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Research should not serve science alone but must also advance national interests. It ought to yield tangible solutions that contribute to societal well-being and national development. Therefore, every research endevour must be designed with real-world applicability, addressing existing challenges and fostering the nation's progress.

Megawati Soekarnoputri





Research and innovation are the cornerstones of a nation's progress

By nurturing exceptional talent, providing robust infrastructure, and ensuring sustainable support, we are paving the way toward an independent and globally competitive future. A strong research ecosystem empowers us to develop solutions not only for today's challenges but also for those of the future.

Laksana Tri Handoko



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Laksana Tri Handoko Chairman of BRIN

Transforming Research and Innovation to Build the Nation

The advancement of research and innovation is essential for Indonesia's future. It serves as a key driver of knowledge-based economic growth, enabling the country to remain competitive in an increasingly dynamic global landscape.

Transforming research and innovation is not only about strengthening the ecosystem—it is a vital step toward realizing an advanced, resilient, and sustainable Indonesia.

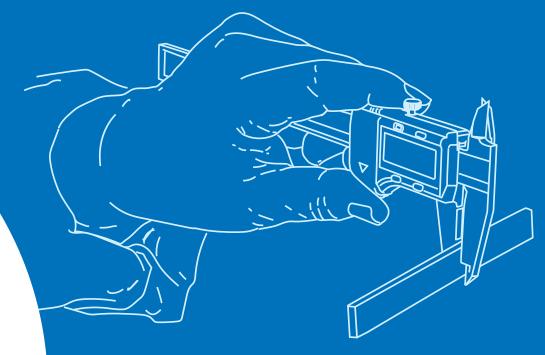
The National Research and Innovation Agency (BRIN) stands at the forefront of this transformation. As a dedicated institution, BRIN is committed to fostering a robust research and innovation ecosystem. Its strategic role is not only institutional but also impactful—delivering tangible contributions to national development and helping shape Indonesia's future.

BRIN's active efforts have propelled Indonesia to 54th in the Global Innovation Index (GII), a testament to the progress made in strengthening the national innovation landscape. This achievement reflects the results of key initiatives such as enhancing the capacity of top-tier research and innovation talent, promoting collaborative use of open research infrastructure, and ensuring effective and sustainable research funding. These integrated efforts continue to

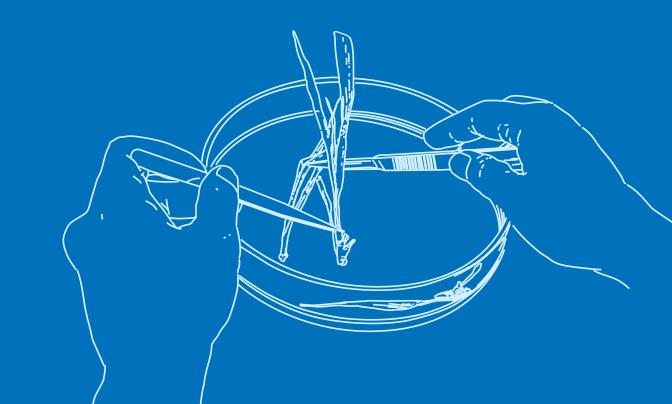
position Indonesia on the global innovation map and contribute meaningfully to the nation's development.

Throughout 2024, BRIN recorded numerous significant achievements. To strengthen national research capacity, it registered 1,596 intellectual property (IP) assets and produced 6,644 globally reputable publications, generated both independently and in collaborations with universities and national research institutions. Patent applications reached 931 in 2024, with 113 patents licensed—an indicator of increasing innovation commercialization. Moreover, the e-Layanan Sains (ELSA) platform expanded its services to reach 62,030, enhancing public access to scientific services and resources.

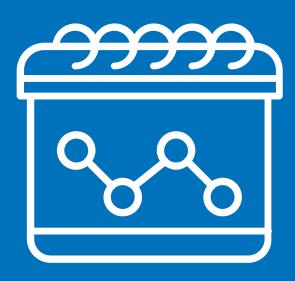
BRIN also solidified its role in global research collaboration, actively building partnerships both the researcher and institutional levels. These accomplishments in 2024 are the result of a collective commitment involving research personnel along with the science and technology management teams. Moving forward, continuous improvements in collaboration and governance will remain crucial to sustaining and advancing the transformation of research and innovation in Indonesia.



INTRODUCTION



HIGHLIGHTS OF THE YEAR





January



- 1 Researchers from the Research Center for Conservation of Marine and Inland Water Resources rediscovered the Belida fish (Chitala lopis), previously declared extinct in 2020. This remarkable finding was published in the Journal of Endangered Species Research. Volume 52. November 2023.
- 2 Archaeological researchers uncovered fossils of Stegodon trigonocephalus, including leg bones and jaw fragments, in Patiayam, Kudus. Further research is being conducted to explore Indonesia's ancient history.
- 3 BRIN researchers identified a new freshwater snake species, Hypsiscopus indonesiensis, in Lake Towuti, South Sulawesi. Specimen identification took 16 years (2003–2019), and the findings were published in Treubia Journal, Volume 50, Issue 1, 2023.



4 BRIN developed an eco-friendly bioanthelmintic from local plant extracts and tropical macroalgae to serve as a natural dewormer for sheep. This innovation is rich in antiparasitic compounds and offers a sustainable alternative to synthetic drugs, helping to mitigate the risk of drug resistance among livestock parasites.

February

- BRIN researchers developed a Single-passenger Electric Autonomous Transporter, an eco-friendly electric vehicle designed for individual short-distance travel. Equipped with automatic navigation technology, the transported can avoid obstacles autonomously, making it an efficient solution for urban mobility while reducing carbon emissions in densely populated areas.
- 2 In collaboration with the Faculty of Agriculture at Sam Ratulangi University, BRIN researchers identified three new moth species: Cryptophasa warouwi, Glyphodes nurfitriae, and Glyphodes ahsanae. Notably, Cryptophasa warouwi poses potential risks to clove plantations, as it may damage stems and branches—prompting the need for further monitoring by farmers. ▼



- BRIN introduced an innovative smart farming concept, integrating information and communication technologies such as sensors, the Internet of Things (IoT), big data, robotics, and artificial intelligence (AI). Rooted in precision agriculture, this approach enhance both the quantity and quality of agricultural production by optimizing land use, cultivation methods, human resources, and other production factors through automation and data-driven decision-making.
- As part of its commitment to sustainable solutions, BRIN developed a method to convert tofu wastewater into biogas using anaerobic digestion. Microbes break down the organic-rich waste into methane and carbon dioxide, producing biogas as an eco-friendly waste management solution.

March



- In collaboration with the National University of Singapore, BRIN researchers discovered a rare tricolored crab, Lepidothelphusα menneri, on Mount Kelam, West Kalimantan. This miniature crab features a smooth carapace with distinct tricolor patterns. The discovery was published in Zοοtαxα (Issue 5397, Vol. 2, 2 January 2024), adding to Indonesia's unique endemic biodiversity.
- 2 A groundbreaking discovery was made in Cipeundeuy, West Java, where BRIN researchers found hair strands belonging to the extinct Javan tiger (Panthera tigris sondaica). DNA analysis confirmed a match with a 1930 specimen from the Museum Zoologicum Bogoriense (MZB), offering renewed hope and valuable insight into the species' historical distribution and potential remnants.
- BRIN researchers advanced the development of Hydroxyapatite-Zirconium nanoparticles (Zr-doped HAp), derived from local material, for use in Photodynamic Therapy to treat lung cancer. The therapy utilizes cytotoxic Reactive Oxygen Species (ROS) to target and destroy cancer cells. The project highlights Indonesia's potential to produce cutting-edge medical treatments using abundant local mineral resources.
- Two BRIN researchers participated in the "Expedition Java Trench 2024" alongside the Institute of Deep-Sea Science and Engineering (IDSSE), Chinese Academy of Sciences (CAS). The team explored the southern Java Sea to depths of 7,000 meters, investigating benthic fauna diversity, innovative trench species, unique ecosystems, iron oxide sedimentation, novel rock biota, and low-temperature hydrothermal vents.

April

- BRIN and its partners developed spike-bodies for COVID-19 (2021–2023), a technology that may prevent SARS-CoV-2 infection by blocking ACE2 receptor-spike protein interactions. The development process involved advanced techniques such as protein expression and purification, Cryo-Electron Microscopy (Cryo-EM), and X-ray Crystallography, offering promising avenues for therapeutic innovation.
- Marking its third anniversary, BRIN completed the national consolidation of government R&D resources and formally launched its role as a funding agency. In strengthening Indonesia's research ecosystem, BRIN implemented eight researcher mobility schemes, nine research grant schemes, expanded access to open research infrastructure, and revitalized the national research program, reinforcing its leadership in national innovation governance.
- BRIN successfully bred a new lowland-adaptive chrysanthemum variety, supporting horticulture for local and international markets, a significant achievement for Indonesia's horticulture sector. This variety enhances cut-flower production, and improves farmer welfare—while overcoming geographic and agroecological limitations traditionally associated with chrysanthemum farming.

 ■



BRIN created an electrochemical biosensor with graphene/ZnO nanoparticles to detect Serum Amyloid A (SAA) biomarkers, which are crucial indicator for lung cancer and COVID-19. This portable device uses blood serum/saliva (measuring 10–200 mg/L), and is designed for easy use by connecting to smartphones—paving the way for fast, accessible, and non-invasive health diagnostics.

May

1 BRIN developed a synthetic aperture radar (SAR) that captures images using high-resolution microwaves and is effective in all weather conditions. This system can be deployed via satellites, aircraft, drones, and unmanned vehicles, and also adapted into ground-based SAR for infrastructure inspections (e.g., buildings and bridges). This innovation strengthens Indonesia's capabilities in remote sensing and structural safety assessments.

June

At the 10th World Water Forum (Nusa Dua, Bali, May 21 2024), BRIN and the National Priority Lake Rescue Steering Council launched "Si Danau" (Lake Information System). This digital platform provides centralized, accessible data on Indonesia's lakes to assist governments, communities, researchers, and stakeholders for improved lake management in Indonesia.

3 BRIN hosted Animalium Fest 2024 to

promote Animalium BRIN as the

country's largest wildlife science hub.

Beyond its role as an educational and

ecotourism destination, Animalium

functions as a research platform,

knowledge center, and innovative

publication venue for wildlife

A BRIN released 12 superior new

plantation crop varieties, including

Batu, Unggul Genjah Jingga Ganda,

1. RHS 2. Tobacco: 5 West Lombok

to support food security, regional

through improved yield and

adaptability.

economies, and farmer livelihoods

Coconut: Genjah Hijau Erabolo Labuhan

Unggul Geniah Merah Bali, Cocoa: RHS

varieties, and two Sago varieties: Yebha,

Dowbetha. These varieties are expected



BRIN hosted the Asia Pacific Network for

together representatives from 22

Asia-Pacific countries. The gathering

facilitated expanded collaborations on

Global Change Research meeting, bringing

critical global challenges, including climate

change, food security, and energy resilience.

Participants included governments, research

institutions, and practitioners, underscoring

Indonesia's first mobile floating solar power

plant (PLTS). Designed for deployment on

lakes, reservoirs, and marine areas, this

innovation offers a solution to land-use

limitations in solar energy development.

Beyond energy generation, it also helps

reduces water evaporation and powers

irrigation pumps, supporting sustainable

essential application like agricultural

energy and water management.

the region's commitment to addressing

interconnected environmental and

BRIN pioneered the development of

socio-economic issues.

- To accelerate multidisciplinary innovation in healthcare, BRIN launched CARe-Hub, a digital platform that connects researchers, institutions, industries, and governments stakeholders. CARe-Hub facilitates data sharing and collaborative research to develop innovative health solutions, aiming to improve the quality, accessibility, and impact of health research in Indonesia and beyond.
- BRIN established a national seed bank to conserve Indonesia's vast biodiversity. This initiative focuses on collecting and preserving endemic/rare plant seeds, ensuring their availability scientific research, sustainable agriculture, and food security. It also serves as a strategic legacy for future generations, safeguarding the country's ecological heritage.



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ANNUAL REPORT 2024 Transformation of Research and Innovation to Build the Nation



HIGHLIGHTS OF THE YEAR

July

- In collaboration with Griffith University and Southern Cross University, BRIN researchers discovered a 51,200-year-old cave painting in Leang Karampuang, South Sulawesi. This remarkable finding enriches our understanding of prehistoric human artistry and ancient Indonesian culture.
- BRIN uncovered evidence that Sumba Island has been continuously inhabited for 2,800 years, with the Melolo site being the oldest (26 skeletons/artifacts). The Lambanapu site contained 52 ancestral graves, rings, and pearls, while Mborombaku is believed to be the Sumbanese ancestors' landing point. These findings provide invaluable insights into the early civilization and cultural heritage of Eastern Indonesia.
- 3 BRIN partnered with Japan's Green Power Development Corporation and PT ABE Indonesia Berjaya to produce bioavtur (sustainable aviation fuel) made from non-standard coconuts, reducing aviation carbon emissions and aligning with Indonesia's green energy targets. ▼



4 BRIN improved eucalyptus cultivation in Biak Numfor, developing disease-resistant, fast-growing varieties with high-quality essential oil. These innovations aim to stimulate local economic growth and strengthen Indonesia's position in the global essential oil industry.

August

- BRIN hosted the Indonesia Research and Innovation Expo (InaRI Expo) 2024 on 10 August to commemorate the 29th National Technology Awakening Day (Hakteknas). This flagship event showcased Indonesia's R&D potential and fostered cross-sector collaborations and provided a platform for researchers, students, industries, and policymakers to engage and explore innovation opportunities across various fields.
- BRIN researchers identified a new orchid species, Aerides obyrneana, endemic to Sulawesi. Known as the "tiger claw orchid" for its striking floral morphology, the species was documented in the Edinburgh Journal of Botany (May 2024). The discovery adds to Indonesia's rich botanical diversity and contributes to ongoing conservation and horticultural research.
- BRIN organized the Indonesian Research and Innovation Fair (IRIFair) to identify and empower top-tier research talents. The event featured competitions, exhibitions, and awards, forming a key part of BRIN's Talent Management Program aimed at strengthening Indonesia's human resources in science and technology.



BRIN published the 2024 Science,
Technology, Research, and Innovation
Indicators Book, offering a
comprehensive data dashboard to track
national R&D performance and trends.
The publication serves as a key tool for
evidence-based policymaking, resource
allocation, and strategic planning across
Indonesia's scientific ecosystem.

September



- 1 In response to climate change and water scarcity, BRIN successfully bred drought-resistant chili varieties using multi-index selection method. These chilies are designed to thrive with minimal irrigation, offer strong disease resistance, and help strengthen national food security amid shifting climate conditions.
- 2 BRIN introduced a digital landslide risk map at ADEXCO/GFSR, combining field data with Geo-Al technology to assess landslide risks across Indonesia. By integrating field observations and geospatial modeling, the system enables accurate landslide risk assessments across Indonesia's vulnerable regions, supporting early warning systems and disaster mitigation planning.
- 3 BRIN launched the Transient Rainfall Infiltration and Grid-Based Regional Slope-Stability (TRIGRS) information system to analyze slope stability parameters in rain-prone areas. Simulations using this tool reveal that increased rainfall significantly reduces slope stability, making it essential for infrastructure safety and land-use planning in hilly and mountainous zones.
- Together with the Negeri Rempah Foundation, BRIN co-hosted the International Forum on Spice Routes (IFSR) 2024 under the theme "Spice Routes in Flux: Navigating Global Transformation and Intercultural Exchange." The forum highlighted the historical and cultural significance of the spice trade, while exploring contemporary issues such as heritage preservation, intercultural exchange, and innovation in spice-based industries.

October

- In collaboration with Baperlitbang Banjarnegara, BRIN developed "petasol", a diesel-equivalent fuel derived from plastic waste through fast pyrolysis method. This innovation transforms non-recyclable plastics into renewable energy, contributing to sustainable waste management and supporting Indonesia's clean energy transition.
- BRIN and Rosatom organized the Nuclear Young Talent Fest 2024 to promote nuclear education in Russia for Indonesian talents, fostering R&D collaborations with Russian institutions.
- BRIN explored the biomedical potential of five land snail groups, uncovering bioactive compounds with promising applications for wound healing, asthma treatment, antibacterial therapies, and skin regeneration. This study advances the search for natural-based pharmaceuticals and supports Indonesia's biodiversity-based drug discovery efforts.



BRIN introduced the Political Party Institutionalization Index, an analytical tool to measure the maturity, transparency, and accountability of Indonesian political parties. The index provides critical insights into party governance and democratic performance, promoting evidence-based political reform and policymaking.

November

- BRIN developed an advanced nuclear-based radiation/isotope technology to detect food fraud in a non-destructive manner. This innovative approach enhances food safety monitoring systems in Indonesia by enabling accurate, reliable analysis without altering or damaging the tested products.
- 2 BRIN published Mengembalikan Tionghoa ke dalam Historiografi Indonesia (Reintegrating Chinese Indonesians into Historiography), shedding light on the social and political contributions of Chinese Indonesians, particularly during the Reform Era. The work aims to enrich inclusive narratives in Indonesian history and promote multicultural understanding. ▼



- 3 In collaboration with PT Bumiresik Nusantara Raya, BRIN designed a waste shredder to support urban solid waste management. This technology enables more efficient recycling and composting, contributing to Indonesia's circular economy goals and reducing environmental impact through improved waste processing infrastructure.
- 4 BRIN built an astronomical observatory on Mount Timau, Kupang, East Nusa Tenggara (NTT). The observatory leverages the region's clear skies and minimal light pollution for astronomical research and educational tourism, strengthening Indonesia's capacity in space science and public science engagement.

December

BRIN's Cibodas Botanical Garden reopened its Nepenthes greenhouse, showcasing 80 rare pitcher plant species. The initiative raises public awareness of plant conservation and serves as a living laboratory for botanical research and education.



- BRIN deployed Indonesia's first medical radioisotope-producing cyclotron, DECY-13 (Yogyakarta). With a 20 nanoampere beam current, DECY-13 enhances domestic isotope production for cancer diagnosis and treatment, reducing reliance on imports and bolstering national healthcare independence.
- BRIN introduced egg yolk powder, a nutrient-dense egg yolk made from free-range egg through spray-drying technology. Rich in protein and essential amino acids, this innovation supports efficient food processing, nutrition programs, and emergency food supply chains.
- In collaboration with Diponegoro University, BRIN developed Biosalin rice, a saline/ brackish-water-tolerant variety resistant to brown planthoppers, bacterial leaf blight, and blast disease. This variety strengthens agricultural resilience and enhances food security in coastal and degraded lands.

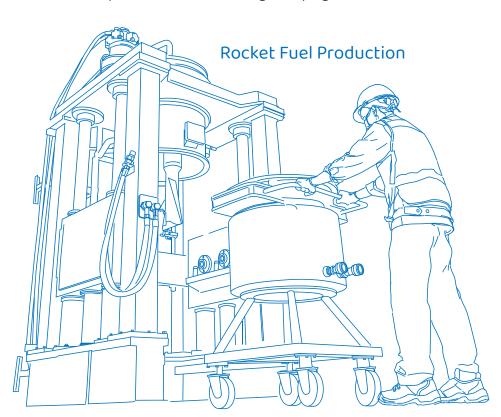
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THE ROLE OF BRIN FOR INDONESIA

SECTION

BRIN'S ROLE FOR INDONESIA

Indonesia envisions itself as an advanced, independent, and competitive nation by 2045. Realizing this vision demands a solid foundation built upon four key pillars: human development and mastery of science and technology (S&T), equitable development, sustainable economic growth, as well as strengthened national resilience and governance. As the nation's foremost research and innovation institution, BRIN plays a strategic role in advancing the first pillar—developing human capital and harnessing science and technology. BRIN's mission is to cultivate a thriving, inclusive research ecosystem, foster world-class talent, and generate transformative innovations that enhance national competitiveness and drive long-term progress.



High-quality research and innovation are critical drivers of sustainable economic growth. Yet, Indonesia continues to face challenges in fully realizing this potential. In the 2024 Global Innovation Index (GII), Indonesia ranks 54th out of 133 countries, indicating room for substantial improvement in the national innovation landscape.

The key barriers to a stronger research ecosystem include limited human resources (HR) in research, insufficient research infrastructure, and low and uneven research funding. To address these issues, BRIN is actively working to consolidate and strengthen all three aspects. Through talent development programs, expansion of open research infrastructure, and a shift toward sustainable and competitive research funding, BRIN is laying the groundwork for a more effective, inclusive, and impactful research ecosystem—one that can propel Indonesia toward a more innovative and resilient economy.

Sustainable research and innovation rely on the availability and quality of human capital. Indonesia has only 1,070 researchers per million population, significantly below Singapore's 7,000 per million. Moreover, only 14.08% of Indonesian researchers hold doctoral degrees, falling short of global standard. To address this gap, BRIN has introduced several strategic initiatives: PhD qualification requirements for entry-level researchers; special recruitment pathways for top talents from diverse discipline; capacity-building programs, including visiting professor initiatives, postdoctoral fellowships, Master's and PhD-based research schemes.

At the same time, BRIN is prioritizing the modernization of research infrastructure by developing international-standard laboratories, workshops, pilot plants, and open-access research platforms. These facilities support strategic sectors such as applied technology, aerospace and nuclear science, and are open to academia and industry, both domestic and international, to accelerate downstream innovation .

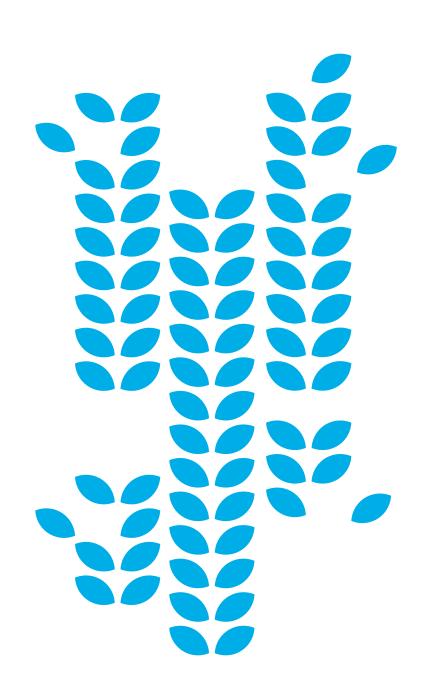
Despite these efforts, Indonesia's research spending remains low —just 0.23% of GDP in 2023, below UNESCO's 1% recommendation. To overcome this, BRIN is encouraging private-sector collaboration, targeting a future in which 80% of national research funding originates from non-government sources. This aproach aims to position research and innovation as the core of a sustainable, knowledge-based economy.

Through bold reforms, BRIN reaffirms its commitment to research and innovation driven national development through its policies and programs. A stronger research ecosystem will enable Indonesia to produce globally competitive innovations, drive inclusive and sustainable economic growth, and enhance public welfare and quality of life.

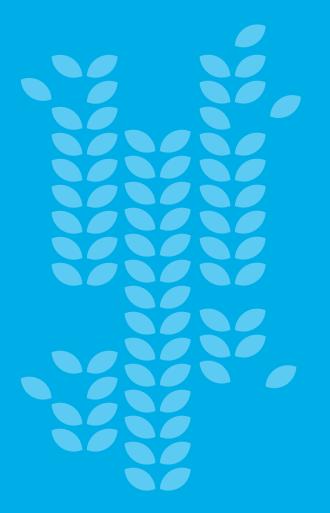
To realize Indonesia's vision of becoming a science and technology-driven advanced nation by 2045, collaboration is the key. Government, academia, industry, and the public must work hand in hand to build a resilient, future-ready research ecosystem.

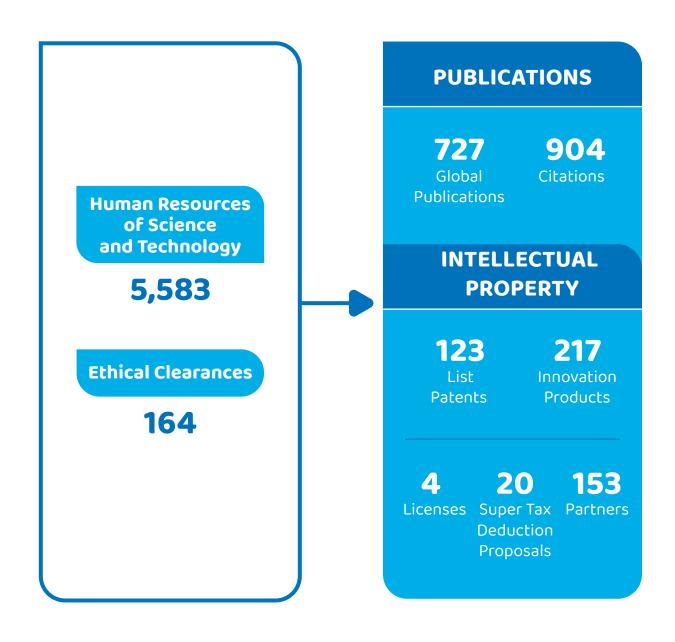
Food Sovereignty

Cluster



Research and Innovation Ecosystem Food Sovereignty



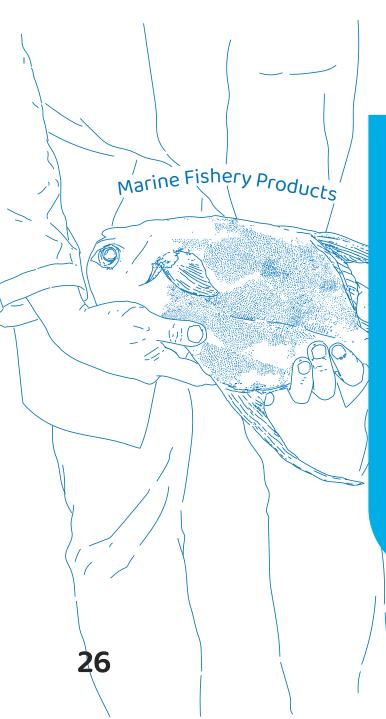


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Research Ecosystem to Support Food Sovereignty



Food sovereignty is a nation's ability to produce, distribute, and store food to meet domestic needs by leveraging natural resources, human capital, socio-economic factors, and local wisdom in a dignified and sustainable way. Achieving food sovereignty requires enhanced agricultural productivity, advancement of agricultural technologies, crop diversification, improved agricultural infrastructure, and efficient management of natural resources.

BRIN plays a strategic role in this mission through sustainable food research and innovation. BRIN fosters synergy among local governments, educational institutions, research organizations, food industry players, and communities to build a resilient and integrated food system.

Farmers conducting the initial planting of superior rice seedlings in the demonstration area (Demonstration Area) of PT Sang Hyang Seri (SHS) Sukamandi, Subang Regency, West Java, a collaboration between BRIN, the National Food Agency, the Ministry of State-Owned Enterprises, and food sector businesses. Photo © BKPUK





BRIN's food sovereignty program is driven by 5,583 researchers and science and technology professionals, working across disciplines and partnering with both national and international stakeholders. Open research collaboration at national and global levels enables large-scale research involving multiple stakeholders, ensuring sustainability and supporting government programs to achieve food sovereignty.



This program is funded through various sources, including state (APBN) and non-state budgets, allocated for agricultural technology development, human resource quality improvement, food research and innovation infrastructure, and food innovation research. This funding ensures research continuity and accelerates the achievement of government-set food sovereignty targets.



To achieve food sovereignty, BRIN advances research and innovation to strengthen local food systems, enhance food security, and ensure the availability of high-quality, sustainable food. Research productivity in the food sector has resulted in 727 globally indexed scientific publications and 904 citations from collaborations between national and global research groups. To improve research quality and integrity in food sovereignty, BRIN has facilitated 164 ethical clearances.



The success of BRIN's food research is also reflected in 123 registered patents, demonstrating mastery of food technology ready for industrial application.

Additionally, this research and innovation has produced 217 utilizable products and four licenses, further strengthening BRIN's contribution to advancing Indonesia's food sector.



To encourage greater private sector participation,
BRIN has submitted **20 super tax deduction proposals**to incentivize R&D investment in food sovereignty.
BRIN collaborates with **153 product utilization**partners, significantly expanding the impact of BRIN's research. This makes BRIN as a key driver of progress in the food sector.







In addition to broader systemic research, BRIN also conducts thematic, solution-driven studies that directly support food sovereignty. These targeted efforts include the development of multi-tolerant rice varieties that are resistant to submergence, salinity, and drought—key challenges exacerbated by climate change. By enhancing the climate resilience of staple crops, BRIN helps ensure food security across diverse regions. To address the complexities of agricultural productivity in tidal swamp areas, BRIN formulates biostimulants derived from plant extracts, animal-based compounds, and indigenous microbes. These eco-friendly formulations enhance corn productivity and improve inorganic fertilizer efficiency, offering sustainable solutions for difficult-to-manage lands.





In the realm of genetic crop improvement, BRIN applies genome editing and molecular selection to develop superior rice varieties resistant to dwarf viruses. Meanwhile, molecular breeding techniques are used to produce tropical soybeans with long juvenile traits, enabling higher yields and drought tolerance in soybean production. BRIN also advances livestock productivity through the release of the Maron chicken strain and the implementation of local chicken breeding programs in Central Java, aimed at improving performance and adaptability.

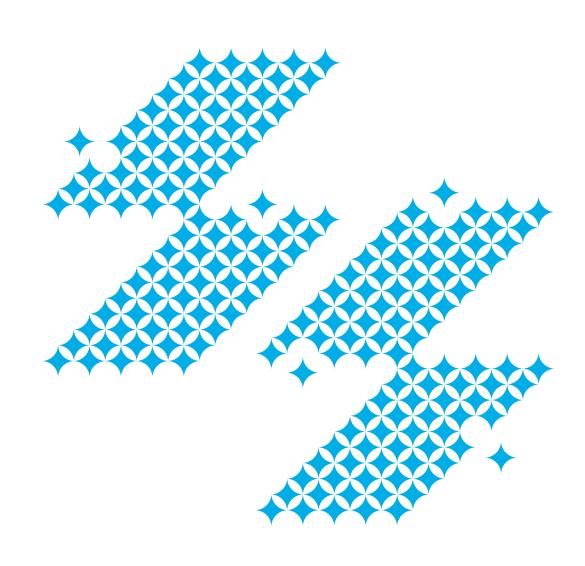


In functional food innovation, BRIN has created bio-coating technology to extend egg shelf life and developed halal gelatin derived from free-range eggshell membranes—supporting Indonesia's ambition to become a global halal hub through the use of sustainable, locally sourced ingredients. Together, these innovations demonstrate BRIN's commitment to adaptive, eco-friendly technologies that directly enhance Indonesia's food sovereignty and resilience.



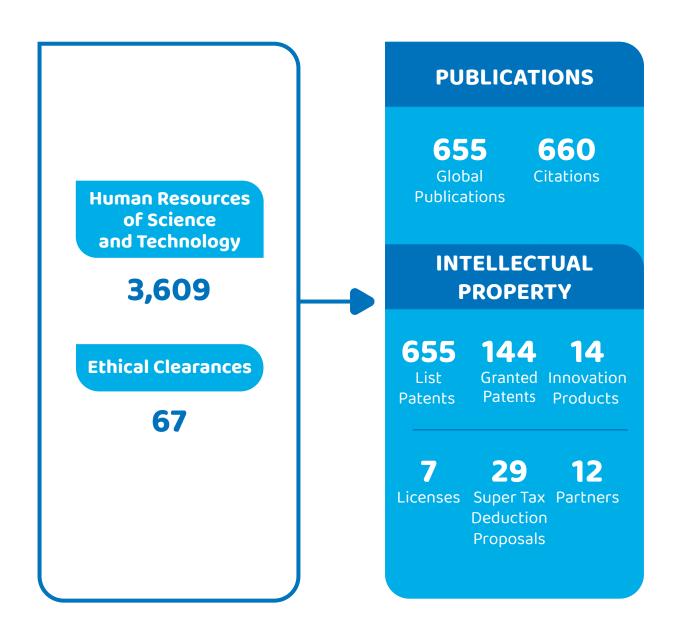
Energy Sovereignty

Cluster









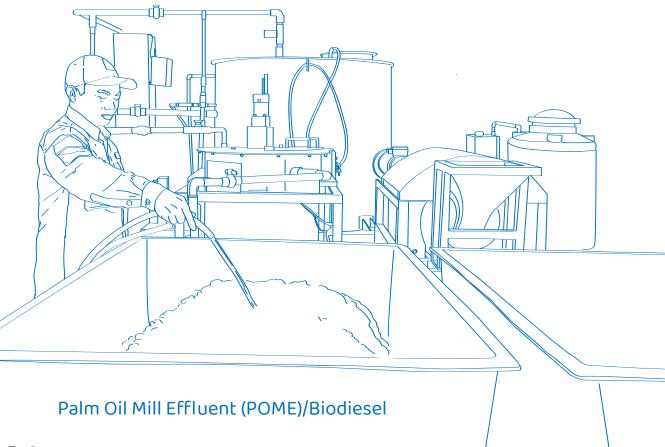
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for complete information!



Research Ecosystem to Support Energy Sovereignty

Energy sovereignty is a key priority for the Indonesian government, particularly in alignment with the national goal of achieving net zero emissions by 2060. Central to this ambition is the transition to new and renewable energy (NRE). To realize this, the government is implementing a range of strategic efforts, including expanding biodiesel usage, accelerating the adoption of renewable energy, developing national electricity infrastructure, enhancing energy efficiency, and optimizing the use of natural gas as both a raw material and fuel source.





Through research organizations specializing in energy, BRIN plays a critical role in advancing R&D for sustainable energy solutions. As of 2024,

3,609 science and technology

researchers—comprising both national and international talent—are dedicated to advancing innovation in the energy sector.



Research funding is sourced from multiple streams, including the state budget (APBN) and collaborative partnerships with domestic and global institutions. These resources are directed toward renewable energy technology development, energy efficiency programs, HR capacity building, and the modernization of energy infrastructure—all essential components in Indonesia's journey toward true energy sovereignty.



BRIN continues to strengthen Indonesia's energy research landscape, with significant contributions to global scientific knowledge and national innovation. Researchers have produced 655 globally indexed scientific publications, enriching academic literature and contributing to both national and international discourse, as reflected in 660 citations.



These efforts have led to the development of 144 patents, 14 utilizable products, seven licenses, and 67 ethical clearances, reflecting BRIN's dedication to ethical, applicable innovation. Additionally, 29 super tax deduction proposals have been submitted to incentivize private-sector investment in research, alongside partnerships with 12 product utilization partners.



In human capital development, the Nuclear Polytechnic under BRIN plays a pivotal role in cultivating highly skilled talent in nuclear technology. BRIN also conducts sustainable energy research and innovation, partnering with local governments, educational institutions, domestic and international research bodies, and state-owned enterprises such as PTPN, PT Pertamina, and PT PLN. Together, these initiatives underline Indonesia's growing contribution to global energy knowledge and reinforce its commitment to achieving energy sovereignty and long-term sustainable development.



Transformation of Research and Innovation to Build the Nation 35



Research in energy technology and natural resource management is advancing rapidly to support sustainable development. Current efforts include the development of a multi-condenser pyrolysis machine that converts plastic waste into fuel oil (BBM) and the implementation of waste-to-energy conversion technologies using Organic Rankine Cycle (ORC) turbines. Additionally, innovations in biogas production using gas mixtures are being explored as more efficient solutions for renewable energy.



BRIN also prioritizes the development of structure, system, and component (SSC) technology and nuclear reactor safety systems to ensure the safe and environmentally responsible use of nuclear energy. In parallel, research on nuclear fuel recycling and nuclear analysis is being intensified to bolster national energy resilience. To support the shift toward cleaner energy, BRIN is also advancing research on high-portion co-firing technologies using biomass additives, aimed at optimizing the combustion process of biomass-based fuels.



In the transportation sector, BRIN is developing electric vehicle (EV) charging infrastructure, enabling a broader transition to low-emission mobility solutions. Collectively, these innovations are vital to achieving Indonesia's sustainable development goals, reducing greenhouse gas emissions, and promoting efficient and responsible resource use in alignment with global environmental commitments.

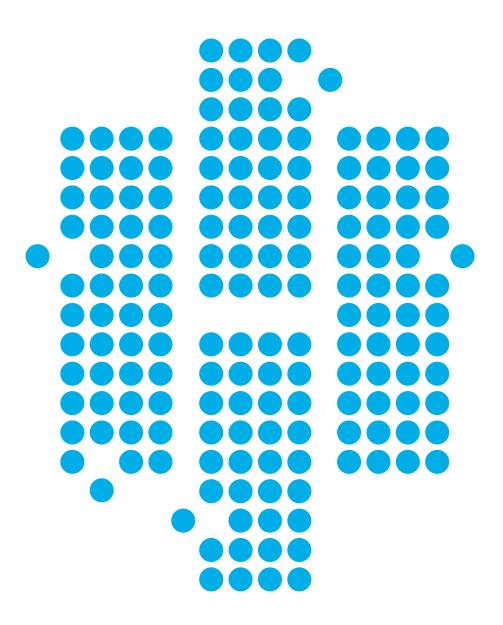




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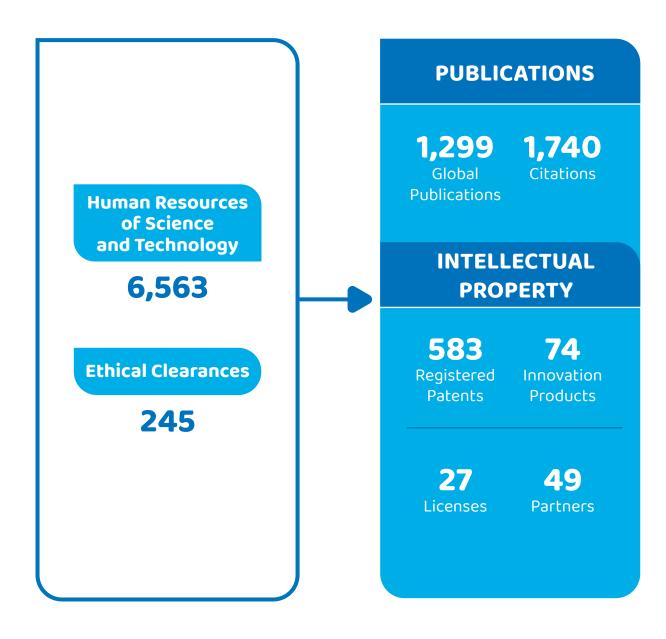
Sustainable Development

Cluster



Sustainable
Development
Research
and Innovation
Ecosystem









Research Ecosystem

to Support **Sustainable Development**

Sustainable development is a long-term process that utilizes and maximizes natural resources to improve societal well-being in a manner that safeguards the environment for future generations. Grounded in science and technology, sustainable development enhances national competitiveness and is one of BRIN's strategic missions to strengthen the research and innovation ecosystem.

By implementing research and innovation within the sustainable development cluster, BRIN actively promotes the green and blue economy concepts—two strategic pillars of Indonesia's economic transformation agenda. These approaches prepare the nation to face global challenges such as resource scarcity, climate change, and environmental security threats.





In 2024, a total of 6,563 researchers supported BRIN's sustainable development research cluster.



To elevate the impact and quality of these initiatives, substantial funding is channeled from both the state budget (APBN) and non-APBN sources, including national and international collaboration partners. This funding framework ensures the continuity and effectiveness of research efforts focused on reducing carbon emissions, preserving natural resource sustainability, and achieving Indonesia's long-term development goals.



To ensure that research and innovation activities produce high-quality and impactful outcomes, BRIN facilitated 245 ethical clearances in 2024. This ethical oversight supports responsible research practices and reinforces the credibility of BRIN's work.



As a result of strong human resources, strategic collaboration, and robust funding, BRIN achieved significant milestones in advancing sustainable development. In 2024 alone, BRIN produced 1,299 globally indexed scientific publications, which received 1,740 citations—a testament to the growing recognition of BRIN's contributions in both national and international research communities.



In the area of intellectual property, BRIN registered 583 patents and developed 74 innovative products, reflecting a high level of technological mastery. These innovations not only strengthen the national science and technology base but also hold substantial economic value, with clear potential for industrial adoption and commercialization.



Moreover, the practical application of BRIN's research results has led to the issuance of 27 licenses and collaborative partnerships with 49 stakeholders. The research spans a wide range of topics aligned with sustainability principles, including green and blue economy strategies, sustainable natural resource development, greenhouse gas emission reduction technologies, and waste processing innovations. These initiatives demonstrate BRIN's active role in driving a sustainable, eco-friendly transformation of Indonesia's economy and environment.





In addition to the previously outlined achievements, BRIN's sustainable development research also drives innovation across multiple sectors to support environmentally friendly and future-oriented development goals. One standout initiative is the development of an autonomous mobility-on-demand system for electric vehicles operating in limited areas. This technology is designed to enhance transportation efficiency in urban environments while significantly contributing to carbon emission reductions, aligning with national targets for greener cities.

BRIN is also advancing accelerator system technologies and their components, which hold great promise for both industrial and medical applications. These technologies can improve precision, efficiency, and productivity in various processes—ranging from advanced manufacturing to cancer treatment—demonstrating BRIN's role in translating high-tech research into impactful, real-world solutions.

BRIN is also focusing on developing salt purification technology, which could enhance the quality of local salt. It is hoped that the utilization of this technology will also improve the welfare of salt farmers.



Production Process of Salt at PT Garam (Persero), Gresik, East Java.
Photo © BKPUK





BRIN is also conducting biorefinery research on aromatic plants, especially *Litsea cubeba* (May Chang), to produce high-quality essential oils for cosmetics and biolubricants for industrial use. This research taps into the potential of environmentally-friendly natural resources and create high-value products.

Further innovation includes utilizing pineapple stems (Ananas comosus L.) to produce maltodextrin through optimized starch extraction and enzymatic hydrolysis. This breakthrough promotes value-added processing of agricultural waste, supporting sustainable economic development and local innovation.



In the field of nuclear science, BRIN is strengthening radiation detection and safety technologies, particularly through advanced nuclear analysis tools. These developments are crucial for ensuring the safe use of radioactive materials in both healthcare and industrial sectors, enhancing national capabilities in medical diagnostics and industrial applications. Together, these research efforts embody BRIN's commitment to environmentally responsible, efficient, and innovation-driven development, accelerating Indonesia's path toward long-term sustainability.



Discovery of 98 New Taxa for Indonesia's Biodiversity and Conservation

In 2024, BRIN announced 98 new scientific discoveries, including the identification of new taxa in the realms of flora, fauna, and microorganisms. Among the 50 new taxa discovered, 11 are new plant species, including Alocasia roseus, Begonia tanggamusensis, and Rhododendron mulyaniae. A new subspecies of Rhododendron javanicum and a new variety of Impatiens platypetala var. minialba were also recorded, further enriching Indonesia's native plant biodiversity.

In the fauna category, 26 new species and 13 new records were found. Highlights include crustaceans like Lepidothelphusa menneri and Macrobrachium ngankeeae, and a newly identified gecko,

Cyrtodactylus mamberamo (reptile). New fish species such as Oryzias moramoensis and Pomacentrus mandacani add to Indonesia's freshwater and marine biodiversity. Mammalian discoveries include Crocidura balingka and Crocidura dewi, along with newly recorded bird species like Caprimulgus ritae.

The microorganism world also recorded significant findings, with nine new taxa. These include new fungal species Lambertella fusoidea and Lambertella phanensis, as well as the microalga Eutreptiella sp. EKoku01. These findings offer promising potential for further research in biotechnology and health sciences.

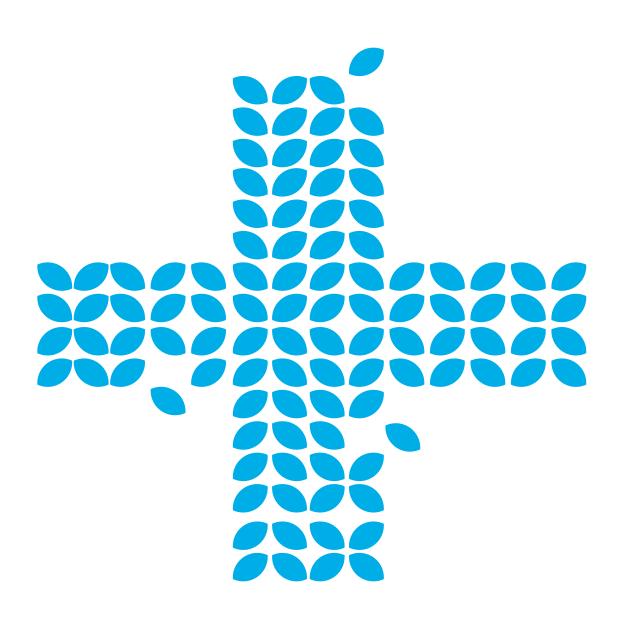
Altogether, these 98 discoveries—comprising 39 animal species, nine microorganism taxa, and 50 plant taxa—not only highlight Indonesia's unparalleled biodiversity but also contribute to scientific advancement and open up new opportunities in conservation, research, and practical application across multiple sectors.

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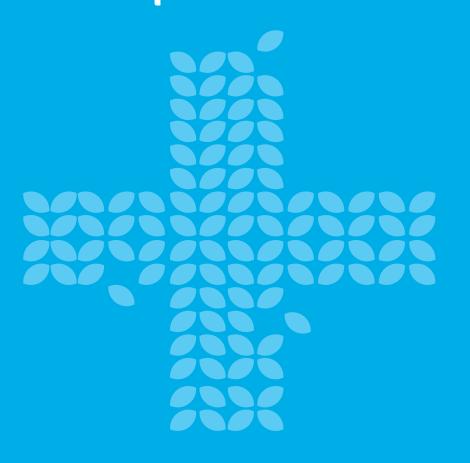
Spirulina Microalgae Research

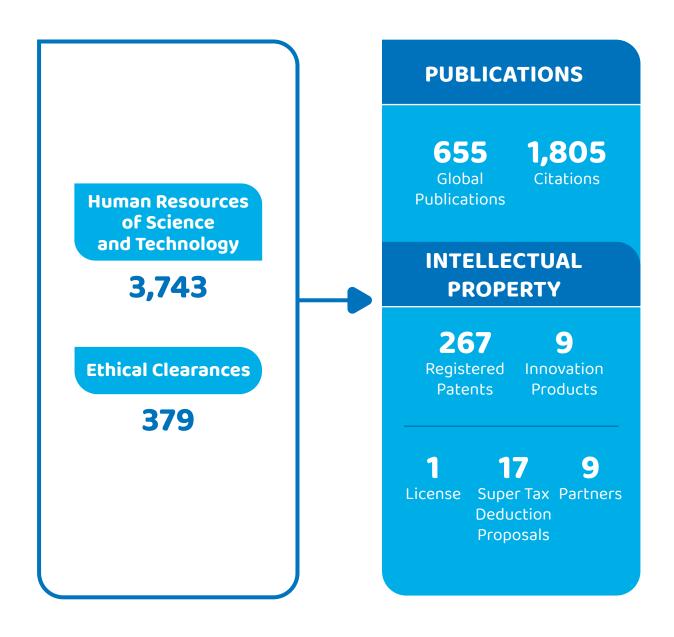


Health Independence Cluster



Research and Innovation Ecosystem for Health Independence





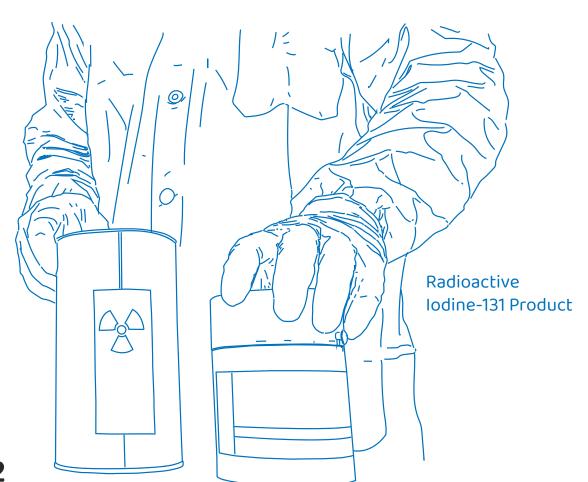
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Research Ecosystem to Support Health Independence

Research in health independence plays a vital role in strengthening Indonesia's national health system through innovation and sustainable solutions. The central focus is to improve public health outcomes and ensure broader, equitable access to high-quality healthcare services. As a strategic pillar in the national development agenda, health research contributes directly to societal welfare and sustainable development.





Health Independence Research is funded through a combination of state budget (APBN) allocations and non-APBN sources, including strategic collaborations with national and international partners. These partnerships help bolster innovation capacity and accelerate the translation of research into practice.



In 2024, BRIN made significant strides in health research. BRIN has produced **655 scientific publications**, contributing to the national and global knowledge base, and earning **1,805 citations**, a testament to the influence and quality of the research.



In addition to academic contributions, BRIN demonstrates its commitment to innovation through **267 patents** in the health sector. These patents cover various medical and pharmaceutical technological innovations that support improving healthcare services in Indonesia.



From these patents, nine
innovative products were
successfully developed, addressing
real-world health needs and
demonstrating the tangible impact
of BRIN's research. One product
has been commercially licensed,
marking progress in the
commercialization of local
innovations and reinforcing
collaboration with the healthcare
industry.



This progress is driven by **3,743**researchers, encompassing both
BRIN's internal scientists and
external collaborators. Their
work is conducted under strict
ethical standards, evidenced by **379** approved ethical clearances.



To encourage private sector involvement, BRIN submitted **17** super tax deduction proposals, offering fiscal incentives for industry partners investing in R&D activities.



BRIN has also formed collaborations with **nine utilization partners**, including pharmaceutical companies, hospitals, universities, and healthcare institutions, to ensure research findings are effectively implemented and benefit the public.

These achievements highlight BRIN's pivotal role in fostering a robust, collaborative health research ecosystem, propelling Indonesia toward health sovereignty and resilience in the face of current and future health challenges.



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BRIN actively supports health research, including accelerator and reactor technology development for medical and industrial applications. This research focuses on the production of radioisotopes and radiopharmaceuticals, which hold significant potential for safer and more efficient treatments and food-related applications.

In the biomanufacturing sector, BRIN is advancing national vaccine independence through the development of MicroVAC-D, an Indonesian dengue vaccine based on microalgae.





BRIN is also creating an innovative wound dressing using a composite hydrogel made from alginate, nanocellulose, and ZnO, combined with the secretome of mesenchymal stem cells derived from umbilical cord tissue. This technology enhances healthcare services while promoting environmentally friendly solutions that align with food security efforts.

Additionally, research into prenylated flavonoids extracted from Macaranga bancana and Macaranga hypoleuca focuses on isolating and evaluating their anticancer properties. This work contributes meaningfully to public health.



An officer from the Directorate for Nuclear Facility Management (DPFK) at BRIN retrieves an irradiation target in the Hot Cell – G.A. Siwabessy Multipurpose Nuclear Reactor to support Indonesia's radioisotope production sovereignty. Photo © BKPUK



Exploration of anti-tuberculosis metabolites from endophytic fungi associated with Indonesian medicinal plants broadens the diversity of herbal-based treatments. BRIN is also bioprospecting extracts from the moli plant (Asystasia sp.) as a promising, safe, and affordable multipotent adjuvant for cancer therapy.

On the technology front, BRIN has developed the "GESERHB" software—an efficient, sensitive, and specific tool for determining the genotype and serotype of the hepatitis B virus.



In food product development, BRIN is enhancing the quality of soft capsules using seaweed extract as a gelatin alternative, offering a healthier, plant-based, and eco-friendly ingredient.

Together, these innovations not only support health and food sovereignty but also advance sustainable and environmentally responsible technologies—critical steps toward achieving national independence in food and healthcare.

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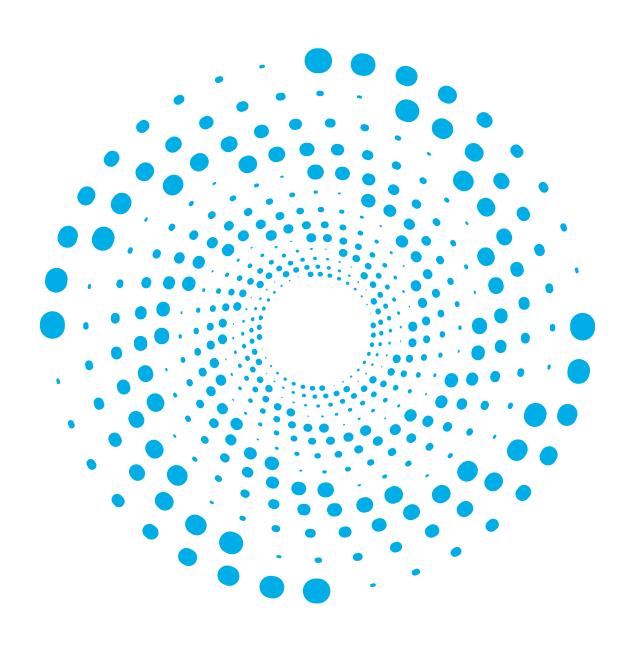


Seaweed cultivated by the Research Center for Marine and Land Bioindustry located in Lombok, NTB, is used as raw material for seaweed extract capsules. Photo © BKPUK

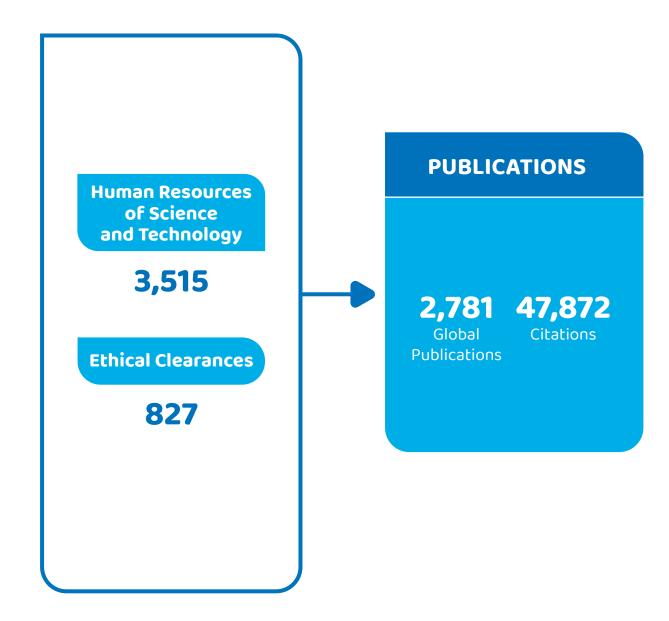
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Research and Innovation Capacity Strengthening

Cluster



Strengthening Research and Innovation Capacity



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Strengthening Research and Innovation Capacity for National Progress

In addition to advancing food security, energy independence, sustainable development, and health resilience, research and innovation efforts are also focused on strengthening national capacity. The goal of enhancing research and innovation capacity is to position them as key drivers of national development and progress.





Researchers from the Research Center for Agroindustry are producing edible drinking straws made from sago starch—an innovative product that has already been utilized. Photo © BKPUK



In 2024, a total of **3,515 researchers** were engaged in initiatives aimed at strengthening this capacity. These research activities were supported by diverse funding sources, including both state budget (APBN) and non-state budget (non-APBN) allocations, as well as partnerships with domestic and international collaborators. This research plays a crucial role in fostering collaboration among academia, industry, government, and communities. The objective is to accelerate innovation, expand national and global networks, and enhance the quality of research and innovation outcomes. Ultimately, the focus is on producing innovations that are not only impactful but also applicable in real-world industrial and societal settings.



As a result of these efforts, **2,781 scientific publications indexed in global databases** have been produced. These publications contribute significantly to the academic body of knowledge and have made notable impacts at both national and international levels, as reflected by **47,872 citations** to date.



In addition, the field has recorded **827 ethical clearances**, ensuring that all research activities adhere to established ethical standards.

Development of Technology Based on Research and Innovation



Various research projects have been undertaken across strategic sectors to strengthen research and innovation capacity. One key initiative is the development of extraction technology for nickel-manganese-cobalt (NMC) compounds sourced from Indonesia's laterite nickel ore and industrial waste (urban mining). This research has led to the creation of a particle homogenization and fragmentation tool using a heat impact collision method, as well as an NMC production model with potential applications in the battery industry.



Significant progress has also been made in the field of biomedical materials. A notable project involves enhancing the hydrophobic properties of biomedical pulp through the application of superabsorbent polymers derived from cellulose and lignin. This innovation not only improves the performance of biomedical materials but also reduces agricultural waste, contributing to the development of sustainable healthcare solutions. The research has resulted in a lignin-based polyurethane prototype and a patented manufacturing method.



In the forestry sector, research on finishing materials for chemically and thermally modified short-rotation teak wood has yielded a new treatment method. By combining lactic acid with citric acid or citric acid-glycerol, this method enhances the wood's resistance to fungi, termites, and fire, while also improving dimensional stability. The project has produced a modified teak wood prototype and a corresponding patent.





In the field of defense and aerospace, research on sounding rockets has been focused on the development of a rocket with a 450 mm diameter and a range of 100 km. The rocket's propulsion system utilizes solid propellant with a star grain configuration. Avionics system testing has been successfully conducted using the RX 200-TC03 rocket.



The RX200TC Series 03 rocket conducts a flight test at Karang Papak Beach, Santolo, Garut, West Java. Photo © BKPUK

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Social Research for Cultural and Societal Sustainability



In addition to technology-based research, social research also plays an equally vital role in strengthening national capacity. One interesting study is "Exploration of Language Identity in the IKN Region through Voice Data Collection", which not only digitizes language data but also reveals phonological, morphological, and syntactic shifts among migrants in the Nusantara Capital City (IKN). The findings serve as a foundation for developing linguistic preservation policies and innovations in language-based technologies.



The development of the Nusantara Capital City (IKN) has become an interesting subject for research, especially in the social field of cultural and societal sustainability. Photo © IKN Authority



Another impactful study, "Ata Women in the Vortex of Violence: Reinventing Women's Protection in the Treasures of Local Wisdom", sheds light on the plight of Ata women, who often face exploitation, traditional violence, and limited access to education and social mobility. The research provides essential insights for designing local regulations to prohibit forced marriages involving violence and for developing programs to economically and socially empower Ata women.

The study titled "Analysis of Cultural Dynamics Interaction: Community Resilience and Its Contribution to Inclusive Research in Schools of Sabang and Merauke" enhances understanding of Indonesia's cultural and social diversity. By exploring Sabang's maritime heritage and Merauke's rich traditions, the research supports initiatives to strengthen diversity, tolerance, and intercultural dialogue.



In the realm of international relations, the study "Beyond Gastrodiplomacy: Exploring the Culinary Mobility of Indonesia and South Korea in the Context of Social and Cultural Crossroads Between the Two Countries" presents new opportunities to promote Indonesian cuisine as a tool of cultural diplomacy. Meanwhile, the study "Format of Indigenous Community Representation in Regional Development and Natural Resource Management Policies Based on the Principles of Decentralization" underscores the importance of involving Indigenous communities in policy-making to ensure inclusive and sustainable regional development.



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Mitigating Weather and Climate Change through Research and Innovation



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Various studies have been conducted to develop early warning systems and technology-based adaptation methods to address the challenges of climate change and mitigate extreme weather.

One significant study is the "Development of a Bad Weather Early Warning System Based on Ocean Wave Radar and Coupled Atmosphere-Ocean Models to Support Tin Mining Activities in the Bangka Belitung and Kundur Islands", which resulted in a low-cost ocean wave detection radar and a high-resolution atmosphere-ocean model capable of predicting weather conditions.

Another important study is the "4-D Atmospheric Monitoring Based on GNSS Radio Occultation and Radiosonde for Mitigating Extreme Weather Events and Climate Change in the Maritime Continent of Indonesia". This research produced the GNSS for Atmospheric Observation and Tracking Climate Change (GATOTKACA) information system, offering accurate data crucial for climate change mitigation.



Additionally, the "Decision Support System for Evaluating Biodiversity in Potential OECM Areas Managed by Communities Using Satellite Imagery" was developed to support marine ecosystem conservation. In response to the growing threats to marine resources from human activities and climate change, this study produced a prototype biodiversity sensor to aid conservation decision-making.

Through these and other research initiatives, national research capacity continues to strengthen, enabling Indonesia to better face global challenges, enhance competitiveness, and deliver tangible benefits to society and industry. Sustaining this momentum is key to building a more innovative, inclusive, and sustainable future for the country.



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STRENGTHENING
THERESEARCH
ECOSYSTEM

SECTION COLOR



STRENGTHENING THE RESEARCH ECOSYSTEM

Strengthening the Research Ecosystem for Sustainable Innovation

Success in research and innovation heavily relies on high-quality, adaptive human resources. Aligned with Presidential Regulation No. 108 of 2024, BRIN holds the responsibility of implementing National Talent Management in the fields of research and innovation.

BRIN's dedication is reflected in a range of program schemes designed to enhance the capacity and quality of science and technology talent, fostering a robust pipeline of national research and innovation professionals. Key flagship programs include talent cultivation and acquisition, mentoring, qualification enhancement, and talent maturation—each structured to nurture an open and sustainable research and innovation ecosystem.

Investment in research is strategically allocated: 70% to skilled human resources, 20% to infrastructure, and 10% to budget—aimed at generating research outputs with tenfold returns in value. Strengthening the research ecosystem also requires close collaboration across startups, industry, academia, and international networks.

BRIN targets improved researcher capacity and increased cross-sector collaboration. Moreover, it envisions a 1:4 ratio between government and non-government researchers. Through this approach, Indonesia is paving the way for a new generation of researchers, well-equipped to tackle global challenges and drive national progress in science and technology.

Talent Cultivation in Research and Innovation



The goal of cultivating research and innovation talent is to recruit as many potential talents as possible, particularly university with a strong interest in research and innovation. Key initiative to attract emerging talent is the Indonesian Research and Innovation Fair (IRIFair), a final assignment research competition for undergraduate and master degree students (D-4/S-1 and S-2).

A total of 247 IRIFair participants received mentorship for their final assignment research, leading to the selection of 57 finalists across various fields, including earth, space, and marine sciences; life and nature sciences; social sciences and humanities; and technology and engineering sciences.

Additionally, throughout 2024, a range of talent development activities engaged 1,779 participants in regional scientific competitions organized by educational institutions and local governments, further strengthening the pipeline of future research and innovation leaders.

Research and Innovation Talent Mentorship

As part of its efforts to strengthen an open and collaborative research and innovation ecosystem, BRIN provides opportunities for active university students to receive mentorship from BRIN researchers through various research programs. These include the MBKM research internships, thesis research internships, research assistant roles, and the Research Thesis Support Incentive program (Barista), all designed to engage students at the undergraduate. master, and doctorate degree (D-4/S-1, S-2, and S-3) levels in hands-on research experience.

In 2024, a total of 1,057 S-1 students participated in one-semester MBKM research internships at BRIN.

Additionally, 610 students from undergraduate to doctorate degree (S-1–S-3) levels contributed to BRIN's research activities as research assistants. A further 904 final-year students completed their thesis research internships under the guidance of BRIN researchers.

Moreover, the Barista program supported 3,674 students by providing mentorship and research completion incentives. The strong participation in these programs highlights the growing interest and potential of young talent in science and technology, reinforcing BRIN's role in cultivating high-quality human resources and advancing the national research and innovation ecosystem.

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Maturation of Research and Innovation Talent

BRIN provides open access for researchers from various institutions and fields of expertise to collaborate on joint research at BRIN. Through its postdoctoral program, BRIN offers opportunities for researchers who have recently completed their doctoral studies to further develop their expertise, integrate into BRIN's research groups, and produce joint research outputs alongside BRIN researchers.

In 2024, a total of 306 postdoctoral researchers from diverse fields participated BRIN's research activities. The largest number came from the fields of life sciences and the environment (96 people), followed by nanotechnology and materials science (44 people), and energy and manufacturing sciences (30 people). Other fields with notable participation included earth and maritime sciences (23 people), health (24 people), agriculture and food (20 people), and electronics and informatics (20 people).

In addition to the postdoctoral program, BRIN fosters the maturation of research and innovation expertise through collaboration with visiting researchers/professors. These collaborations aims to strengthen BRIN's internal expertise already and open a wider access to global research networks. In 2024, a total of 46 visiting researchers/professors from various countries joined BRIN's research activities, contributing signiticantly to internationally recognized research outputs.

Through these initiatives, BRIN continues to strengthen the capacity of national researchers, expand international collaborations, and enhance the quality and relevance of research to drive scientific advancement and societal well-being.



One of the Visiting Researcher/Professor activities aimed at strengthening national researchers' expertise and capacity. Photo © BKPUK

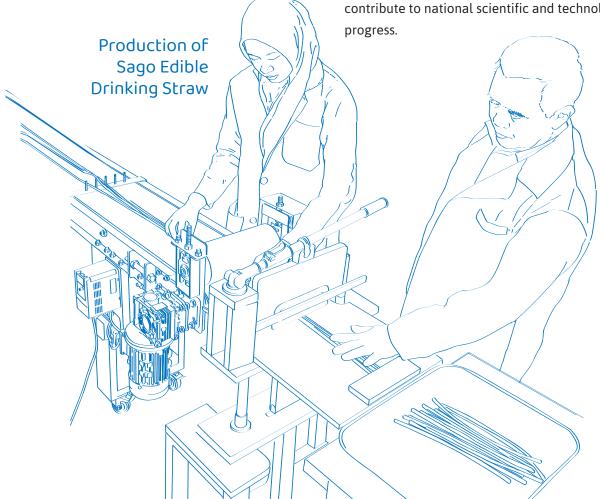
Improvement of Talent Qualifications and Capacity

BRIN is committed to accelerating the development of human resources (HR) in science and technology, particularly those with doctoral qualifications, to expedite the adoption and mastery of scientific and technological advancements.

Through its flagship Degree by Research program, BRIN offers research and innovation talent the opportunity to pursue research-based master's (S-2) and doctoral (S-3) education. In collaboration with various domestic and international universities, this program allows participants to conduct their research activities under the mentorship of BRIN's co-promoter researchers.

In 2024, the Degree by Research program enrolled 993 participants, comprising 993 participants in the Degree by Research program, consisting of 319 master's (S-2) students and 610 doctoral (S-3) students. Participation in the program continues to grow annually, reflecting strong enthusiasm among HR for advancing their research capabilities. Notably, 65 participants successfully completed their doctoral (S-3) education in 2024.

The Degree by Research program is a concrete manifestation of BRIN's commitment to strengthening Indonesia's research and innovation ecosystem through the cultivation of excellent human resources. This initiative is expected to foster greater collaboration, enhance research quality, and contribute to national scientific and technological





Strategic Infrastructure for Strengthening Knowledge-Based Economy

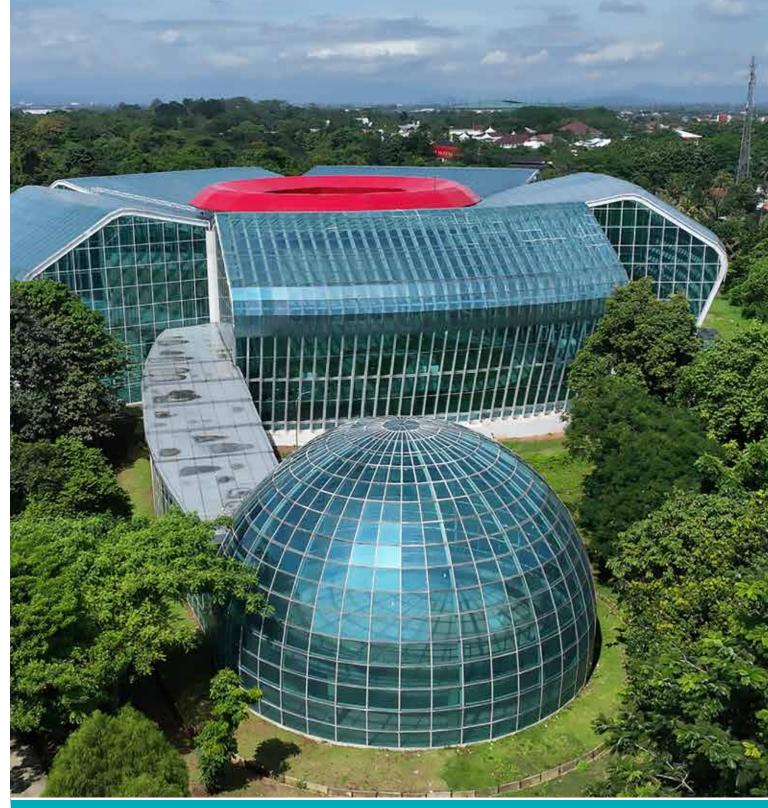
Advancements in research and innovation rely not only on the quality of human resources but also on the availability of robust infrastructure. Over time, research facilities can age and lose efficiency, making revitalization essential to maintaining their relevance and productivity. BRIN remains committed to developing a wide range of infrastructures, from laboratories to data centers, to support research in science and technology, applied technologies, space, and nuclear energy. Embracing an open platform concept, BRIN's infrastructure is designed to foster national and international collaboration, laying the groundwork for building a research and innovation-driven economy in Indonesia.

Open Research and Innovation Infrastructure

Research facilities are essential in supporting innovation. However, many existing facilities are aging, and their utilization has yet to be fully optimized. Revitalization is therefore necessary to ensure that infrastructure remains relevant, efficient, and productive. BRIN is actively developing and revitalizing facilities such as laboratories, workshops, and accredited pilot plants. Designed with an open access concept, this infrastructure is available for national and international collaboration, accelerating the advancement of technology and innovation. Through this approach, research plays a vital role in driving the growth of a science and technology-based economy.

To strengthen research capabilities and foster innovation, BRIN has successfully developed the following key infrastructures by 2024.

Infrastructure Developed by 2024						
1	Biological Data and Intellectual Property Center					
2	Indonesian Geodiversity Area, Karangsambung					
3	Integrated Tropical Biodiversity Greenhouse					
4	Appropriate Technology Laboratory					
5	Strategic Local Mineral Processing Laboratory					
6	Incubation Building & Remote Sensing Laboratory					
7	Bandung Advanced Sciences & Creative Engineering Space					
8	Earth Station for Satellite Data Control & Reception					



The Integrated Tropical Biodiversity Greenhouse is located in the Soekarno Science and Technology Area, Cibinong, West Java.
Photo © BKPUK

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Strengthening Research and Innovation Capacity

In recent years, research and innovation productivity in Indonesia has shown significant growth, driven by expanding national and international collaborations. BRIN has strategically strengthens the research ecosystem through initiatives, such as increasing scientific publications, developing intellectual property, and fostering partnerships with various global institutions. Programs like research collaboration centers, funding for research-based startup, and the application of innovations in industry further demonstrate BRIN's commitment to advancing the downstream use of research outcomes. At the regional level, the establishment of BRIDA has broaden the impact of research to support evidence-based policymaking. Through an inclusive and collaborative approach, research and innovation continue to play a crucial role in driving economic development and improving societal well-being.

Increasing Publications in Global Reputable Journals

From 2021 to 2024, researchers in Indonesia produced a total of 222,455 scientific publications, reflecting a strong and growing research culture.

BRIN ranked second globally for reputable publications based on the Scopus database 2025.

BRIN's research productivity has shown a remarkable upward trend, with publications increasing from 318 publications in 2021 to 6,644 in

2024. Moreover, BRIN's citation impact ratio relative to global citations stands at 0.97, signaling strong international recognition of its research outputs. This achievement highlights BRIN's critical role in strengthening Indonesia's research ecosystem and advancing global contributions to science and innovation.

Global Reputable Publications

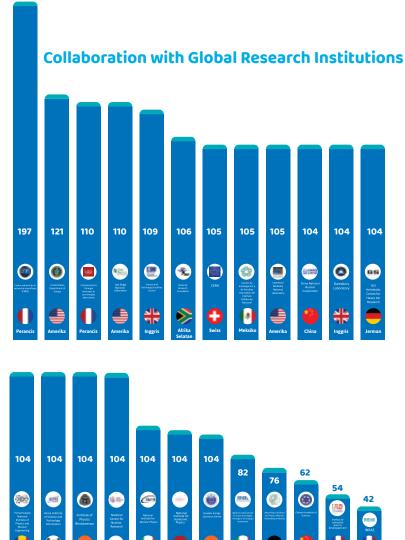


Strengthening Partnerships with Global Research Institutions

BRIN actively fosters collaborations with leading global research institutions to advance scientific publications. Between 2021 and 2024, BRIN established partnerships with prominent institutions, including CNRS France (197 publications), the U.S. Department of Energy (121 publications), as well as various laboratories and research councils across Europe, Asia, and America.

These collaborations reflect the growing international reach of Indonesian research, strengthening scientific networks and enhancing the global visibility of national research outputs. In addition, BRIN has collaborated with renowned institutions such as INFN Italy, Max Planck Germany, and the Chinese Academy of Sciences. Through these efforts, BRIN continues to play a strategic role in expanding global research ecosystem.

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Expanding Partnerships with Global Universities

BRIN has built strong collaborations with leading global universities to advance research and scientific publications. Between 2021 and 2024, the University of Tokyo emerged as a key partner with 216 publications, followed by Universiti Kebangsaan Malaysia with 163 publications, and Universiti Teknologi Malaysia with 160 publications.

These collaborations strengthen BRIN's academic network, broaden research horizons, and enhance Indonesia's contributions to global science. Through these partnerships, BRIN continues to drive research and innovation progress by fostering international cooperation.



Strengthening Partnerships with National Universities

BRIN actively collaborates with national universities in advancing scientific research. Throughout 2024, Bogor Agricultural University (IPB) emerged as the leading partner with 1,131 publications, followed by the University of Indonesia with 871 publications, Bandung Institute of Technology (ITB) with 823 publications, and Gadjah Mada University with 747

publications. Further collaborations included Padjadjaran University (466 publications), Diponegoro University (312 publications), and Lampung University (116 publications). Through these partnerships, BRIN and national universities continue to strengthen Indonesia's scientific contribution and drive the nation's progress.



Technology Innovation Patents

Between 2022 and 2024, BRIN emerged as the domestic institution with the highest number of patent applications in Indonesia, surpassing universities. The number of patent applications filed by BRIN rose sharply, from 396 in 2022 to 762 in 2023 and 931 in 2024. During this period, BRIN generated a total of 3,424 intellectual property assets, including patents, industrial designs, trade secrets (PVT), and copyrights. Notably, 113 patents have been licensed.

This achievement demonstrates BRIN's critical role in driving technological innovation, strengthening the national research ecosystem, and enhancing Indonesia's global competitiveness.

Global Collaboration Distribution

Throughout 2024, BRIN established collaborations with 81 global institutions across 18 countries, including universities, government agencies, international organizations, and the private sector entities. These collaborations span various fields, such as scientific research, technological innovation, environmental studies, and industrial development. BRIN's partners are based in countries such as the United States, the United Kingdom, France, the Netherlands, Australia, Japan, South Korea, China, and other countries. These international partnerships strengthen the research ecosystem, promote innovation, and enhance Indonesia's global competitiveness. Through these collaborations, BRIN continues to contribute to the advancement of science on the world stage.

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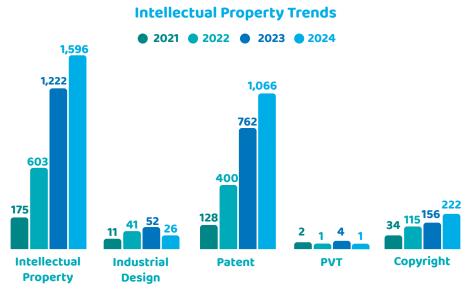


The Head of BRIN opened "The 14th Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-XIV) UNESCO" at the Sumitro Djojohadikusumo Auditorium, Thamrin Administrative Area, Jakarta. Photo © BKPUI

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Intellectual Property

BRIN has significantly increased its intellectual property proposals from 2021 to 2024. The total number of proposals rose sharply from 175 in 2021 to 1,596 in 2024. Patent applications grew from 128 in 2021 to 1,066 in 2024, while copyright applications also increased from 34 in 2021 to 222 in 2024. This growth reflects BRIN's commitment to strengthening technological innovation and expanding the impact of research outcomes.



e-Science Services

The number of services available on BRIN's e-Science Services platform (ELSA) has steadily increased each year. In 2021, there were 2,034 services, which expanded to 4,789 in 2022, 6,203 in 2023, and 8,098 in 2024. Service requests also grew significantly, rising from 15,388 in 2021 to 45,468 in 2022, 53,099 in 2023, and 62,030 in 2024. This growth highlights the increasing accessibility and utilization of research services by the public as well as BRIN's commitment to supporting research needs across Indonesia.

e-Science Services Trends





Research and Innovation Programs for an Advanced Indonesia

BRIN continues to strengthen the research and innovation ecosystem by developing infrastructure and facilities that are open to the public. In support of research and innovation toward Indonesia's Golden Years 2045, BRIN offers eight funding schemes through the Research and Innovation for an Advanced Indonesia Program (RIIM). This program is open year-round, providing opportunities for academics, researchers, and industries to access research funding. To date, 1,388 grantees have received funding through RIIM. In addition, BRIN has introduced the RIIM Award as recognition for researchers and institutions that have made significant contribution to research and innovation.

The eight RIIM funding schemes include:

- RIIM Competition 5 Health Innovation Product Testing
- RIIM Expedition 6 Agricultural Innovation Product Testing
- RIIM Invitation 7 Research Collaboration Centers
 - RIIM Startup 8 RIIM Collaboration

Quantum Physics Research 81

RIIM Expedition

RIIM Expedition is a collaborative funding program between BRIN and LPDP that supports scientific expeditions and explorations for researchers domestically and internationally. It enables researchers to collect data and specimens in compliance with regulations and in cooperation with Indonesian research institutions. In 2024, the RIIM Expedition funded 45 research projects with a total budget of IDR 16.49 billion, of which IDR 7.17 billion was allocated for the current year. Archaeology, Language, and Literature fields received the largest funding, with 17 research projects worth IDR 5.63 billion, followed by the fields of Biology and Environment, with 10 projects valued at IDR 5.08 billion. Social Sciences and Humanities received support for nine research projects, Health for four, Agriculture and Food for two, and Governance for three.

With a research duration of one to three years, this program aims to enrich academic knowledge, inform evidence-based policymaking, and strengthen Indonesia's global research presence. RIIM Expedition promotes open science principle, ensuring research outputs are accessible and contribute to sustainable development and societal well-being. The program promotes open science principles, ensuring research outputs are accessible and contribute to sustainable development and societal well-being.



Exploration of Marine Biota in Cenderawasih Bay as a Source of Future Bioactive Compounds: Drugs, Chemical Probes, Blue Gold Compounds. This exploration was conducted in the waters of Raja Ampat, Southwest Papua. Photo © Research Organization for Earth Sciences and Maritime

Sailing Day

The Sailing Day Support Facilitation initiative provides researchers, lecturers, and students with access to BRIN's research vessels for data and specimen collection. This initiative supports multidisciplinary research, including biodiversity, oceanography, marine geosciences, marine biology,

and fisheries. In 2024, 130 sailing days were conducted, supported by institutional partners that provided research vessels and scientific instrumentation. These efforts facilitate in-depth exploration of Indonesia's marine territories, from coastal to deep-sea zones.

Innovation Product Testing

In 2024, 18 proposals were submitted under the Innovation Product Testing scheme, covering three main fields: health, agriculture, and technology. Twelve proposals were related to health innovations, including pharmaceuticals, medical devices, and phytopharmaceuticals, with support from universities and private companies.

Five proposals focused on agriculture: pesticides, animal feed, superior varieties, and fertilizers.

Meanwhile, one proposal in the technology field was related to transportation, supported by PT INKA. This program demonstrates BRIN's commitment to advancing research-based innovations that support the growth and competitiveness of Indonesia's science and technology-driven industries.



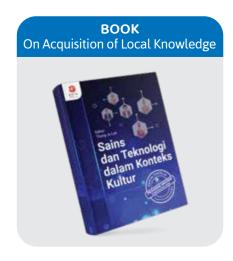
Cross-Institution Collaboration - PKR

The Research Collaboration Center (PKR) is a multidisciplinary research program initiated by BRIN to support strategic research through collaboration with academia and industry. In 2024, 25 PKRs collaborated with prominent universities such as ITB, UI, UGM, UTM, and industrial partners, including PT Kimia Farma and PT Swayasa Prakarsa. PKR focuses on various fields, including life sciences and environment, health, earth sciences and maritime, nanotechnology, electronics, nuclear, archaeology, as well as agriculture and food. Throughout 2024, PKR has produced 390 scientific publications, 25

international books, 42 technology products, and 100 patents and intellectual property rights (IPR). Additionally, there have been 134 national and international research collaboration contracts, as well as 120 external funding sources. Innovations developed include SITANGAN for Cimahi City, nanocellulose, biomass-based cosmetics, and radiopharmaceuticals for cancer therapy. Through PKR, BRIN promotes robust collaboration among academia, industry, and government, creating impactful innovations that benefit society and the economy.

Acquisition of Local Knowledge

To acquire local knowledge, 88 books, 58 non-incentive works, and 266 audiovisual products have been produced, documenting the culture and wisdom of local communities. This content attracted over 10,000 users, reflecting high public interest in local knowledge content. Covered themes included religious moderation, food security, and technology rooted in local wisdom. This program embodies BRIN's commitment to enriching nation's insight and preserving cultural identity.



Recommendations for the Establishment of BRIDA

BRIN actively support the formation of Regional Research and Innovation Agencies (BRIDA) by issuing 546 Consideration Letters (SP) to local government. Thirty-eight provinces and 506 districts/cities have received the SP. BRIDA has been established in 22 provinces and 148 districts/cities, while others are still in the legislative or consideration process. Additionally, 11 provinces and 303 districts/cities have completed the consideration phase. This initiative strengthens the regional research ecosystem, supports evidence-based policymaking, and encourages innovation-driven development across Indonesia.

Research-Based Startup Companies (PPBR)



A visitor interacts with one of the Research-Based Startup Companies (PPBR) Development Program participants, who is demonstrating a product at the InaRI Expo 2024 at the Innovation Convention Center (ICC), Cibinong, West Java. Photo © BKPUK

The Research-Based Startup Companies (PPBR)
Development Program aims to encourage the
commercialization of BRIN's research outcomes and
foster sustainable research-driven enterprises
through three stages: **pre-incubation**: initial
assessment, mentoring, business roadmap
development; **incubation**: production trials,
certification, market expansion, investor
engagement; and **post-incubation**: growth and
sustainability support.

Throughout 2024, BRIN supported 53 partners under the Collaborative Research-Based Community Empowerment (PPBR) program, resulting in 168 innovations. The program received a total funding of IDR 4.13 billion, which was allocated to support BRIN's research and empower communities across various sectors, including food, social sciences, engineering, transportation, and energy, in collaboration with 39 partners from multiple provinces. Additionally, the Research and Innovation for Society (RIIM) startup program also funded 23 startups with IDR 5.43 billion and supported 13 startups in pre-incubation. The resulting products ranged from food innovations and cosmetics to digital applications, reflecting the growing contribution of research to the advancement of innovation-based enterprises in Indonesia.

LSU-02 VTOL

Research and Innovation Capacity Building Program for Society (PKP-RIM)

The Research and Innovation Capacity Building Program for Society (PKP-RIM) is designed to expand public's access to and utilization of BRIN's research and innovation outcomes. Through training sessions and technical guidance conducted by BRIN experts, the program promotes the application of science and technology at the grassroots level. From January to September 2024, this program engaged 113,676 participants in 463 activities across various regions, with Central Java having the highest number of participants (21,864), followed by West Java (18,017), and East Java (18,050).

This program not only provides an understanding of BRIN and its innovations but also contributes to offering solutions to community issues and increasing access to scientific knowledge. From an economic perspective, BRIN's research contributes significantly to increasing the added value of local products, making them more competitive in domestic and international market. In 2024, BRIN implemented training programs spanninng from Aceh to Papua, demonstrating a strong commitment to capacity building and broadening public access to science and research-based innovations in support of inclusive national development. As a result, 94 innovations were successfully adopted by communities and ministries/agencies, along with 13 additional innovations that have strengthened domestic products competitiveness. These outcomes play a vital role in enhancing industrial performance and accelerating economic growth through applied research and local empowerment.

Grassroots Innovation Mentoring (PIAR)

The Grassroots Innovation Mentoring Program (PIAR) seeks to identify and nurture community-based innovations originating outside formal institutions like universities, government agencies, or industries. These innovations are critical for supporting SME competitiveness and solving socio-economic and cultural challenges. The mentoring provided includes product testing, scientific validation, intellectual property (IP) management, certification, and the utilization of research and innovation outcomes. Innovations generated by the community often require support from researchers to refine them and ensure they adhere to scientific standards. In 2024, 25 innovations developed by BRIN researchers were adopted by grassroots inventors to

enhance their creations, whether in the form of simple tools or sustainable technologies. Through the PIAR (Innovation Utilization Acceleration Program), BRIN facilitated a comprehensive process involving instruments preparation, appointment of review teams, awareness campaigns, both online and offline identification of community innovations, and administrative and substantive assessments.

Additionally, direct mentoring was conducted to ensure that the innovations produced have high value and impact. This initiative is expected to strengthen the innovation ecosystem, enhance industrial competitiveness, and provide tangible benefits to the broader community.

Development of Botanical Garden Areas

In 2024, the development of botanical garden across Indonesia progressed through four key stages: initiation, planning, construction, and management. Four new botanical garden areas have entered the initiation phase, while nine are currently in the planning stage. Seventeen locations, including Pucak Botanical Garden (KR Pucak) and Solok Botanical Garden (KR Solok), are under construction. Meanwhile, 18 botanical gardens, such as

Balikpapan Botanical Garden (KR Balikpapan) and Sriwijaya Botanical Garden (KR Sriwijaya), are actively managed. The national botanical garden map illustrates the geographic distribution of these initiatives across various regions. These developments play a vital role in conserving biodiversity, supporting scientific research, and enriching environmental tourism, thereby strengthening Indonesia's green ecosystem.



The greenhouse at the Bogor Botanical Garden is the result of the development of the botanical garden area and has become one of the new attractions. Photo © BKPUK

Micro Business Mentoring Based on Science and Technology

(PUMI)

The Micro Business Mentoring Based on Science and Technology (PUMI) program is an initiave by BRIN aimed at enhancing the competitiveness of micro-enterprises (MSMEs) through the application of research and innovation. It serves as a platform for micro-entrepreneurs seeking technological solutions to improve productivity, product quality, and market value. The program operates through a proposal-based system, where submissions are evaluated based on the business profile, identified

technology needs, and projected socio-economic benefits. The implementation of PUMI includes coaching clinics and personalized mentoring adjusted to the complexity and nature of of the technology being applied. Support also includes applying research-based technology, product testing, certification, and promotion. Throughout 2024, the program has supported 113 innovations for MSMEs through surveys, discussions, and follow-up plans to ensure tangible impacts for micro-businesses.



Technology Transfer Collaboration

Technology transfer is a strategic process that facilitates the dissemination and mastery of scientific knowledge and technological capabilities across institutions, industries, and individuals, both domestically and internationally. BRIN plays a pivotal role in enabling this exchange by bridging the gap between research outputs and industry needs. This process is carried out through the recruitment of experts, provision of machinery and equipment, and licensing agreements.

To align research with practical application, BRIN actively maps its research outcomes against industria demands, ensuring that technological innovations find relevance and use in real-world settings.

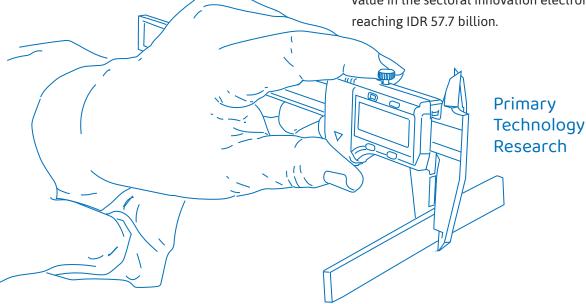
Additionally, BRIN also carries out licensing and innovation business collaborations. In 2024, 31 licensing agreements were signed for 39 intellectual property (IP) products that industry partners utilize.

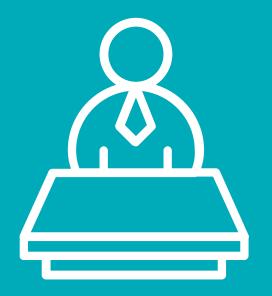
Licensing, Tax Deduction, and E-Catalog

To accelerate the utilization of research-based innovations, BRIN promotes the adoption of its technologies through licensing, Super Tax Deduction (STD) scheme, and inclusion in the sectoral e-catalog. The number of licensing agreement has increased from 23 in 2021 to 39 in 2024, reflecting growing industry interest in BRIN's intellectual property (IP). In 2024, 17 industry partners submitted 74 proposals, with 35 approved (valued at IDR 294.4 billion) and 33 under revision (IDR 127.7 billion), bringing the total proposal value to IDR 422.1 billion. Under the STD program—regulated by PMK No. 153/PMK.010/2020—BRIN collaborates with Ministry of Investment and Downstream Industry (BKPM) and Directorate General of Taxes (DJP) to facilitate tax incentives of up to 300% gross income reduction for companies conducting research and development (R&D). This program covers 11 fields and 105 research themes, including food, energy, pharmaceuticals, and defense and security. Tax deductions are granted based on R&D stages such as commercialization, patent registration, or collaboration with universities and government research institutions.

BRIN, appointed as the assessment body for STD eligibility, established evaluation standards through Standard No. 4057/II.8.5/MR/12/2023. The agency conducted comprehensive proposal assessments, industry outreach, and mentoring throughout the year. The total proposed R&D budget reached IDR 431.7 billion, with approved tax deduction assessments awaiting final approval from DJP. To support import substitution in accordance with Presidential Instruction No. 2 of 2022, BRIN also strengthens the visibility and procurement of innovations through the Sectoral Innovation Electronic Catalog.

In 2024, BRIN showcased 22 innovation products and five innovation labels in the government's electronic catalog. The activities included product registration, risk management support, and technical guidance in collaboration with the Government Procurement Policy Agency (LKPP), the Ministry of Industry, Bappenas, and industry partners. BRIN aims to enhance cross-sector collaboration, certify innovative products, and optimize Domestic Content Level (TKDN). In 2024, 46 products from 19 industry partners were reviewed, with a total transaction value in the sectoral innovation electronic catalog reaching IDR 57.7 billion





Scientific Awards and Outstanding Researchers



To honor outstanding contributions in the fields of science and technology, BRIN hosts a series of scientific awards and memorial lectures. These initiatives recognize individuals who have significantly advanced the discovery, development, and dissemination of scientific knowledge, while also encouraging continued innovation for societal benefit.

In 2024, BRIN presented the following awards and lectures: the Indonesia Innovator Lecture, Sarwono Award, Sarwono Prawirohardjo Memorial Lecture, Habibie Prize, Nurtanio Award, and Nurtanio Pringgoadisuryo Memorial Lecture, as well as the Siwabessy Award and G.A. Siwabessy Memorial Lecture. Award recipients in 2024 represented a broad range of disciplines, including trade ecosystem management, bioinformatics, and materials engineering. These honors reflect BRIN's commitment to fostering a culture of research excellence and celebrating individuals whose work drives scientific and technological progress in Indonesia. By recognizing these achievements, BRIN aims to strengthen the national research ecosystem and inspire the next generation of scientists, educators, and innovators to produce impactful solutions for societal advancement.

Indonesia Innovator Lecture

The 2024 Indonesia Innovator Lecture (IIL) Award was bestowed upon **Syaefullah Muhammad** from Syiah Kuala University for his innovation in creating a healthier trade ecosystem through a penta-helix approach. His innovation includes the development of an extractor machine capable of producing high-quality patchouli oil with optimal patchouli alcohol content, while also maximizing energy efficiency.



The presentation of the 2024 Indonesia Innovator Lecture Award by the Head of BRIN to Syaefullah Muhammad at the Innovation Convention Center, Cibinong, West Java, on August 11, 2024. Photo © BKPUK

Sarwono Award and Sarwono Prawirohardjo Memorial Lecture

The 2024 Sarwono Award was presented to **Bens Pardamean**, a dedicated practitioner, researcher, and academic from Bina Nusantara University. He was recognized for his significant contributions to the fields of information technology, bioinformatics, and science education in Indonesia. The Sarwono Prawirohardjo Memorial Lecture was delivered by **Trina Ekawati Tallei** from Sam Ratulangi University, who has made notable advances in understanding biodiversity and ecosystems, especially in the utilization of genetic resources for research and development. Her work supports the conservation and sustainable use of Indonesia's rich biological heritage.



Bens Pardamean Recipient of the 2024 Sarwono Award



Trina Ekawati TalleiPresenter of the 2024 Sarwono
Prawirohardjo Memorial Lecture

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Photo © BKPUK

Photo © BKPUK

Habibie Prize

In collaboration with the Indonesia Endowment Fund for Education (LPDP), BRIN awarded the prestigious Habibie Prize to five outstanding Indonesian scientists across five research fields. These awards celebrate their pioneering contributions to science, technology, and the humanities.

- Award in Basic Science was given to **Felycia Edi Soetaredjo** from Widya Mandala Catholic University Surabaya for her contribution to research on using biomass and clay for water environmental remediation.
- **Brian Yuliarto** from Bandung Institute of Technology received the Engineering Science Award for his research on engineering porous nanomaterials for sensor and energy applications.
- Award in Medicine and Biotechnology was presented to **Bachti Alisjahbana** from Padjadjaran University, who led the initiative toward self-reliance in infectious disease diagnosis in Indonesia.
- Anita Lie from Widya Mandala Catholic University Surabaya was awarded in Social Sciences, Economics, Politics, and Law for her dedication to education transformation through curriculum development and educational policy research.
- Award in Philosophy, Religion, and Culture was awarded to **Amin Abdullah** from UIN Sunan Kalijaga Yogyakarta, known for his contribution to developing multidisciplinary, interdisciplinary, and transdisciplinary approaches to studying religion and culture.











Recipients of the 2024 Habibie Prize. Photo ${\rm @}$ BKPUK



Nurtanio Award and Nurtanio Pringgoadisuryo Memorial Lecture

The 2024 Nurtanio Award was conferred upon Lavi Rizki Zuhal, a Professor of Aerodynamics at the Faculty of Mechanical and Aerospace Engineering, Institut Teknologi Bandung (FTMD ITB). He was recognized for his substantial contributions to advancing aerospace science and technology in Indonesia, especially in the field of aerodynamics research and development.

The Nurtanio Pringgoadisuryo Memorial Lecture was delivered by Josaphat Tetuko Sri Sumantyo, Director of the Josaphat Microwave Remote Sensing Laboratory (JMRSL) at the Center for Environmental Remote Sensing (CEReS), Chiba University, Japan. Since 2005, he has led cutting-edge research in microwave remote sensing, contributing significantly to aerospace and environmental observation technologies.

The 2024 Siwabessy Award was presented to Zaki **Su'ud**, Professor at the Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung (ITB). He was honored for his innovative work in developing cluster computers for parallel computing, which significantly enhance capabilities in nuclear reactor analysis and simulation. Meanwhile, the 2024 G.A. Siwabessy Memorial Lecture was delivered by Liem Peng Hong, a distinguished nuclear expert affiliated with Nippon Advanced Information Service (NAIS) and Tokyo City University (TCU). Specializing in neutronics, he provided an in-depth lecture on the interrelation between reactor physics, nuclear physics, and nuclear data, offering insights into the future of

Siwabessy Award and

G.A Siwabessy

Memorial Lecture



Lavi Rizki Zuhal Recipient of the 2024 Nurtanio Award



nuclear technology.

Zaki Su'ud Recipient of the 2024 Siwabessy Award



Photo © BKPUK

Josaphat Tetuko Sri Sumantyo

Presenter of the 2024 Nurtanio Pringgoadisuryo **Memorial Lecture**



Liem Peng Hong

Presenter of the 2024 **G.A. Siwabessy** Memorial Lecture





Awards BRIN Researchers

From BRIN to Employees

BRIN presents the High-Performing Researcher Award to recognize outstanding researchers who have demonstrated exceptional productivity and made significant contributions to the advancement of science and technology in Indonesia. The recipients of this prestigious award are:

1. Abo	li Wira Septama	7.	Johan Muhamad
2. Abo	dul Fikri Angga Reksa	8.	Luna Nurdianti Ngeljaratan
3. Abu	ı Muslim	9.	Rien Ritawidya
4. Dec	de Heri Yuli Yanto	10.	Risky Ayu Kristanti
5. Did	it Okta Pribadi	11.	Tri Muji Susantoro
6. Har	i Hariadi	12.	Widi Astuti

The Intellectual Property Achievement Award was presented to **Widya Fatriasari** for achieving the highest cumulative intellectual property (IP) royalty value. This award underscores the importance of innovation commercialization and the role of IP in advancing national research and development.



Recipients of the High-Performing Researcher Award Photo \circledcirc BKPUK



ANNUAL REPORT 2024 Transformation

Transformation of Research and Innovation to Build the Nation

BRIN Researchers

Awards

At the National and International Levels

BRIN researchers' dedication to research and innovation inspires young talents to continue contributing to achieving Indonesia's Golden Years 2045.











Rezzy Eko Caraka





















Yustian Rovi Alfiansah & Andina Ramadhani Putri Pane

Alfiansah and Pane were awarded a MURI record for successfully conducting a deep-sea research expedition to a depth of 7,192 meters.

Yohanes Purwanto

Yohanes is the recipient of the Mahaputra Nararya Star Honorary Award for his significant contribution to the advancement of science and technology, particularly in applying biosphere reserve concepts as a sustainable development tool in Indonesia.

Science and Technology at the national level and was ranked in the Top 2% of AI researchers worldwide, according to Stanford University. His data science, statistics, and artificial intelligence (AI) research supports sustainable development goals (SDGs). **Deliana Dahnum** Dahnum was awarded the L'Oréal-UNESCO for Women in Science 2024 for her research on coconut-based bio-jet fuel that reduces carbon emissions, utilizes local resources, and supports the production of environmentally friendly fuels. Both Fajar and Nani were honored with the Bhumandala Rupabumi Fajar Erikha & Award from BIG for their contributions and dedication to the Nani Darheni management and organization of toponymy (geographical names) in Indonesia. Natawidjaja was included in the Top 2% World Ranking Scientist list by Danny H. Natawidjaja Stanford University and Elsevier, focusing on tectonic earthquake research in various regions of Indonesia. Ratih specializes in marine and food biotechnology, it also ranked in Ratih Pangestuti the Top 2% of the World Ranking Scientists list by Stanford University and Elsevier. **Muhammad Reza Cordova** Cordova has done a lot researches on the impact of microplastics on Indonesia's marine ecosystems. He was also ranked in the Top 2% World Ranking Scientist list by Stanford University and Elsevier. Frediansyah is a researcher in food technology and processes also **Andri Frediansyah** included in Stanford University and Elsevier's Top 2% World Ranking Scientist list. Burhani's research mainly focuses on social, cultural, and religious **Ahmad Najib Burhani** studies. He was included in the Top 2% World Ranking Scientist list by Stanford University and Elsevier. Zulvikar Syambani Ulhaq Ulhaq focuses his research in ophthalmology and genetics. He was also ranked in the Top 2% of the World Ranking Scientists list. Lubis focuses on wood adhesives, wood adhesion, and polymer **Muhammad Adly Rahandi** Lubis composites. He as successfully included in the Top 2% World Ranking Scientist list. **Agung Dwi Laksono** Laksono is a researcher at the Research Center for Public Health and Nutrition who conducts impactful research for the community and policy is also ranked in the Top 2% of the World Ranking Scientists list. **ANNUAL REPORT 2024** Transformation of Research and Innovation to Build the Nation

Caraka received the Outstanding and Inspirational Youth Award in

Research Professor

The title of Research Professor represents the highest distinction awarded to individuals in research and innovation. It is conferred upon those who have demonstrated exceptional research excellence and made significant contributions to the advancement of science and technology within their specific areas of expertise.

Several BRIN researchers who have achieved the Research Professor award due to their outstanding expertise and impactful contributions to their respective scientific fields include:



Isnaeni

Isnaeni's expertise is in optics, with research on electrical energy efficiency and environmental pollution through the development of carbon quantum dots as a solution.

Erma Yulihastin

Erma developed the NAKULA method, which integrates weather prediction models and oceanography to improve rain prediction accuracy in Indonesia.

Muhammad Reza Cordova

Cordova generated important data on reducing ocean plastic waste leakage, which serves as the basis for policy development on marine waste management in Indonesia.

4 Yusmani

Yusmani focuses on plant pests and diseases, with the groundbreaking innovation of Entomopathogenic Fungi (CEP) for soybean pest control.

5 Endang Romjali

Endang's expertises are in animal breeding and genetics, with innovations in improving the genetic quality of sheep through crossbreeding local and exotic sheep to produce superior composite sheep.

Cuk Supriyadi Ali Nandar

Cuk Supriyadi developed smart grid technology to enhance the electricity system's stability and support Indonesia's energy transition.

7 Adi Purwandana

Adi focuses on internal waves and turbulent mixing in the ocean, researching the characterization of internal ocean waves and the turbulent mixing of seawater.

Heny Herawati

Herawati's research is in post-harvest technology, developing extrusion-formulation technology to process local raw materials into food and non-food products.

Muhammad Rifai

Rifai innovates in metals and alloys, using neutron scattering and synchrotron X-ray techniques to develop nanostructured metals.

A'an Johan Wahyudi

Wahyudi focuses on marine biogeochemistry, researching carbon variability monitoring to support sustainable blue economy development.

11 Didi Rosiyadi

Rosiyadi is a researches in cybersecurity, focusing on digital watermarking as a solution to cybercrime problems related to important data.

12 Ahmad Sofyan

Sofyan develops microbial—and plant-based animal feed additives to obtain key technologies for selecting, preparing, and optimizing local animal feed.

Yusuf Nur Wijayanto

Wijayanto focuses on microwaves and photonics, providing wireless broadband network services to meet community needs.

Natalita Maulani Nursam

Natalita develops materials and solar cell devices, particularly third-generation dye-sensitized and perovskite-based solar cell technologies.

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Research Professor

15 Widi Astuti

Her Research is in mineral processing and refining to support the national energy transition program.

16 Muhamad Nasir

Nasir develops multifunctional nanofibers as an environmentally friendly technological solution to replace conventional products.

17 Sik Sumaedi

Sumaedi's expertise is in quality management, proposing a new evaluation model for organizations in the private and public sectors for the application of ISO 9001.

18 Yusuf

Yusuf focuses on agricultural business systems, agribusiness, and farming institutions, proposing a reformulation of agricultural technology transfer development strategies in Eastern Indonesia.

Nasrullah Armi

Armi develops solutions for spectrum frequency scarcity in telecommunication transmission amidst the rapid growth of wireless devices.

20 Atriyon Julzarika

Julzarika develops innovations to address the limitations of static topographic data that cannot reflect current field conditions, especially in disaster areas.

21 Ocky Karna Radjasa

Ocky focuses on marine microbiology, developing symbiotic microorganisms for coral reefs to produce environmentally friendly bioactive compounds.

22 Yanuandri Putrasari

Yanuandri is a researches automotive technology, specifically developing alternative fuel injection controls to support zero net emission goals.

23 Danang Surya Candra

Danang develops satellite image data processing technology for cloud detection to monitor land cover and climate change.

24 Andri Hardiansyah

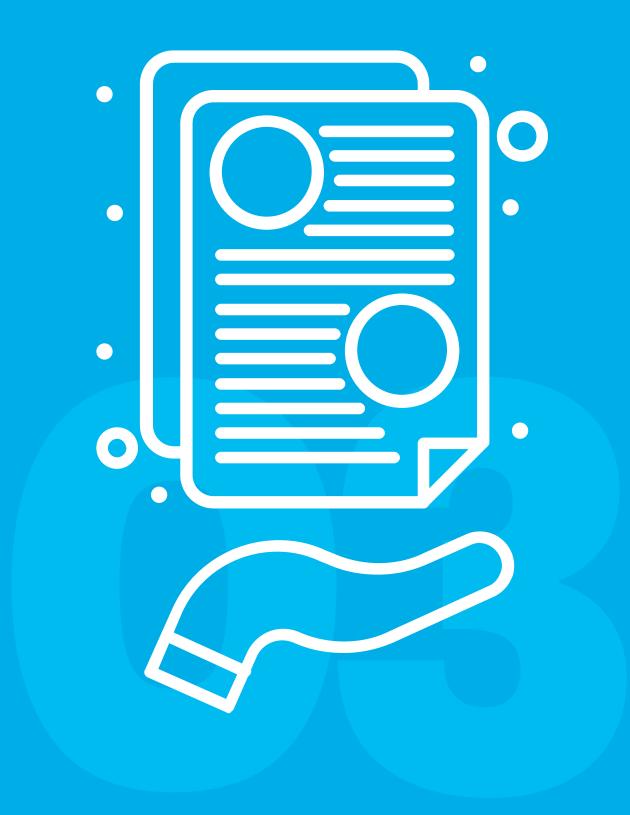
Andri is a researches in nanobiotechnology, developing nano graphene composite applications for DNA detection, Parkinson's disease therapy, and photocatalysis to address environmental pollution.



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POLICY RECOMMENDATIONS

SECTION A





Strengthening the Regional Research and Innovation Ecosystem

The Deputy for Regional Research and Innovation at BRIN continues to implement the mandate of Presidential Regulation No. 78 of 2021 by facilitating the establishment and development of Regional Research and Innovation Agencies (BRIDA) in 153 local governments that, as of 2023, had not yet received the Technical Consideration Letter.

This support involved both online and offline consultations and technical guidance, in line with Government Regulation No. 12 of 2017. The services provided include assistance in policy formulation, preparation of the Regional Science and Technology Master Plan (RIPJ PID), and institutional strengthening.

plays a role in research and innovation and offers technical recommendations to ensure regional development is grounded in science-based and evidence-based policymaking.

In 2024, key outcomes of BRIN's technical assistance to BRIDA/BAPPERIDA include:

171 Policy Recommendations

with the highest distribution in South Kalimantan (8), East Kalimantan (8), Papua (6), Bali (5), and Riau (5).

Technical Assistance

for 140 BRIDA/BAPPERIDA.

2024 Technical Coordination Meeting (Rakortek) for BRIDA to strengthen the regional research ecosystem.

Policy Recommendations Study

In 2024, BRIN provided 171 policy recommendations to local governments to support, the development of the research and innovation ecosystem. These recommendations were categorized into three main thematic areas:

Regional Competitiveness Index (IDSD)

This recommendation focuses on enhancing performance across the 12 IDSD pillars. It supports local governments in setting measurable targets within their Regional Long-Term Development Plan (RPJPD) or Regional Medium-Term Development Plan (RPJMD), and forms a basis for comprehensive research on regional competitiveness.

Regional Competitive Potential (PUD)

This study highlights key sectors that represent the strength of each region. It plays a critical role in accelerating regional development by informing action plans, such as the Regional Food and Nutrition Action Plan (RAD-PG), Disaster Action Plans, and aligning central and local policies. Additionally, it facilitates the implementation of national standards for export products, enhancing regional competitiveness in global markets.

Regional Science and Technology Master Plan (RIPJ PID)

This recommendation aims to fortify the regional research and innovation ecosystem through multi-stakeholder collaboration. As of 2024, 85% of BRIDA/BAPPERIDA were actively involved in drafting regional planning documents (dokrenda), while 69% contributed to the preparation of the RIPJ PID documents.



Policy recommendations regarding the Innovation Village Program were delivered from the Innovation Village Head, R. Siti Zuhro, to the Minister of Village, Development of Disadvantaged Regions, and Transmigration, Yandri Susanto, in Muara Tinobu Village, North Konawe District, Southeast Sulawesi, on December 11, 2024, as a manifestation of BRIN's commitment to supporting the development of innovation-based villages. Photo © BKPUK

Strengthening Regional Research and Innovation Management

In 2024, BRIN continued to strengthen the role of Regional Research and Innovation Agencies (BRIDA) in accelerating regional development and enhancing regional competitiveness, particularly in border areas. To support this goal, BRIN provided extensive technical assistance aimed at helping local government build robust and sustainable research and innovation ecosystems.

As part of this initiative, BRIN encouraged BRIDA to develop ket strategic documents, such as the Regional Science and Technology Master Plan (RIPJ PID) and to identify and establish Regional Competitive Products (PUD). These efforts are designed to reinforce regional research and innovation management and promote development based on data-driven and evidence-based policies. One important tool introduced in this context is the Regional Competitiveness Index (IDSD), which serves as the foundation for research- and innovation-oriented regional development planning. The IDSD assesses regional strength and potential, guiding local governments in setting informed and strategic policy directions.

BRIN has provided compehensive technical assistance to BRIDA, focusing on various aspects, including planning, preparation of the Regional Science and Technology Master Plan (RIPJ PID), and the utilization of the Regional Competitiveness Index (IDSD) to enhance regional competitiveness. Special attention has also been given to the management of Science and Technology (S&T) human resources, including capacity building for regional officials to formulate evidence-based

policies and the strengthening of intellectual property (IP) management systems.

A key initiative in 2024 was the Technical Coordination Meeting (Rakortek) for BRIDA, aimed at promoting best practices, enhancing the management of regional research and innovation, and ensuring the long-term sustainability of regional research ecosystems. Held on August 7, 2024, the Rakortek was attended by representatives from 179 regions, including 38 provinces, 94 districts, and 25 cities, as well as expo participants from 22 additional regions, most of which have established BRIDA or BAPPERIDA. The forum facilitated the exchange of experiences and insight, enabling regions to explore and develop their unique research and innovation potentials.

Despite notable progress has been made, challenges remain in fully implementing the formation of BRIDA and BAPPERIDA, particularly due to budget constraints and limited human resource (HR) capacity in several regions. Nevertheless, BRIN's initiatives in 2024 demonstrate a strong and ongoing commitment to fostering a sustainable regional research and innovation ecosystem. By providing structured technical assistance and promoting collaboration among local governments, BRIN, and other stakeholders, these efforts aim to accelerate regionally driven development anchored in scientific evidence and innovation. This approach aligns with BRIN's vision of formulating and implementing dataand research-based policies that are applicable and impactful across all regions in Indonesia.



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Indonesia Research and Innovation Expo 2024 (INARI)

The InaRI Expo 2024, held from August 8–11, 2024, at the ICC Cibinong, West Java showcased the vibrant landscape of Indonesian research and innovation. The event brought together 268 exhibitors from a diverse range of sectors, including small and medium enterprises (SMEs), private companies, universities, and research organizations. Drawing over 24,000 visitors, the expo served as a dynamic forum for knowledge exchange and public engagement. This expo highlighted the significant interest in Indonesia's research and innovation, featuring 19 live-streamed activities viewed by 11,402 online attendees and 113 side events involving media and related institutions.

A series of Memorandums of Understanding (MoUs) signed in critical areas such as food, agriculture, and

biotechnology, underscoring national efforts to strengthen cross-sector collaboration.

In addition to product innovation exhibitions, the event featured several supporting activities, such as talk shows, training sessions, product demonstrations, and coaching clinics, enriching the visitor experience. The expo spotlighted seven priority research clusters: food, health, energy, sustainable environment, knowledge-based economy, social resilience and society, and biodiversity.

Through InaRI Expo 2024, BRIN reaffirms its commitment to fostering interdisciplinary collaboration, promoting sustainable development, and supporting Indonesia's transition toward an innovation-driven economy.



The Head of BRIN accompanies the Chairperson of BRIN's Steering Committee during the opening of InaRI Expo 2024, which was also attended by the Minister of Women's Empowerment and Child Protection (I Gusti Ayu Bintang Darmawati), members of BRIN's Steering Committee, and senior officials of BRIN. Photo © BKPUK



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PARETO 2024: Achieving Food Self-Sufficiency and Sustainable Economic Growth

The Economic Practitioners and Researchers
Symposium (PARETO), jointly organized by BRIN and
the Indonesian Researchers Association (PPI), is an
annual forum focused on strategic economic issues
such as industrial downstreaming, food security, and
startup development in food sector. PARETO 2024,
held on November 28–29, 2024, carried the theme
"Designing Effective and Strategic Approaches to
Achieve Indonesia's Food Self-Sufficiency."

This forum brought together academics, business practitioners, and policymakers to exchange insights on strengthening Indonesia's economy through

research and innovation. Key discussions covered the development of sustainable business models, capacity building for human resource in agriculture, and strategies for industrial downstreaming of the food sector.

PARETO 2024 served as a vital platform for formulating policy recommendations to enhance food system efficiency, improve public welfare, and promote job creation through environmentally friendly food technologies. The symposium reinforced BRIN's commitment to achieving national food self-sufficiency and sustainable economic growth.



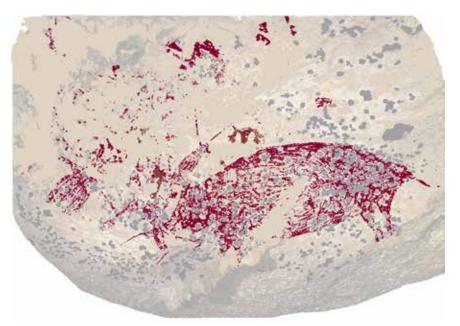
Widya Graha Building, Sarwono Prawirohardjo Science and Technology Area, Jakarta. Photo © BKPUK

BRIN and Google Collaboration: Digitizing Prehistoric Rock Art for Indonesia's Cultural Preservation

In collaboration with Google Arts & Culture, BRIN launched a digital initiative to showcase and preserve Indonesia's prehistoric rock art, including the world's oldest artwork—dated to 51,200 years ago—from Leang Karampuang Cave, South Sulawesi. This collaboration, initiated in 2020, focuses on digitizing vulnerable archaeological sites across Indonesia. Image documentation continued in 2023 across Southeast Sulawesi and East Kalimantan, with further updates in Leang Karampuang in 2024. The result is a publicly accessible collection featuring 33

curated narratives on Indonesian rock art, now available on the Google Arts & Culture platform.

This initiative helps preserve fragile cultural assets threatened by climate change and industrial development, while also expanding public access to heritage content and promoting further academic research. Looking ahead, BRIN plans to broaden the collaboration by engaging more stakeholders in both digital preservation and cultural research efforts.



Cave painting in Leang Karampuang, South Sulawesi, estimated to be 51,200 years old. Photo \odot BKPUK

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International Involvement

BRIN-JICA Collaboration for Bioeconomy



BRIN, represented by the Chairman of Research Organization for Life Sciences and Environment Head of Biological and Environmental Research, signs an agreement with the Japan International Cooperation Agency (JICA) regarding the Science and Technology Research Partnership for Sustainable Development (SATREPS) project at the Science and Technology Room, Thamrin Administrative Area, Jakarta, on January 25, 2024. Photo © BKPUK



BRIN and the Japan International Cooperation Agency (JICA) have entered into a strategic partnership through the SATREPS Project, focusing on the development of a circular bioeconomy. This initiative applies a holistic approach to utilizing agricultural waste and energy to produce sustainable biofuels and biochemicals, thereby reducing environmental impact and increasing resource efficiency. The project not only introduces innovative waste management solutions but also supports the creation of a green economic model, laying a strong foundation for BRIN and JICA to address global bioeconomy challenges through innovation.

Nuclear Technology to Address Plastic Pollution

BRIN is partnering with the International Atomic Energy Agency (IAEA) under the Nuclear Technology for Controlling Plastic Pollution (NUTEC Plastic) initiative, using nuclear technology to combat plastic pollution. The collaboration leverages electron beam machining (EBM), a process that breaks down plastic at the molecular level, facilitating easier

recycling or disposal. As a pilot country for the Asia-Pacific region, Indonesia received 2.5 MeV EBM equipment and technical training support from the IAEA. This initiative is expected to contribute significantly to reducing plastic waste and achieving sustainable development goals through innovative nuclear applications.

Strengthening Indonesia-China Research Partnership

In collaboration with the Ministry of Science and Technology of China (MOST), BRIN held the 7th China-Indonesia Joint Committee on Science, Technology & Innovation Cooperation in Beijing on November 1, 2024. This meeting focused on enhancing bilateral cooperation in health, energy, climate change, and digital transformation. This partnership aims to accelerate technology transfer, foster national innovation-driven industries, and unlock new investment opportunities in science and technology, reinforcing the strategic research alliance between Indonesia and China.

BRIN and ROSATOM Develop Radioisotopes for Health

BRIN has established a strategic collaboration with the State Atomic Energy Corporation, ROSATOM, to advance the development of radioisotopes and radiopharmaceuticals technologies in Indonesia. This partnership is a significant step toward strengthening national capacity in the production of medical radioisotopes, which are crucial for the diagnosis and treatment of cancer. This collaboration aims to enhance national capacity in medical radioisotope production, strengthen the domestic radiopharmaceutical industry, and expand patient access to more effective and safe nuclear-based cancer treatments.



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Indonesia-China Marine Research Collaboration



The Head of BRIN with participants and delegates at the 8th China-Southeast Asian Countries Marine Cooperation Forum in the Sumitro Djojohadikusumo Auditorium, Thamrin Administrative Area, Jakarta, on November 28, 2024. Photo © BKPUK

In collaboration with the China's Ministry of Natural Resources of China (MNR), BRIN officially launched the Indonesia-China Center for Ocean and Climate (ICCOC) during the 8th China-Southeast Asian Countries Marine Cooperation Forum in Jakarta. This partnership aims to strengthen bilateral cooperation in marine research and climate change, two issues of critical importance to Southeast Asia and the global community.

ICCOC is expected to enhance the sustainable use of marine resources to support the blue economy and address the climate crisis. This initiative will boost research capacity, fosters innovation in marine science, supports marine conservation, and contribute to climate change mitigation efforts.

Indonesia-UK Collaboration to Tackle Plastic Waste



In partnership with the United Kingdom, BRIN has launched the PISCES (A systems analysis approach to reduce plastic waste in Indonesian societies) project. This initiative tackels the urgent environmental challenge of plastic waste in Indonesia.

PISCES employs a systems analysis approach to examine the root causes of plastic pollution and design sustainable, long-term solutions. This project aims to improve waste management, support policy development, and contribute to a cleaner, more environmentally responsible society.

Muncar Port Beach in Banyuwangi, East Java, is one of the areas with a high level of plastic waste pollution in Indonesia. Several BRIN researchers shared their latest findings on plastic waste management with local government representatives and the communities of West Bali and East Java during the 2nd Annual Meeting of PISCES at Hotel Kokoon, Banyuwangi, on December 3, 2024. Photo © PISCES

BRIN Strengthens Indonesia's Position at ASEAN COSTI

BRIN represented Indonesia, through the National research and Innovation Agency (BRIN), actively participated in the 86th ASEAN Committee on Science, Technology, and Innovation (ASEAN COSTI-86), held from October 7–11, 2024, in Singapore. This engagement was a strategic move to solidify Indonesia's leadership role in the lead-up to ASEAN COSTI 2025. One of the key outcomes was the successful securing of High-Performance Computing (HPC) grant from the Republic of Korea, to be hosted in Indonesia. This advanced infrastructure is anticipated to be a game-changer for ASEAN in accelerating big data and artificial intelligence (AI) research, enhancing the region's scientific and technological competitivenes.

BRIN's delegation also championed greater collaboration and transparency in ASEAN COSTI business processes. Member states were encouraged to fully utilize the ASEAN Research Collaboration Platform to foster a more inclusive and integrated research ecosystem across the region. While acknowledging ongoing challenges, BRIN reaffirmed its commitment to establishing Indonesia as a global research hub. Through strengthened regional cooperation, BRIN is confident that ASEAN can produce high-quality, impactful research that will drive the economic growth and improve the well-being of its people.



Delegates of The 86th ASEAN Committee on Science, Technology, and Innovation (ASEAN COSTI-86) collaborating to utilize the Research Collaboration Platform. Photo © A*STAR Singapore

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Indonesia-Japan Deep Sea Research Collaboration

In collaboration with the Institute for Deep Sea Research and Engineering of the Chinese Academy of Sciences (IDSSE-CAS), BRIN has launched an ambitious deep-sea research mission in the Java Trench, one of Indonesia's and the world's deepest oceanic regions. Utilizing the Tan Suo Yi Hao research vessel and the Fendouzhe deep-sea manned submersible, the Expedition Java Trench 2024 focuses on studying deep-sea biodiversity, geology, and the environmental dynamics of the Sunda subduction zone. The team is analyzing biological samples, sediments, and seafloor rocks to assess the potential of deep-sea resources and

understand their broader implications for the global ecosystem. A major highlight of the expedition was the historic descent of BRIN researchers, Yustian Rovi Alfiansah and Andina Ramadhani Putri Pane, who reached a depth of 7,192 meters in the Indian Ocean aboard the Fendouzhe. This remarkable achievement earned BRIN a recognition from the Indonesian World Records Museum (MURI). This expedition marks a significant milestone in BRIN's growing partnership with IDSSE-CAS and underscores Indonesia's commitment to advancing marine science and fostering international collaboration in ocean exploration.



The Head of BRIN, along with the Coordinating Minister for Maritime Affairs and Investment, Luhut B. Pandjaitan, inspects the Tan-Suo-Yi-Hao research vessel of the People's Republic of China (PRC) used in the "Expedition Java Trench 2024" on March 22, 2024. This research involves BRIN and IDSSE-CAS researchers in the South Java Sea.

BRIN-ROSATOM Nuclear Technology Collaboration

BRIN continues to strengthen international collaboration in nuclear science, notably through enhanced cooperation with the Korea Atomic Energy Research Institute (KAERI). This partnership focuses on revitalization of the GA Siwabessy Multipurpose Reactor and the decommissioning of radioisotope and pharmaceutical production facilities at the BJ Habibie Science and Technology Area (KST) in

Serpong. Furthermore, BRIN's Accelerator
Technology Research Center (PRTA) is developing
accelerator-based nuclear technologies, including
the Development of Experimental Cyclotron in
Yogyakarta 13 MeV (DECY-13) project and the
initiation of a 30 MeV Cyclotron in Serpong for
advanced research and applications.

Optimization of Biak Ground Station with ISRO

In the space sector, BRIN collaborates with the Indian Space Research Organization (ISRO) to optimize the Biak Ground Station in Papua.

Strategically located near the equator, the station plays a critical role in satellite launches and space communications. The partnership encompasses joint research and development in satellite launch

technologies, satellite monitoring, and satellite data for disaster mitigation, climate change, and natural resource management. The collaboration strengthens Indonesia's space technology capabilities and contributes to the sustainable and inclusive global space ecosystem.



BRIN manages the Biak Ground Station, part of Biak's Field Station Area (KSL). Following the signing of a Memorandum of Understanding (MoU) with ISRO, the ground station will be gradually managed by BRIN over a three-year transition period. BRIN will operate it fully thereafter. Photo © BKPUK

Deep Sea Exploration with OceanX

BRIN has partnered with OceanX, a leading global organization in ocean exploration, to conduct scientific expeditions to explore and understand Indonesia's marine ecosystems. This collaboration leverages OceanX's state-of-the-art exploration platform, including the OceanXplorer research vessel, which is equipped with cutting-edge laboratories, manned submersibles, and underwater robotic equipment. The expeditions focus on Indonesia's deep-sea areas, which are known for their extraordinary biodiversity and hold critical information related to climate change, underwater geology, and marine biology.

This collaboration supports sustainable ocean resource management, endemic species protection, and marine biotechnology development. During the expedition, BRIN and OceanX scientists conducted seafloor mapping, deep-sea species documentation, and sample collection for further research during the expedition. Beyond generating valuable scientific data, the program also emphasizes the capacity building for Indonesian researchers through hands-on training and technology transfer, ensuring long-term benefits for national marine science capabilities.

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BRIN and KISTI Collaboration in Data Technology

BRIN has partnered with the Korea Institute of Science and Technology Information (KISTI) to optimize data and information technology use and develop supporting infrastructure in Indonesia. This collaboration aims to bolster national capacity in managing large-scale data and integrating advanced technologies such as artificial intelligence (AI), high-performance computing, and data

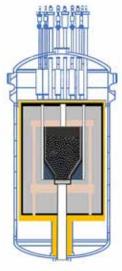
analytics to support multidisciplinary research and innovation. KISTI contributes through technical support, sharing expertise in IT infrastructure for diverse field, including science, health, environment, and energy. Meanwhile, BRIN leverages this collaboration to enhance human resource capabilities, accelerate digital transformation, and and establish resilient national data infrastructure.



The Vice Head of BRIN, alongside the President of the Korea Institute of Science and Technology Information (KISTI), signs a Memorandum of Understanding (MoU) at the Innovation Room, Thamrin Administrative Area, Jakarta, on June 12, 2024. Photo © BKPUK

BRIN and INET Tsinghua Develop HTGR Reactor Technology

BRIN has partnered with the Institute of Nuclear and New Energy Technology (INET) at Tsinghua University, China, to jointly develop High-Temperature Gas-Cooled Reactor (HTGR) technology through a joint laboratory program. This initiative is a part of a joint laboratory program focused on promoting HTGR clean, and sustainable energy source for Indonesia. HTGR reactors offer high thermal efficiency, excellent safety performance, and flexibility in industrial applications. The collaboration involves material research, reactor design, safety testing, and heat management optimization. INET supports the program by providing technical guidance and trainin, contributing to Indonesia's long-term energy innovation strategy.



The main components of the power and steam generation reactor for industry (PeLUIt) are fuel, coolant, reflectors, control rods, and other components.

Photo © Nuclear Engineering and Design Journal (2023)

BRIN and PET IC UNN Develop FAPI for Cancer Diagnosis & Therapy

In the field of nuclear medicine, BRIN is working with the PET Imaging Center at the University Hospital of Northern Norway (PET IC UNN) to develop a novel compound: Fibroblast Activated Protein Inhibitor (FAPI). This radiopharmaceutical agent targets activated fibroblast proteins in tumor environments and allows for precise cancer detection using Positron Emission Tomography (PET).

Beyond diagnostics, FAPI shows promise in targeted radionuclide therapy, delivering radiation directly to cancer cells while sparing healthy tissue. BRIN leads the efforts in radio-pharmaceutical production, while PET IC UNN contributes through imaging support and clinical protocol development. This collaboration also includes research on FAPI's safety and effectiveness across multiple cancer types.

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BRIN and KITECH Strengthen Renewable Energy and Sustainable Manufacturing Research

BRIN has formed a strategic partnership with the Korea Institute of Industrial Technology (KITECH), South Korea, to enhance research ini renewable energy technologies and sustainable manufacturing. This collaboration covers a broad spectrum of areas including carbon neutrality, emission reduction, biofuels, bioenergy, photovoltaics, wind energy, microgrids, electrical systems, and charging stations development. Additionally, the partnership supports innovation in non-conventional oil and gas production and promotes locally sourced, environmentally friendly manufacturing. By improving industrial efficiency and promoting local content, the collaboration aims to elevate Indonesia's competitiveness in the global market by utilizing local raw materials and environmentally friendly production processes.



BRIN, represented by the Head of Research Center for Energy Conversion and Conservation, Tata Sutardi, signs a Memorandum of Understanding (MoU) with the Korea Institute of Industrial Technology (KITECH) at the B. J. Habibie Science and Technology Area, Serpong, November 26, 2024. Photo © BKPUK

BRIN and UNSCEAR Conduct Radiation Exposure Survey to Evaluate Impacts in Indonesia

BRIN, in collaboration with the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), conducted a national radiation exposure survey to assess the impact of ionizing radiation on public health and the environment. in a global radiation exposure survey program to collect and analyze radiation exposure data across various regions of Indonesia. This program involves collecting data from diverse regions, including natural high-radiation areas, nuclear industrial zones, and both urban dan rural settings. The data will be analyzed to produce a comprehensive national profile of radiation exposure, contributing to better-informed policies on radiation safety, environmental protection, and public health risk management.

BRIN-Swinburne Collaboration on Advanced Technology Research

BRIN has established a long-term research partnership with Swinburne University of Technology, Australia, focusing on cutting-edge fields such as space science, nanotechnology, quantum technology, as well as materials and metallurgy. This partnership aims to strengthen Indonesia's research and innovation ecosystem by

leveraging the technological expertise of both institutions. This collaboration involves joint research initiatives, researcher exchanges, and collaborative laboratories, aimed at accelerating innovation in space science, energy, manufacturing, and communication. This effort supports Indonesia's vision of becoming a world-class research hub.

BRIN-Tongji University Researches Geology of the Sunda Shelf

In collaboration with Tongji University, China, BRIN is investigating the geological features and dynamics of the Sunda Shelf, a key region in Southeast Asia's environmental history. This collaboration aims to enhance scientific understanding of climate change, sea-level rise, and marine geological evolution. The Sunda Shelf plays a crucial role in geological history, climate change, and the evolution of marine environments in Southeast Asia. Findings from this study will contribute to disaster risk reduction, climate resilience, and sustainable development policies in Indonesia. Employing a multidisciplinary approach and cutting-edge technology, this collaboration is poised to make a significant impact on regional environment managemeent and global scientific knowledge.



Zhifei Liu, Director of the State Key Marine Geology at Tongji University, presenting at the Joint Workshop organized by Research Center for Geological Disaster at the Samaun Samadikun Science and Technology Area, Bandung, August 23, 2024. Photo © BKPUK

BRIN-Bridgestone-Kyushu University Tackle White Root Rot Disease in Rubber Plants

BRIN has partnered with Bridgestone Corporation and Kyushu University, Japan, to address White Root Rot Disease (WRRD) in rubber plants, an agricultural threat that can reduce productivity by up to 50%. The collaboration integrates biocontrol methods, early detection technology, and eco-friendly innovations to develop sustainable disease management systems. The initiative aims to support the long-term health of Indonesia's rubber industry, ensuring its productivity and sustainability. The partnership also serves as a model for international cooperation in combating plant disease, with potential applications acrross rubber-producing regions worldwide.

BRIN-UTP Develop LTJ Purification Technology



Representatives from Universiti Teknologi Petronas (UTP), Malaysia, visit the Research Center for Nuclear Material and Radioactive Waste Technology Facility at the B. J. Habibie Science and Technology Area, Serpong, November 19, 2024. Photo © BKPUK

In collaboration with Universiti Teknologi Petronas (UTP), Malaysia, BRIN is advancing research in Rare Earth Elements (REE) Carbonate processing technology, focusing on the extraction and purification of Non-Radioactive Rare Earth Oxide (REO). The partnership aims to develop efficient, clean, and radioactive-free methods for processing rare earth metals (LTJ) into usable REO materials. This collaboration supports critical mineral indepence and the development of high-tech industries in both Indonesia and Malaysia. It is strategically aligned with regional goals to minimize raw material exports, maximize value-added production, and build a sustainable downstream rare earth ecosystem in Southeast Asia.

BRIN-UPHF-CNRS Develop Sustainable Transportation

BRIN, in partnership with Université Polytechnique Hauts-de-France (UPHF) and Centre National de la Recherche Scientifique (CNRS), France, has launched a Joint Research Laboratory dedicated to the development of advanced electronics and informatics for sustainable transportation systems. This collaboration is focused on creating environmentally friendly, energy-efficient, and technologically innovative transportation solutions. A key objective is to generate intellectual property, including patents and licenses, which can benefit industries in both Indonesia and France. This initiative reinforces Indonesia's role in gloval innovation networks and contributes to building a competitive and sustainable transport sector.



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BRIN Introduces Plant Breeding Research at SABRAO-CSSP

BRIN took part in the South Asian Breeders Association-Crop Science Society of the Philippines (SABRAO-CSSP) conference to present its latest innovations in plant breeding. This participation marked a key step in BRIN's mission to address global agricultural challenges such as climate change, food security, and agricultural productivity. By showcasing breakthroughs in developing climate-resilient, high-yield plant varieties, BRIN also strengthened its international research collaboration network, engaging with leading research institutions and universities from Asia, Oceania, and beyond.

BRIN-Chiyoda Develop Mo-99/Tc-99m Radioisotope Technology



In collaboration with Chiyoda Technol Corporation, Japan, BRIN is advancing the production of Molybdenum-99 (Mo-99) and Technetium-99m (Tc-99m) extraction technology. This collaboration aims to strengthen Indonesia's independence in radioisotope production, reduce reliance on foreign supply, and position Indonesia as an exporter of Mo-99/Tc-99m in the Asia-Pacific region. The development of this technology also supports the national nuclear industry and opens up opportunities for innovations in cancer therapy, medical imaging, as well as industrial and environmental applications. Moving forward, BRIN and Chiyoda Technol Corporation will develop a long-term development roadmap and enhance human resources capacity in radioisotope technology.

BRIN-NEC Power Develop Energy-Based Waste Management

BRIN has partnered with NEC Power Co., Ltd to develop a thermal waste-to-energy management system, specifically designed for urban and regional waste volumes. This innovative technology transforms waste into usable energy using compact thermal generators, providing a sustainable solution

for local governments. The initiative aims to support clean energy goals, promote environmentally friendly waste processing, and meet the energy demands of regencies and cities in a sustainable manner.

BRIN-ISOL Develop 0.6T MRI Based on TKDN

BRIN has collaborated with ISOL Technology Inc. from South Korea to develop a 0.6 Tesla MRI device that meets Indonesia's Domestic Component Level (TKDN) standards. This collaboration seeks to create affordable, easy-to-operate, and low-maintenance medical imaging technology for healthcare facilities in underserved areas in Indonesia. Beyond MRI, the partnership also explores advancements in PET-MRI and High-Intensity Focused Ultrasound (HIFU) technology. These efforts support Indonesia's medical equipment indepence, improve national healthcare access, and contribute to local industry growth. strengthen the local medical industry, and provide direct benefits to communities in rural areas.



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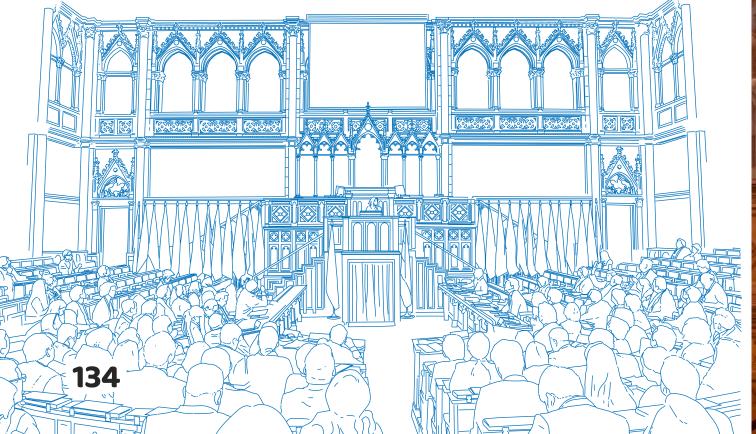
World Science Forum (WSF) 2024

Indonesia has officially been selected as the host of the 12th World Science Forum (WSF) in 2026, a global recognition announced at the closing ceremony of the 11th WSF held at the Hungarian Parliament Building in Budapest on November 23, 2024. This prestigious biennial event brings together the global scientific community, policymakers, and the public to address the world's most pressing challenges through science.

The Indonesian delegation, led by Nur Tri Aries Suestiningtyas, Executive Secretary of BRIN, played a key role in securing this opportunity. Indonesia was selected through a rigorous selection process, competing with the Turkish Academy of Sciences and Vietnam, showcasing its growing influence and commitment to science diplomacy.

With the theme "Science for Global Resilience and Equity", Indonesia will focus the 2026 forum on sustainability, equity in science, and inclusive policy transformation. During bilateral meetings with the President of the Hungarian Academy of Sciences (MTA), Indonesia reaffirmed its dedication to promoting openness, equality, and academic freedom, values reflected in the Declaration of the 11th WSF in 2024.

Jakarta will serve as the host city for WSF 2026, welcoming scientiests, decision-makers, and thought leaders from across the world. This forum is expected to strengthen Indonesia's role as a global innovation hub and highlight its leadership in adressing global challenges through scientific cooperation and policy solutions. By hosting the WSF, Indonesia continues to position itself at the forefront of international science dialogue, emphasizing the critical role of science, technology, and innovation in shaping a resilient and equitable future for all.





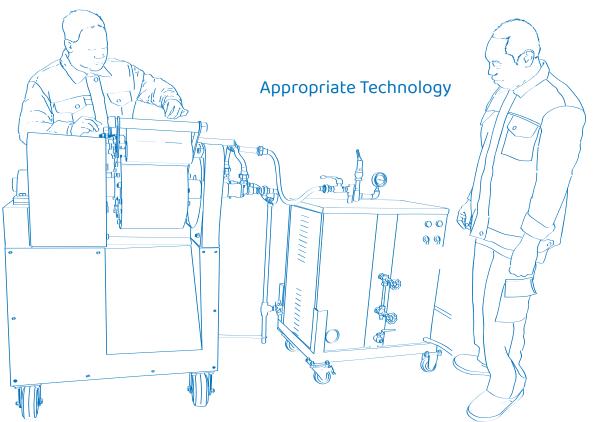
GOVERNANCE

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GOVERNANCE

Good governance is fundamental to driving institutional performance and ensuring transparency. BRIN is committed to continuously strengthening its governance practices through a range of initiatives, from administrative simplification to enhanced oversight archiving system. BRIN also champions transparency by promoting public access to information and continuously improving service quality. These efforts are reinforced by regular evaluations, reflected in updated awards, reform indexes, and performance metrics, as part of its pursuit of institutional excellence.

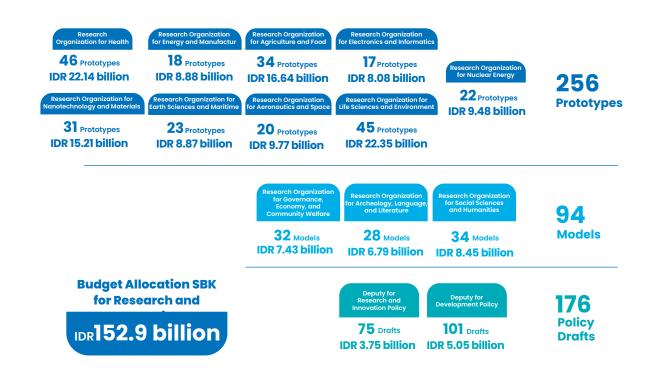


Simplification of Research and Innovation **Funding Administration**

To enhance efficiency in financial management, BRIN has implemented the Standard Output Cost (SBO) system for Research and Innovation activities in accordance with Minister of Finance Regulation Number 92 of 2024. This implementation covers 14 out of 22 budget units (77.28%) and focuses on three outputs: prototypes, models, and policy drafts. With a total budget of IDR 152.9 billion, BRIN aims to deliver 256 prototypes, 94 models, and 176 policy drafts. Funding distribution is tailored to the strategic focus of each research organization. For instance, the Research Organization for Health develops 46 prototypes with a budget of IDR 22.14

billion, while the Research Organization for Life Sciences and Environment produces 45 prototypes with a budget of IDR 22.35 billion.

The Research Organization for Social Sciences and Humanities produces 34 models with a budget of IDR 8.45 billion. Additionally, the Deputy for Research and Innovation Policy as well as Deputy for Development Policy contribute to policy research with 176 policy drafts, supported by a budget of IDR 8.8 billion. This initiative is expected to significantly enhance the efficiency, effectiveness, and impact of research and innovation efforts across Indonesia.



BRIN as a Policy Draft Supplier for Ministries and Agencies

BRIN has played a pivotal role as a key provider of policy drafts for ministries and government agencies in Indonesia. Between 2022 and 2024, through the Deputy for Development Policy, BRIN produced 178 policy drafts that have been utilized by various government institutions utilized to support the formulation and implementation of strategic policies.

The number of policy drafts produced has shown a significant upward trend. In 2022, BRIN drafted 20 policy documents, which rose to 28 in 2023, and significantly increased to 130 policy drafts in 2024.

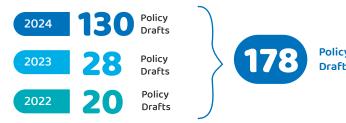
This growing contribution illustrates BRIN's commitment to integrating scientific research into public policy, ensuring that national development is

guided by rigorous analysis and aligned with Indonesia's long-term interests.

These policy drafts have addressed a wide range of critical national issues, including the management of Borobudur as a cultural heritage site, climate financing following the SB60 and SBSTA60 negotiations, and the protection of Indonesian migrant workers in the fisheries sector.

BRIN's continued contribution to research- and innovation-based policy formulation is expected to further strengthen the integration of science and public policy, fostering more evidance-based development initiatives alligned with national interests.

Trend in Policy Draft Formulation



Results of Archival Oversight for 2024

According to the official letter from the Head of the National Archives of the Republic of Indonesia (Nomor T-AK.01.00/6422/2024, dated December 30, 2024), BRIN achieved outstanding results in the Archival Oversight assessment. The institution

received score of 92.87 for both external oversight and internal verification, placing it in the "AA" (Very Satisfactory) category. In addition, BRIN's level of digitalization in archival management reached a score of 80.42, which is classified as "A" (Satisfactory).

Governance Transformation

BRIN continues to demonstrate a strong commitment to transparent, accountable, and quality-oriented governance. Achievements in financial management, planning, procurement, and oversight underscore BRIN's solid and competitive performance.

In 2024, BRIN received an unqualified opinion (WTP) in its financial report. The institution recorded a budget performance rate of 92.94 and achieved a national development planning index score of 96.51.

In the procurement, BRIN attained an index score of 89.94, while the maturity level of the internal government control system reached 3.29 out of 4. Performance Accountability level scored 71.87, and Legal Reform received a perfect score of 100.

For public service, BRIN earned a 4.69 out of 5 rating from Ministry for Administrative and Bureaucratic Reform (KemenPANRB), along with an "Informative" rating in Public Information Disclosure.



Submission of the Audit Report by the Audit Board of the Republic of Indonesia (BPK RI) on BRIN's 2023 Financial Statements by Chairperson Isma Yatun, held at the Sumitro Djojohadikusumo Auditorium, Thamrin Administrative Area, Jakarta, on 9 July 2024. Photo © BKPUK

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Meanwhile, the Indonesian Ombudsman assessed BRIN's public service compliance score at 87.48, categorized as high quality. This evaluation covered four service units at BRIN, namely the Directorate for Repositories, Multimedia, and Scientific Publishing; the Directorate for Research and Innovation Funding; the Directorate for Laboratory Management, Research Facilities, and Science and Technology Park; and the Directorate for Research and Innovation Partnership. Additionally, BRIN received a proactive award for the maturity of its Goods and Services Procurement Unit (UKPBJ), achieving a Level 3 rating, signifying a proactive and forward-thinking approach.

BRIN Governance Achievements

FINANCIAL REPORT Audit Opinion from Audit Board of the Republic of Indonesia	WTP	4.69/5	PUBLIC SERVICE PERFORMANCE MONITORING & EVALUATION Ministry of Administrative and Bureaucratic Refor Excellent Service	m R
BUDGET PERFORMANCE As of January 2025	92.94	87.48	PUBLIC SERVICE COMPLIANCE SCORE Ombudsman of the Republic Indonesia High Quality	:
NATIONAL DEVELOPMENT PLANNING INDEX Very Good	96.51	INFORMATIVE	PUBLIC INFORMATION DISCLOSURE Central Information Commission RI	
MATURITY LEVEL Government Internal Control System	3.29/4	89.94	PROCUREMENT GOVERNANCE INDEX Index	
PERFORMANCE ACCOUNTABILITY LEVEL BB (Very Good)	71.87	92.87	ARCHIVAL OVERSIGHT AA (Very Satisfactory)	
LEGAL REFORM Index AA (Excellent)	100	Level 3	UKPBJ MATURITY AWARD Proactive	

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BRIN Wins

Public Information Disclosure Award

At the 2024 Public Information Disclosure Award (KIP), BRIN was honored with the third-highest recognition in the category of State Institutions and Non-Ministerial Government Institutions, achieving a score of 96.15. The award was presented by the Chairman of the Central Information Commission, Donny Yoesgiantoro, to BRIN's Executive Secretary, Nur Tri Aries Suestiningtyas.

This achievement serves as a strong motivation for BRIN to further enhance its public information disclosure practices, particularly in the fields of research and innovation. It also reinforces BRIN's commitment to ensuring transparent and accessible public information.

By embracing opennes, BRIN continues to strengthen its role as a driving force in advancing research and innovation, while promoting greater accountability and encouraging public engagement.

Public Information Disclosure Award (KIP)



The Executive Secretary of BRIN, Nur Tri Aries Suestiningtyas, receives the award from the Chairman of the Central Information Commission, Donny Yoesgiantoro, at the Public Information Disclosure Award (KIP) 2024 event held at the Movenpick Hotel Jakarta on December 17, 2024. Photo © Central Information Commission (KIP)





BRIN from Various
Perspectives



The creative economy can strengthen the downstream side of food products through innovative business models and the commercialization of knowledge-based creative products. At the Ministry of Creative Economy (Bekraf), we focus on the downstream activities, working closely with BRIN to ensure our policies are research and data-driven.

Teuku Riefky Harsya Minister of Creative Economy



step to unlock the potential of our cultural heritage, particularly through archaeological research and the exploration of cultural sites across Indonesia. Cultural research is a key to redefining our national identity, as Indonesia is one of the world's oldest civilizations.

— Fadli Zon
Minister of Culture



BRIN's innovations are expected to benefit the public, enhance national competitiveness, and strengthen Indonesia's independence. We are building a more advanced Indonesia together, through research and innovation, to face the future.

— Budi Sadikin
Minister of Health



I appreciate the ongoing implementation of bureaucratic reform at BRIN, which continues to improve. I encourage BRIN to maintain its commitment to continuous enhancement, particularly in implementing the Government Agency Performance Accountability System (SAKIP) and broader reform efforts, ensuring real impacts for the public and stakeholders.

— Rini Widyantini Minister of Administrative and Bureaucratic Reform (PANRB)



Technology and innovation are key drivers of economic growth. BRIN plays a crucial role in this journey and must be empowered further. Cross-sector collaboration is a essential to shaping the future of innovation, and BRIN is becoming increasingly recognized for its contribution to Indonesia's future.

— Ilham Akbar Habibie Chairman of the Board of Trustees. The Habibie Center



BRIN must continue expanding the reach of Indonesian innovations and strengthening inter-institutional synergy to produce impactful solution for society.

Arif SatriaRector of IPB University



Being named among BRIN's top 24 collaborators is a testament to the hard work of UNJ's academic community. Our strong partnership with BRIN has opened strategic research opportunities. This success motivates us to continuosly improve our research and innovation quality.

— Komarudin Rector of UNJ



Our collaboration with BRIN in livestock-based food technology is a strategic move to elevate research quality. Many Fapet UGM alumni are now contributing at BRIN, proving the synergy between academia and research. We hope this collaboration continues to grow and brings positive impact to animal science and the food industry in Indonesia.

Budi Guntoro Dean of the Faculty of Animal Science, UGM

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BRIN has tremendous potential with its research tool and talented personnel. We're collaborating through education, research, and community service, including student involvement and MBKM programs, to strengthen our partnership and develop impactful innovations.

— Iman Rahayu
Dean of FMIPA, UNPAD



Joining BRIN's Talent Management in 2024 was a valuable experience. I contributed to nanomaterials research, authored a Scopus Q1 paper, worked on patents, and mentored MBKM students. t has been a meaningful journey in advancing nanotechnology.

Fahrialdi
 Research Assistant at BRIN
 Universitas Prasetiya Mulya



BRIN has provided me with incredible learning opportunities. The Barista program supported my tuition, research funding, lab access, and expert mentoring, which enabled me to optimize biomass pretreatment and publish in international journals.

Sumiati Simanullang
 Awardee of the Barista Program BRIN
 IPB University



I'm grateful for the Barista Program BRIN. It offers not only financial support but also collaboration opportunities with top researchers and access to BRIN's advanced genomic facilities. It inspires me to keep growing in research.

Chindy Nur Rosmeita
 Awardee of the Barista Program BRIN IPB University



We're proud to join Indonesia Science on Screen at InaRI Expo. Celebrating science communication through engaging visual media is a powerful way to expand access to science. We applaud BRIN's commitment to enhancing science literacy in Indonesia.

Debora Marizi Kezia
 Science Film Festival by Goethe-Institut



I commend BRIN for its support in providing virtual reality (VR) tools that have greatly contributed to disaster mitigation education for elementary school students in Cilacap. We hope that future developments will cover a wider range of disaster scenarios, enabling children to be better prepared for potential threats in high-risk areas such as Cilacap.

Kanto
 Head of Primary Education Division,
 Department of Education and Culture, Cilacap Regency



BRIN should serve as a think tank that fosters industry innovation, especially for farmers and stakeholders, by using technology to boost productivity and harvest yields.

Agus Priambodo
 General Manager, Djatiroto Sugar Mill



I'm glad to have met incredible researchers and shared my own work. I hope IRIFAIR continues and becomes a catalyst for nurturing young talents passionate about research.

— **Lyna** College Student

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01 Thamrin

Bacharuddin Jusuf Habibie

Gd. B.J. Habibie, Jl. M.H. Thamrin 8, Jakarta 10340

02 Gunung Sindur

Soedjono Djoened Poesponegoro

Jl. Pendidikan, Gunung Sindur, Bogor, Jawa Barat 16340

03 Rawamangun

Harsono Wiryosumarto

Jl. Pemuda Persil 1, Jakarta 13220



Science and Technology Park

KST

01 Serpong

Bacharuddin Jusuf Habibie

Jl. Raya Puspiptek 60, Tangerang Selatan, Banten 15310

02 Cibinong

Soekarno

Jl. Raya Jakarta-Bogor KM 46, Cibinong, Jawa Barat 16911

03 Cisitu

Samaun Samadikun

Jl. Cisitu Sangkuriang, Bandung, Jawa Barat 40135

04 Tanjung Bintang

Iskandar Zulkarnain

Jl. Sutami KM15, Tanjung Bintang, Lampung Selatan, Lampung 35361

05 Lombok

Kurnaen Sumadiharga

Jl. Senggigi, Malaka, Pemenang, Lombok Utara, Nusa Tenggara Barat 83352

06 Gunung Kidul

Umar Anggara Jenie

Jl. Raya Jogja-Wonosari KM 31, Gunung Kidul, D.I Yogyakarta 55861

07 Surabaya

Said Djauharsjah Jenie

Jl. Hidro Dinamika, Keputih, Surabaya, Jawa Timur 60112

08 Gatot Subroto

Sarwono Prawirohardjo

Jl. Gatot Subroto 10, Jakarta 12710

09 Rumpin

Jacob Salatun

Jl. Raya Lapan Sukamulya, Rumpin, Bogor, Jawa Barat 16350

10 Pasar Jumat

Gerrit Augustinus Siwabessy

Jl. Lebak Bulus Raya 49, Jakarta 12440



Science, Technology, and Education Park

KSTE

01 Babarsari

Achmad Baiguni

Jl. Babarsari, D.I Yogyakarta 55281

Science Park KS

01 Rancabungur

Ibnoe Soebroto

Jl. Cagak Satelit 8, Rancabungur, Bogor, Jawa Barat 16310

02 Tarogong

R. Sunaryo

Jl. Raya Lapan Mekarsari 2, Tarogong, Bogor , Jawa Barat 16350

03 Mlati

Subandono Diposaptono

Jl. Grafika Sekip 2, D.I Yogyakarta 55284

04 Ancol

Aprilani Soegiarto

Jl. Pasir Putih Raya 1, Jakarta 14430



01 Bogor Botanical Garden

Jl. Juanda 54, Bogor, Jawa Barat 16122

02 Purwodadi Botanical Garden

Sembung Kidul, Purwodadi, Pasuruan, Jawa Timur 67163

03 Pontianak Botanical Garden

Jl. LAPAN Perjuangan 1, Siantan, Mempawah, Kalimantan Barat 78352

04 Eka Karya Botanical Garden

Candikuning, Baturiti, Tabanan, Bali 82191

05 Cibodas Botanical Garden

Sindanglaya, Cipanas, Cianjur, Jawa Barat 43253

06 Cibinong Botanical Garden

Jl. Raya Jakarta-Bogor KM 46, Cibinong, Jawa Barat 16911

07 Sukendar Asikin Geodiversity Area

Jl. Karangsambung KM 19, Kabupaten Kebumen, Jawa Tengah 54353

08 Baron Marine Biota Conservation Area

Ngresik, Kanigoro, Gunung Kidul , D.I Yogyakarta 55871

Field Station Area KSL

01 Timau National Observatory

Bitobe, Amfoang Tengah, Kupang, Nusa Tenggara Timur

02 Parepare Ground Station

Jl. A. Yani KM 6, Soreang, Parepare, Sulawesi Selatan 91131

03 Agam Ground and Observation Station

Koto Rantang, Palupuh, Agam, Sumatera Barat 26151

04 Biak Ground Station

Jl. Goa Jepang, Samofa, Biak Numfor, Papua 98118

05 Biak Spaceport

Desa Soukobye, Biak Numfor, Papua

06 Dawuan Experimental Garden

Jl. Raya Kalijati KM 9, Subang, Jawa Barat 41270

07 Anak Tuha Experimental Garden

Bumi Aji, Anak Tuha, Lampung Tengah, Lampung 34161

08 Ciater Experimental Garden

Ciater, Subang, Jawa Barat

09 Rancamaya Experimental Garden

Jl. Bojong Kerta 21, Bogor, Jawa Barat 16720

10 Cipanas Experimental Garden

Palasari, Cipanas, Cianjur, Jawa Barat 43253

11 Pamengpeuk Rocket Test Station

Jl. Cilauteureun, Pameungpeuk, Garut, Jawa Barat 44177

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01 Raden Saleh

Doddy Achdiat Tisna Amidjaja Jl. Raden Saleh Raya 43, Jakarta 12710

02 Pasar Minggu

Raden Pandji Soejono

Jl. Condet Pejaten, Jakarta 12510

03 Bogor

Kusnoto Setjodiwirjo

Jl. Juanda 18, Bogor, Jawa Barat 16122

04 Djunjunan

Jl. Dr. Djunjunan 133, Bandung, Jawa Barat 40173

05 Tilong

Desa Oelnasi, Tilong, Kupang Tengah, Nusa Tenggara Timur

06 Palembang

Jl. Kancil Putih, Lrg. Rusa, Demang Lebar Daun, Palembang, Sumatra Selatan

07 Denpasar

Jl. Raya Sesetan 80, Denpasar, Bali 80223

08 Makassar

Jl. Pajjaiyang 13, Sudiang, Makassar, Sulawesi Selatan 90242

09 Jayapura

Jl. Isele, Waena Kampung, Jayapura, Papua 99358

10 Banjarmasin

Jl. Gotong Royong II, Banjarbaru, Kalimantan Selatan

11 Manado

Jl. Pingkan Matindas 92, Manado, Sulawesi Utara 95128

12 Medan

Naniek Harkantiningsih

Jl. Seroja Raya, Gang Arkeologi, Medan, Sumatra Utara 20134

13 Magelang

Muhilal

Desa Kavling Jayan, Borobudur, Magelang, Jawa Tengah 56553

14 Salatiga

M.F. Sustriayu Nalim

Jl. Hasanudin 123, Salatiga, Jawa Tengah 50721

15 Tawangmangu

Soetarman

Jl. Raya Lawu 11, Tawangmangu, Karanganyar, Jawa Tengah 57792

16 Pontianak

Jl. 28 Oktober, Pontianak Utara, Pontianak, Kalimantan Barat 78241

17 Ambon

Max Adolf Manuputty

Jl. Namalatu, Latuhalat, Ambon, Maluku 97118

18 Ambon

Atjep Suwartana

Jl. Y. Syaranamual Guru Guru Poka, Ambon, Maluku 97233

BRIN LOCATION



CLOSING STATEMENT

BRIN's transformation in research and innovation represents a concrete step toward strengthening the national research and innovation ecosystem. This ongoing process is strategic response to an ever-evolving global and national landscape.

The achievements throughout 2024 highlight a systematic and inclusive journey, one made possiblee through the collaborative efforts of BRIN's human resources, the academic community, private sector partners, and society at large. This annual report captures BRIN's continued performance transformation, driven by a steadfast commitment to serve the nation and contribute meaningfully to its development.

