITY RESILIENCE THROUGH SUSTAINABLE LAND MANAGEMENT AND ENVIRONMENTAL EDUCATION



<https://etdc-indonesia.com/dosen-unismuh-makassar-laksanakan-pkm/?utm>

Terrestrial ecosystems are fundamental for biodiversity conservation, food security, climate resilience, and sustainable livelihoods. However, increasing environmental pressures, unsustainable land use practices, and limited environmental awareness continue to threaten ecosystem sustainability in many regions of Indonesia.

Recognizing these challenges, Universitas Muhammadiyah Makassar strengthens its commitment to SDG 15 through community engagement programmes that translate academic knowledge into practical solutions for local communities. Through the implementation of community service programmes (Pengabdian kepada Masyarakat), lecturers and students actively support environmental education, sustainable resource management, and ecosystem stewardship.

The programme demonstrates the University's commitment to integrating research, education, and community empowerment into a unified sustainability framework. Rather than limiting academic activities to classrooms and laboratories, Universitas Muhammadiyah Makassar promotes direct engagement with communities to improve environmental literacy and encourage sustainable land management practices.

Through these initiatives, local communities gain access to scientific knowledge, practical skills, and technological innovations that support environmental sustainability while improving community resilience and livelihoods. The programme also strengthens collaboration between universities, communities, schools, and local stakeholders in addressing environmental challenges at the local level.

This approach reflects the University's vision of producing research and community service outcomes that create measurable social and environmental impacts. Community engagement activities therefore become an important mechanism for strengthening biodiversity conservation and supporting ecosystem restoration efforts in South Sulawesi and Eastern Indonesia.

By connecting scientific expertise with community needs, Universitas Muhammadiyah Makassar contributes to the long-term protection of terrestrial ecosystems while fostering environmental responsibility among present and future generations. These efforts illustrate how higher education institutions can serve as catalysts for sustainable development and biodiversity conservation.

STRENGTHENING BIODIVERSITY CONSERVATION AND SUSTAINABLE LAND MANAGEMENT THROUGH RESEARCH AND COMMUNITY ENGAGEMENT POLICIES



[https://pgsd.unismuh.ac.id/kebijakan-keluaran-dan-capaian-dharma-penelitian-dan-pkm/?utm](https://pgsd.unismuh.ac.id/kebijakan-keluaran-dan-capaian-dharma-penelitian-dan-pkm/?utm_source=chatgpt.com)

Higher education institutions have an important responsibility in addressing biodiversity loss, land degradation, and ecosystem vulnerability through scientific research and community engagement. This commitment is reinforced through institutional policies that promote research outputs and community service activities aligned with sustainable development priorities, including biodiversity conservation, sustainable agriculture, watershed management, and ecosystem restoration.

The policy framework is supported by the Statute of Universitas Muhammadiyah Makassar, the University Strategic Plan 2021–2025, and the Research Master Plan (RIP) 2021–2025, which position research and community service as strategic instruments for generating environmental solutions and supporting sustainable development in Indonesia.

To ensure continuity and institutional impact, the University adopted specific research policies through Rector Decrees governing research priorities, publication incentives, scientific dissemination, and community engagement outcomes. These policies encourage lecturers and students to produce research outputs that contribute not only to academic advancement but also to environmental protection and ecosystem resilience.

Within the SDG 15 framework, these policies support interdisciplinary studies on biodiversity conservation, agroforestry systems, watershed management, sustainable agriculture, and environmentally friendly technologies. Research findings are expected to be translated into practical community solutions through training programmes, village assistance initiatives, environmental education, and sustainable land management activities.

The institutional policy also strengthens collaboration among faculties, research centers, government institutions, and local communities in implementing environmental programmes and ecosystem restoration initiatives. Through this approach, Universitas Muhammadiyah Makassar promotes an integrated model linking research excellence with community impact and environmental sustainability.

These efforts demonstrate that biodiversity conservation and sustainable land management are not isolated activities but are embedded within the University's governance system, strategic planning, and academic culture. By institutionalizing research and community engagement policies, Universitas Muhammadiyah Makassar contributes to long-term ecosystem resilience and sustainable development outcomes in South Sulawesi and Eastern Indonesia.

16

SDG 16
PEACE,
JUSTICE AND
STRONG
INSTITUTIONS

Building Inclusive Governance,
Justice, Accountability, and
Institutional Trust.



RESEARCH ON PEACE AND JUSTICE

Research on peace, justice, and strong institutions covers rule of law, open government, e-government, digital democracy, civic education, restorative justice, disability rights, religious freedom, anti-violence, anti-corruption, public accountability, and sustainable governance. The Scopus-indexed SDG 16 portfolio comprises 61 publications, including studies on campus governance to prevent sexual violence, smart citizens, digital voting, e-participation, restorative justice in Islamic universities, and governance frameworks for social sustainability. These studies strengthen transparent, inclusive, accountable, and participatory institutions while supporting evidence-based policies at local, national, and international levels.

UNIVERSITY GOVERNANCE MEASURES

Institutional governance is strengthened through quality assurance, internal audits, data-driven management, structured documentation, and continuous improvement aligned with international education management standards. In 2024, all university work units achieved ISO 21001:2018 certification, issued by TÜV Rheinland Germany, demonstrating a strong commitment to accountability, transparent administration, service excellence, and effective governance across academic and administrative operations.

OUR IMPACT SNAPSHOT

801-1000
Global

61
Publication

100%
ISO 21001:2018
Certified Work Units

Rp1.2
Billion
Government
Contract Value

PROPORTION OF GRADUATES IN LAW AND CIVIL ENFORCEMENT

Graduates in law and civil enforcement are represented by programmes in legal studies, Islamic law, family law, sharia economic law, governance, and public institutions. During the reporting period, available data identified at least 111 graduates from the Faculty of Islamic Studies, including the Hukum Ekonomi Syariah, Hukum Keluarga, and Al-Ahwal Al-Syakhsiyah programmes. These graduates contribute to strengthening legal expertise, ethical governance, and public service capacity in support of justice and accountable institutions. The overall proportion will be determined using official graduate data from the Faculty of Law and the Academic Administration Bureau (BAA).



WORKING WITH GOVERNMENT

Collaboration with government institutions strengthens public services, education governance, and social protection through strategic partnerships and capacity-building initiatives. In 2025, a partnership with the Directorate of Junior High Schools, Ministry of Primary and Secondary Education, supported the Revitalization of Junior High Schools Programme, assisting 55 schools across South Sulawesi through a contract valued at Rp1.2 billion. Additional collaborations with the National Social Security Council, BPJS Kesehatan, and BPJS Ketenagakerjaan integrate social security literacy into education, research, and community service, reinforcing institutional contributions to inclusive public policy and sustainable social development.

SOURCES: • Scopus Website • Treacer Study
• <https://news.unismuh.ac.id> • BPM



Strengthening transparent governance, justice,
public accountability, and institutional
partnerships.

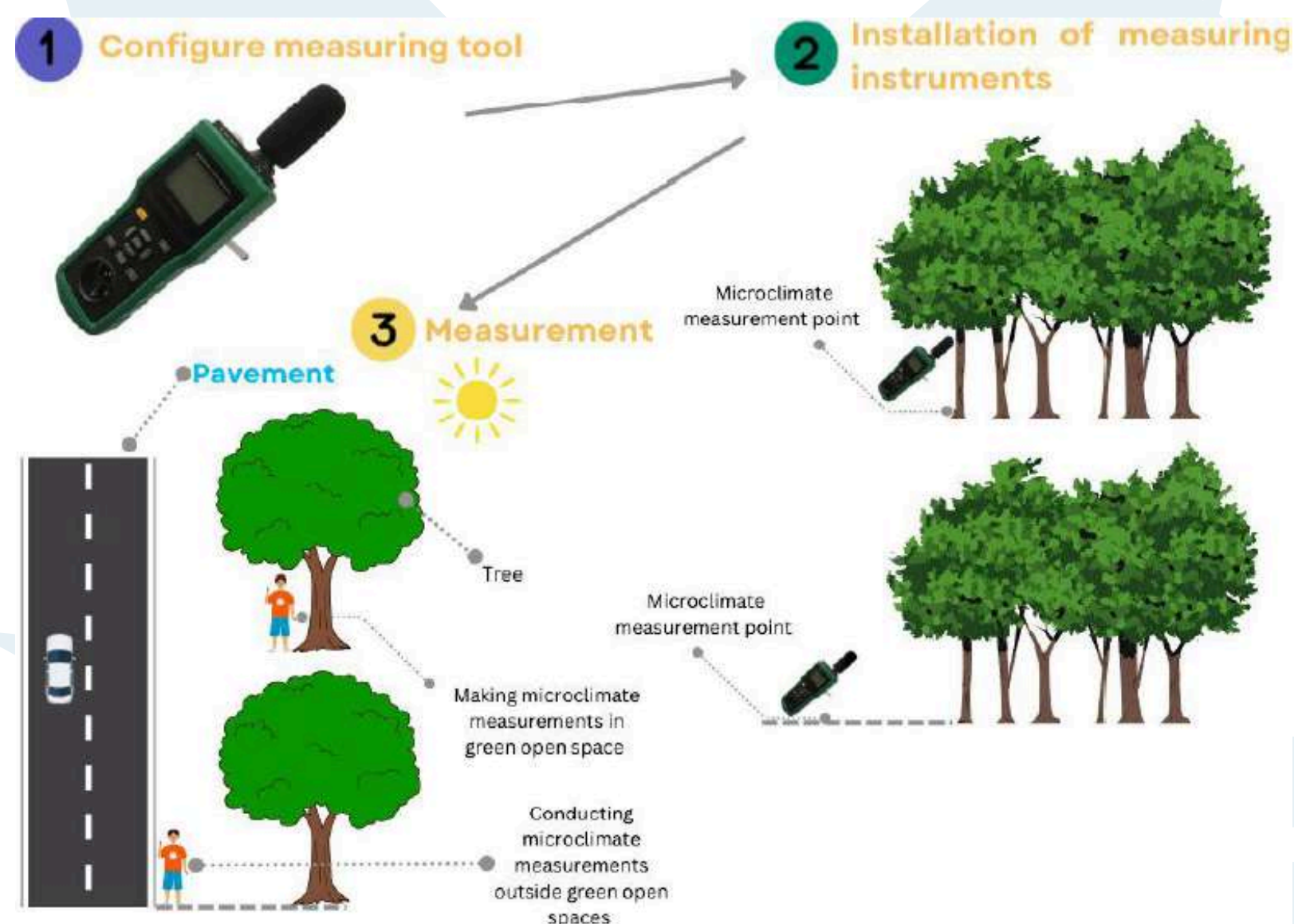
THE URBAN FORESTS AFFECTING THE ENVIRONMENTAL PARAMETERS IN MAKASSAR CITY, INDONESIA



Sustainable urban development requires effective governance, inclusive planning, and strong institutions to create safe, resilient, and healthy communities. Sustainable Development Goal 16 (SDG 16): Peace, Justice and Strong Institutions is closely related to the development of transparent decision-making processes, responsible policies, and public participation in creating sustainable environments. Urban environmental management, including the provision of green open spaces, requires collaboration between governments, researchers, and communities to ensure that urban areas remain comfortable, safe, and beneficial for society.

demonstrate that areas with urban forests provide better environmental conditions compared with areas without vegetation, emphasizing the importance of integrating green infrastructure into city planning.

Furthermore, this research supports inclusive and sustainable urban governance by emphasizing the need for cooperation between government institutions, environmental agencies, researchers, and communities. The development and maintenance of urban forests require supportive policies, proper management systems, and public involvement to ensure that green spaces can



The article entitled “The Urban Forests Affecting the Environmental Parameters in Makassar City, Indonesia” contributes to SDG 16 by providing scientific evidence that can support better urban governance and policy development. The study highlights the importance of urban forests, such as parks and green open spaces, in improving environmental conditions by regulating temperature, humidity, sunlight intensity, noise levels, and wind conditions. These findings can serve as a reference for local governments in developing evidence-based urban planning strategies and sustainable environmental policies.

One of the contributions of this research to SDG 16 is strengthening institutional capacity through data-driven decision-making. The study conducted environmental measurements in several urban forest locations in Makassar City, including Pakui Sayang Park, UNHAS Tamalanrea Campus, and Karebosi Field, to evaluate the role of vegetation in improving urban comfort. The results

provide long-term benefits. Through effective institutional collaboration, cities can improve environmental quality while promoting public health and social well-being.

The study also contributes to SDG 16 by supporting the creation of safer and more comfortable urban environments. Urban forests were shown to reduce noise levels, regulate microclimates, and improve overall urban conditions. These environmental improvements can enhance community well-being and create more livable public spaces. The research highlights that sustainable urban management is not only an environmental issue but also a governance challenge that requires strong institutions and responsible decision-making.

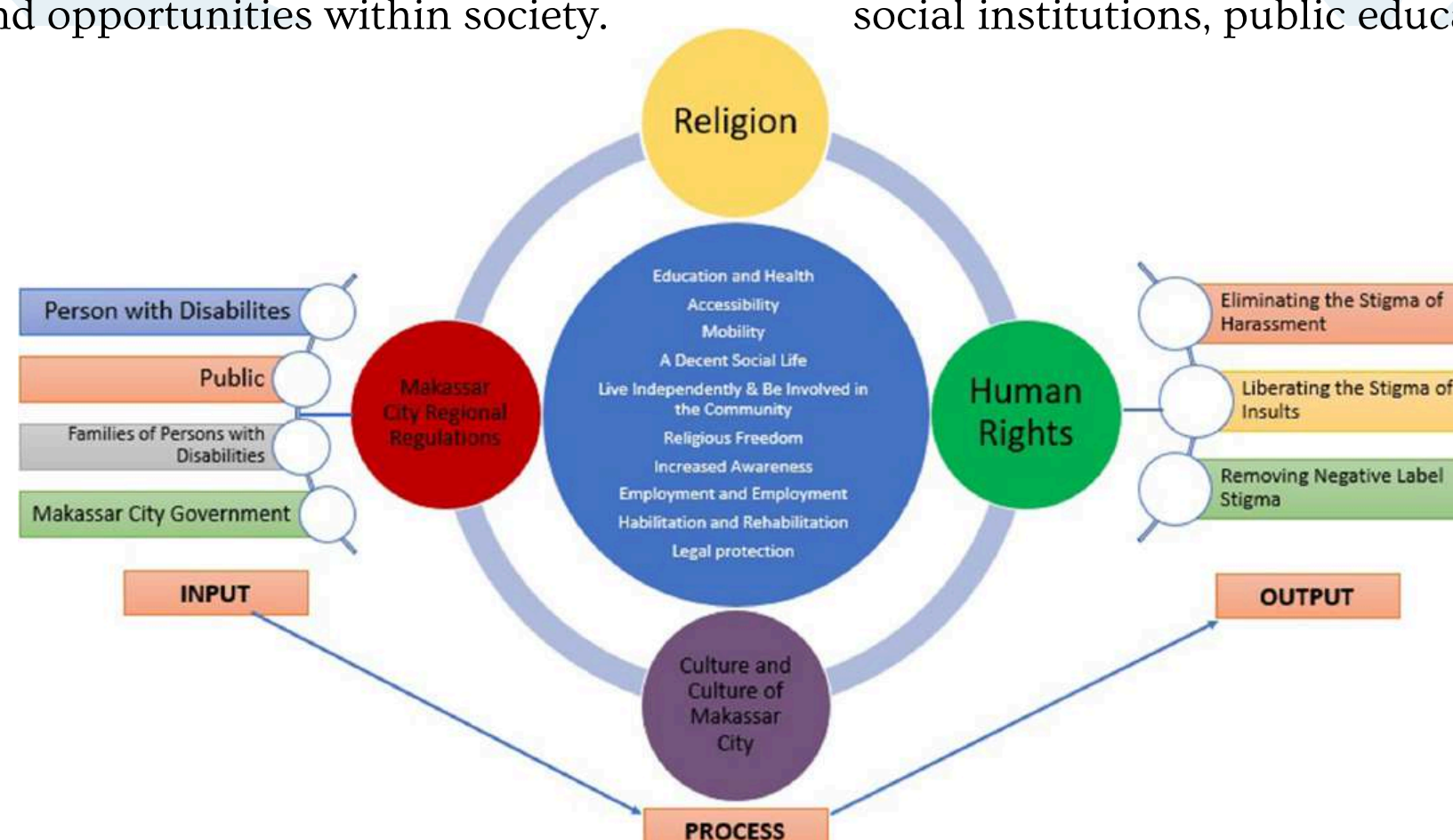
However, successful implementation of urban forest policies requires continuous efforts in planning, monitoring, funding, and community engagement. Challenges such as limited urban space, competing development priorities, and insufficient maintenance capacity need to be addressed through coordinated institutional strategies.

ISLAMIC LAW PERSPECTIVES AND SOCIAL EXPERIENCES ON STIGMA TOWARD DISABLED PEOPLE IN INDONESIA



Sustainable Development Goal 16 (SDG 16), Peace, Justice and Strong Institutions, emphasizes the importance of promoting peaceful and inclusive societies, ensuring equal access to justice, and developing effective, accountable, and inclusive institutions at all levels. One of the important aspects of SDG 16 is the protection of human rights and the elimination of discrimination against vulnerable groups. In this context, disability inclusion represents a critical component of social justice because individuals with disabilities must receive equal recognition, protection, and opportunities within society.

This condition directly relates to the SDG 16 principle of building inclusive societies where all individuals can participate without discrimination. The research demonstrates that justice for disabled people cannot be achieved solely through legal frameworks; it requires changes in social attitudes and institutional practices. The findings indicate that negative stereotypes, including the perception that disability represents a burden or family disgrace, continue to influence how disabled individuals are treated within communities. Therefore, strengthening social institutions, public education, and community-



The article entitled “Islamic Law Perspectives and Social Experiences on Stigma Toward Disabled People in Indonesia” contributes significantly to SDG 16 by examining social stigma, discrimination, and exclusion experienced by disabled individuals in Indonesia. The study highlights that although Indonesia has established legal protections for disabled people, social realities still reveal persistent barriers caused by negative perceptions, cultural beliefs, and limited public awareness. These challenges demonstrate that achieving justice requires not only formal regulations but also strong social institutions capable of implementing inclusive values.

One of the main contributions of this research to SDG 16 is its emphasis on social justice and equality. The study found that stigma toward disabled people remains evident through harassment, insults, negative labeling, and assumptions regarding their abilities. Based on data collected from 400 respondents in Makassar, many respondents acknowledged that disabled individuals are often perceived as physically different, vulnerable, or incapable of participating equally in social and economic activities. Such perceptions can create social exclusion and limit disabled people's access to education, employment, and public participation.

based initiatives becomes essential to reducing discrimination and promoting equality.

Furthermore, this article contributes to SDG 16 by highlighting the role of effective and inclusive institutions in protecting vulnerable populations. The study discusses the importance of collaboration among government institutions, religious organizations, families, disability advocates, and communities in addressing stigma. Strong institutions are required not only to create disability-related policies but also to ensure their implementation through accessible public services, legal protection, and mechanisms that support the participation of disabled people in decision-making processes.

The study also highlights the role of religious values, particularly Maqāsid al-Sharī'ah, in promoting social justice by emphasizing dignity, compassion, and human welfare. Integrating these values into social policies can strengthen disability inclusion, especially in communities where religious perspectives influence social attitudes. Furthermore, the article emphasizes that reducing stigma requires continuous education, stronger disability rights protection, and meaningful participation of disabled individuals in decision-making processes. These efforts can help create more inclusive, representative, and accountable institutions.

17

SDG 17 PARTNERSHIPS FOR THE GOALS

Building impactful partnerships through research collaboration, knowledge exchange, and collective action for sustainable development.



RESEARCH RELATING TO THE SDGS OR WITH LOWER-OR LOWER-MIDDLE-INCOME COUNTRIES

Research collaboration plays an important role in strengthening sustainable development by connecting academic expertise with global challenges. Research activities are conducted through international partnerships that support knowledge exchange, innovation, and community-based solutions. Several initiatives include Learning Express with Singapore Polytechnic focusing on design thinking and community problem-solving, healthcare technology research collaboration with K-Medi Hub South Korea, agribusiness empowerment research in Krabi, Thailand, and collaborative studies with universities in Malaysia. These partnerships contribute to SDGs-related research by addressing issues in education, health, technology, agriculture, and community empowerment. Through international research networks, Unismuh expands its contribution to evidence-based solutions and sustainable development.

RELATIONSHIPS TO SUPPORT THE GOALS

Strategic partnerships are essential in accelerating the achievement of sustainable development goals through collaboration with universities, industries, governments, and community organizations. International cooperation has been strengthened through sustainability programs involving partners such as Singapore Polytechnic, K-Medi Hub South Korea, Universiti Teknologi MARA (UiTM), Universiti Teknologi Malaysia (UTM), Universiti Putra Malaysia (UPSI), and institutions in Thailand. In 2025, the university implemented 16 sustainability programs with international collaborations, increasing from 14 programs in 2023 and 15 programs in 2024, with an average of 15 international initiatives annually. These collaborations support joint research, student mobility, innovation development, and community engagement aligned with SDGs.

SOURCES: • Scopus Website • <https://news.unismuh.ac.id>

OUR IMPACT SNAPSHOT



EDUCATION ON THE SDGS

Integrating the Sustainable Development Goals (SDGs) into academic learning strengthens students' understanding of global challenges and their role in creating sustainable solutions. The curriculum incorporates SDGs-related perspectives across various disciplines through courses that contribute to quality education, health, social inclusion, environmental awareness, and responsible citizenship. Based on curriculum mapping, 2,531 courses have been identified with contributions to SDGs through their learning objectives and academic content. These courses encourage students to develop knowledge, critical thinking, and practical skills related to sustainable development issues. Through SDGs integration in education, Unismuh prepares graduates with interdisciplinary competencies and awareness to contribute to social, economic, and environmental development.

PUBLICATION OF SDG REPORTS

Transparent reporting is an important commitment in demonstrating institutional accountability and measuring sustainability progress. The publication of the Sustainability Report 2024-2025 reflects continuous efforts to document contributions toward the Sustainable Development Goals (SDGs) across education, research, community engagement, environmental sustainability, and institutional governance. The report adopts the Integrated Green-Islamic-Futuristic framework, highlighting the integration of sustainability values, Islamic principles, and future-oriented innovation. Through regular SDGs reporting, stakeholders can evaluate institutional achievements, understand sustainability initiatives, and strengthen collaboration toward shared development goals. The report also supports participation in global sustainability assessments, including THE Impact Rankings and UI GreenMetric.

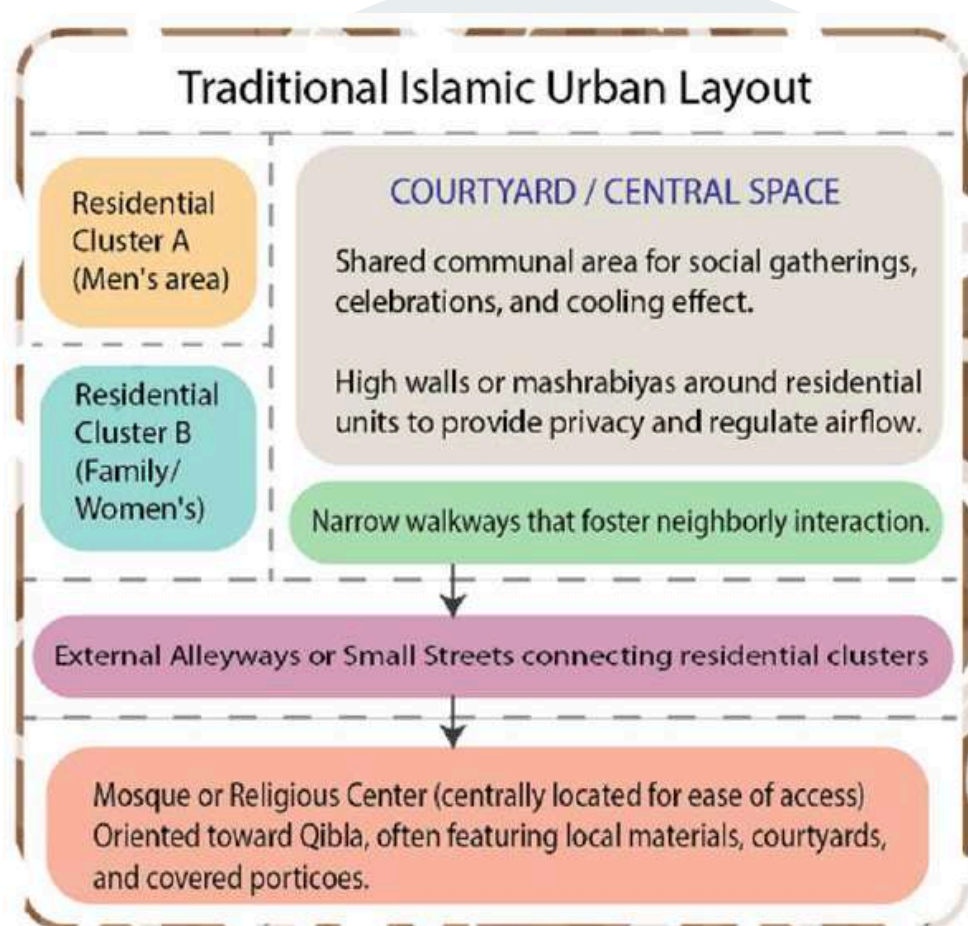


Connecting global partnerships to accelerate innovation and sustainable development.

HARMONIZING ISLAMIC VALUES WITH MODERN URBAN DESIGN: PRIVACY, TECHNOLOGY, AND CULTURAL PRESERVATION IN SOUTHEAST ASIAN ARCHITECTURE —



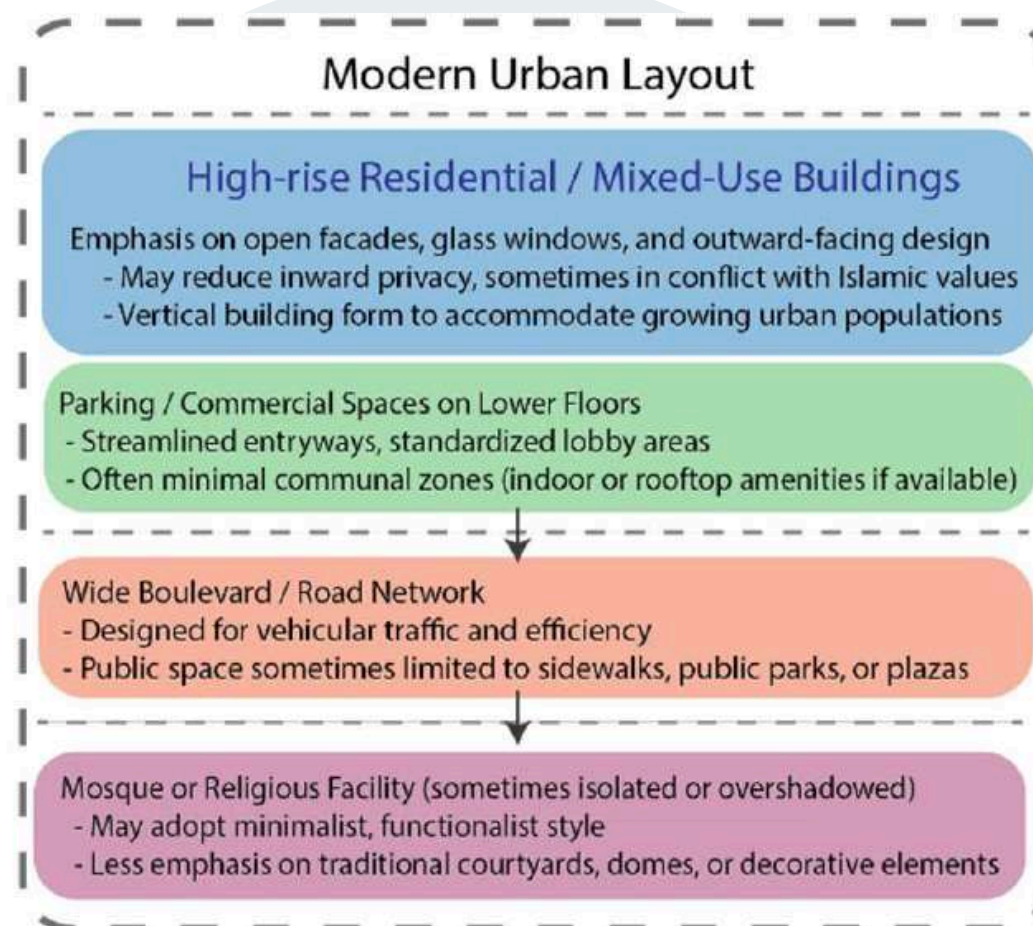
Sustainable urban development requires collaboration among diverse stakeholders, including governments, academic institutions, architects, local communities, policymakers, and technology developers. Sustainable Development Goal 17 (SDG 17) highlights the importance of strengthening partnerships and cooperation to address complex global challenges through knowledge sharing, institutional collaboration, and coordinated actions. In the context of urban development, effective partnerships are essential to ensure that modernization does not undermine cultural identity, social inclusion, and community values.



This research demonstrates that preserving cultural identity within rapidly modernizing cities cannot be achieved by a single actor. Instead, it requires partnerships among multiple stakeholders who possess different forms of knowledge and resources. Governments play an important role in developing urban policies and heritage conservation frameworks, while architects and planners translate cultural principles into practical design strategies. Academic institutions contribute through research and evidence-based recommendations, whereas communities provide local knowledge regarding cultural practices, social needs, and the historical significance of built environments.

One of the key contributions of this article to SDG 17 is its emphasis on community-based participatory design as an essential mechanism for sustainable urban development. The study highlights that local communities should not only become beneficiaries of urban projects but also active participants in decision-making processes. Community involvement strengthens social ownership, improves acceptance of development initiatives, and ensures that architectural solutions reflect local cultural values. This collaborative approach aligns with SDG 17 by promoting inclusive partnerships that recognize the contribution of different groups in achieving sustainable development outcomes.

The article further emphasizes the importance of collaboration between academia and policymakers. Through a narrative literature review involving academic publications, policy documents, and case studies, the research provides knowledge-based insights into how Islamic architectural principles can inform contemporary urban planning. This demonstrates the role of universities as knowledge partners that support governments and practitioners in developing culturally responsive policies. Stronger university-government partnerships can facilitate evidence-based urban strategies that balance modernization with cultural preservation.



In addition, the study identifies technology as an area requiring interdisciplinary collaboration. The integration of smart technologies, including surveillance systems, smart home applications, and AI-supported urban planning tools, creates both opportunities and challenges for privacy-conscious design. Collaboration between architects, technology developers, policymakers, and communities is necessary to ensure that digital innovations enhance urban safety and efficiency without compromising cultural values and individual privacy. The article highlights that technology should be developed through culturally sensitive approaches that consider ethical concerns and community expectations.

The research also highlights the importance of partnerships in balancing modernization and cultural preservation. Rapid urbanization often encourages standardized architectural approaches that prioritize efficiency and global aesthetics, potentially reducing local identity. However, through cooperation among heritage organizations, governments, designers, and communities, traditional architectural elements such as courtyards, transitional spaces, and privacy-oriented zoning strategies can be adapted into modern urban frameworks. Such partnerships enable cities to maintain cultural continuity while responding to contemporary urban challenges.

THE DYNAMICS OF NO ONE LEFT BEHIND: CONTESTATION OF PENTAHELIX ACTORS IN SUSTAINABLE TOURISM GOVERNANCE IN THE COASTAL AREA OF TANJUNG BUNGA, INDONESIA



Sustainable development requires strong partnerships among different actors, as complex social, economic, and environmental challenges cannot be addressed by a single institution. Sustainable Development Goal 17 (SDG 17) emphasizes the importance of strengthening collaboration between governments, academic institutions, businesses, communities, and media to achieve inclusive and sustainable development. Effective partnerships encourage knowledge exchange, shared responsibility, resource mobilization, and coordinated decision-making to ensure that development benefits are distributed fairly among all stakeholders.

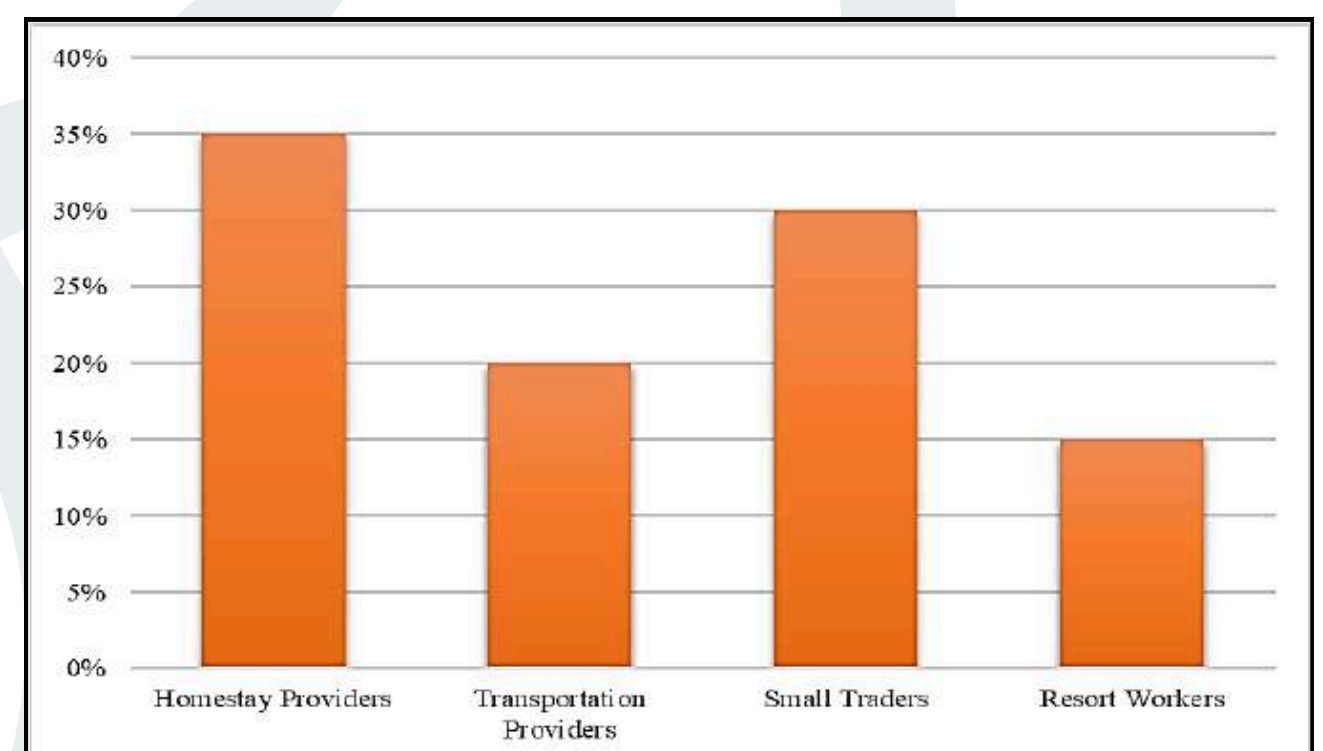
This research highlights that partnerships are a fundamental element in achieving sustainable tourism development. The Pentahelix model demonstrates that sustainable tourism governance requires active interaction among different sectors, where each actor contributes specific resources and capabilities. The government plays a role in policy formulation and regulation, academia contributes through research and innovation, businesses provide investment and economic resources, communities provide local knowledge and cultural assets, while media supports information dissemination and public awareness. This integrated approach reflects the core principle of SDG 17, which promotes cooperation and synergy among diverse stakeholders.

The study reveals that although various actors are involved in tourism governance, collaboration among Pentahelix actors in Tanjung Bunga remains uneven. Government and business actors tend to have stronger influence in decision-making processes, while local communities, despite being directly affected by tourism development, have limited involvement in strategic planning. The research found that community participation was mostly concentrated in implementation activities, such as providing tourism services, homestays, and small-scale businesses, rather than participating in decision-making processes. This finding emphasizes the importance of strengthening inclusive partnerships to ensure that no stakeholder is excluded from development processes.

From the perspective of SDG 17, the challenges identified in Tanjung Bunga demonstrate that partnerships require more than the presence of multiple actors; they require meaningful participation, trust, communication, and shared objectives. The study identifies several barriers to effective collaboration, including conflicts of interest between stakeholders, limited community participation, and unclear regulatory frameworks. Conflict between

actors represents a significant challenge because different stakeholders often prioritize different objectives. Business actors tend to focus on economic benefits, while local communities emphasize environmental protection and fair distribution of tourism benefits.

The research provides evidence that strengthening stakeholder capacity is essential for improving partnership effectiveness. One recommended strategy is increasing local community capacity through training, mentoring, and empowerment programs. By improving community knowledge and skills, local residents can participate more actively in tourism planning, policy discussions, and management processes. This approach supports the SDG 17 principle of inclusive partnerships by ensuring that vulnerable groups have opportunities to contribute to and benefit from sustainable development initiatives.



The study also provides empirical evidence regarding the relationship between collaboration and sustainable governance. The findings show a significant positive relationship between understanding of the Pentahelix concept and participation in decision-making ($r = 0.65$, $p < 0.01$). Furthermore, participation in decision-making has a strong relationship with perceptions of tourism sustainability ($r = 0.72$, $p < 0.01$). These results demonstrate that stronger stakeholder engagement and better understanding of collaborative roles can improve sustainability outcomes. Conversely, conflicts among actors negatively affect governance effectiveness ($r = -0.65$, $p < 0.01$), highlighting the importance of effective conflict management mechanisms within partnerships.



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