

BRIN is responsible for the regulation of science, technology, and national innovation, as well as the implementing agency for research and innovation.

The National Research and Innovation Agency (Indonesian: Badan Riset dan Inovasi Nasional, BRIN) is a cabinet-level government agency functioning directly under the President of the Republic of Indonesia that conducts integrated research, development, assessment, and application, as well as inventions and innovations, implementation of nuclear energy, and space.

BRIN is a specific governmental agency, direct under the President (not a ministry nor a non-ministerial governmental institution). BRIN is not under the coordination of any Ministries.

Under Law Number 11 of 2019 concerning the National System of Science and Technology and Presidential Regulation Number 78 of 2021, BRIN has integrated all human resources, infrastructure, and budgets from 48 Government research institutions across Ministries and Institutions, fully integrated and transformed into one BRIN entity on January 30, 2022.

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"This content is excerpted from BRIN's Profile Book."



Vision

Embodied a reliable, professional, and innovative National Innovation Agency to support the vision and mission of the President and Vice President of the Republic of Indonesia:

To be advanced, sovereign, independent Indonesia having a personality based on the value of "Gotong Royong" (mutual cooperation).

Mission

- ▶ Provide technical and administrative support as well as quick, accurate, and responsive analysis to the President and Vice President in conducting integrated research, development, assessment, and application, inventions and innovations, implementation of nuclear energy and space, as well as monitoring and evaluation of the performance of the duties and functions of the Regional Research and Innovation Agency (Indonesian: Badan Riset dan Inovasi Daerah, BRIDA).
- ▶ Organize an effective and efficient supervision service, general administration, information, and institutional relations.

Goals

01.
The realization of a competitive Indonesian research and innovation ecosystem.
02.
The realization of good and clean Governance in the National Research and Innovation Agency.

Target

01.
Strengthening the research and innovation ecosystem to increase productivity and competitiveness in line with the direction of sustainable development.
02.
Effective, efficient, and accountable governance of BRIN.

“According to Presidential Decree No. 78/2021, BRIN became Indonesia's sole national research agency.



Organization Structure

Research Executing Units 12 RO (Research Organization) +85 Research Center

Research Organization For
Aeronautics
and Space

5 Research Center

Research Organization For
Nuclear Energy

7 Research Center

Research Organization For
Energy and
Manufacture

7 Research Center

Research Organization For
Earth Sciences
and Maritime

10 Research Center

Research Organization For
Life Sciences
and Environment

8 Research Center

Research Organization For
Electronics
and Informatics

6 Research Center

Research Organization For
Social Sciences
and Humanities

8 Research Center

Research Organization For
Archaeology, Language,
and Literature

7 Research Center

Research Organization For
Health

7 Research Center

Research Organization For
Nanotechnology
and Materials

7 Research Center

Research Organization For
Agriculture and Food

6 Research Center

Research Organization For
Governance, Economy,
and Community Welfare

7 Research Center



Research and innovation in Blue, Green, and Digital Economy

The Green, Blue, and Digital economies have become more widespread internationally.

Integrating the three economic concepts into the development standard of a country Leads to new paradigms. It creates opportunities for the process of economic recovery, which is also in line with the ideals of the Sustainable Development Goals (SDGs). The "green economy" is based on practical and theoretical knowledge of climate change and environmental policy development, with applications such as low carbon economy, renewable energy consumption (EBT), and nuclear energy. In turn, the "blue economy" becomes an alternative development paradigm that combines the economical use of the oceans with environmental sustainability. Meanwhile, the "Digital Economy," born when human civilization shifted to digital civilization (IoT, e-commerce, financial technology, and AI), offers efficiency, effectiveness, low-cost production, collaboration, and networks between several parties. The economic wheel will become more accessible, more effective, and more efficient through digital transformation.

These three economic concepts become priorities for BRIN's research and innovation development, as their collaboration can contribute to a more advanced and competitive Indonesian economy. The matter is supported by how Indonesia's wealth in biodiversity becomes the capital for the Green and Blue Economies. For example, the Blue Economy is intended to maximize the potential of Indonesia's seas other than fish and other products, the wealth of marine biodiversity, oil and gas,

and minerals and high-value mining materials. It can become a new economic potential during the recovery stage post-COVID-19 pandemic. The current challenge is to combine it with the Digital Economy, a concept that still needs improvement due to the digital divide in Indonesia. Specifically, information and communication technology service infrastructure throughout Indonesia needs to be improved and distributed equally.



Biodiversity Research and Additional Value Development

Indonesia is well-known as a tropical country with abundant biodiversity due to its location along the equator. Indonesia is said to be one of the countries with mega-biodiversity and is the mega-center of the world's biodiversity. Thus, it is no surprise that Indonesia ranked second in the country with the most terrestrial biodiversity and first if marine biodiversity is included. However, the wealth of biodiversity does not stop at the exploration and utilization stages but needs to be optimized through the combination of continuous preservation efforts. This potential is one of BRIN's main reasons for prioritizing biodiversity research.

Mainstream biodiversity research and innovation is a collective effort to integrate conservation and biodiversity continuity in every step of policies, plans, programs, and project cycles. Biodiversity research and innovation in Indonesia are also linked intimately with increasing added value and competitiveness efforts. These efforts are crucial because there is an increase in significant need for biodiversity-based

materials and products such as food products, pharmaceuticals, and industry and bioenergy raw materials. Thus, developing Indonesian biodiversity's additional value through science and technology is a twofold opportunity for the future of the Indonesian economy. Moreover, this development process is also an opportunity for developing research and innovation quality and quantity in Indonesia.

COVID-19 Research

COVID-19 is a global pandemic that keeps evolving, employing new variants with specific characteristics, resulting in different approaches to tackle it. Although there is no guarantee of its end, the COVID-19 pandemic has undeniable effects on many aspects, which are not only related to health but also the disturbance of the world's economic stability. Economy activities are hampered all around the world, including in Indonesia. The sudden appearance of COVID-19 has been a challenge for Indonesia in approaching it. Therefore, optimization needs to be done to answer the challenge in health-related fields and other fields, such as economic recovery.

Instead of observing from a negative perspective, BRIN perceives the pandemic not as an obstacle but as an opportunity to develop COVID-19-related research and innovation. Various BRIN collaborations with private research institutions, universities, and the pharmaceutical industry continue to be carried out. These collaborations have been recorded to yield results, one of which is the Merah Putih Vaccine. It is a COVID-19 alternative vaccine in Indonesia, targeted to be exported. Medical devices such as GLP High Flow Nasal Cannula-01, Vent-I, and RT Lamp Saliva are the masterpiece of the

nation's youth to combat COVID-19.

Furthermore, the increase in medicine and supplement consumption for endurance during the pandemic is seen as an opportunity for research and innovation in the pharmaceutical industry in Indonesia. It is essential as 90% of pharmaceutical raw materials (BBO) are imported, with around 34,.% of them dominated by innovative products. Referring to the government's target to lower the imported BBO dependency to 20% in 2026, domestic research and innovation must be prioritized and improved.



Space science was once dominated by developed countries, but it changed after many developing countries and private parties became interested in studying and developing it. Historically, Indonesia is the pioneer of space science in Southeast Asia countries as it is the first country to have a national space institute and space law in the ASEAN region. The start of national space development in Indonesia is the launch of the foreign-made Palapa A-1 satellite. Further along, science and technology research and innovation in this field kept being conducted to achieve national independence in space science. It was later realized through the creation of LAPAN A-2, an Indonesian satellite made in Indonesia by the excellent youths of the nation.

Indonesian government's commitment to space science could also be seen through the Spaceport construction project in Biak, Papua. By 2036 –2040, the Indonesian rocketry technology is targeted to have its Launching programs of satellite orbiter rockets to low earth orbit (LEO). Biak was chosen as the location for the spaceport construction due to its strategic location near the equator line. The spacecraft launch from the equator line to geostationary orbit (GEO) has the advantage of faster acceleration with economical fuel

consumption. Not only advancing national space science, but the spaceport also has strategic economic values as the global space economy value is projected to increase by more than 1 trillion US dollars annually in 2040. National space science development is also realized through construction of the National Observatory in Timau, NTT, which has the biggest telescope in ASEAN. Timau was chosen as the sunny days in that area are longer compared to other locations, the location is far from light pollution, and easily accessible from the city.



Collaboration between Scientists in Research Involvement

Research development equals building the key basics for science, technology, and innovation development. However, local cultures need to be utilized alongside the global science, technology, and innovation development standard. Thus, national, regional, and even international collaboration is crucial as collaboration with many people from various fields provides new insights and opportunities for researchers to gain knowledge from around the globe. The collaboration will also result in more in- depth, multi-discipline, diverse research. The global situation during the COVID-19 pandemic is an example of the importance of multilateral collaboration. Science diplomacy is a critical way to encourage international cooperation among scientific communities, governments, and private sectors in scientifically responding to global health crises.

Collaboration can also be done with not only foreign researchers but also Indonesian diaspora researchers. Diaspora is an engine of innovation for Indonesian researchers to embrace overseas diaspora to expand their international research collaboration network. This mutual collaboration is expected to increase the quality and quantity of academic and scientific fields.

In addition, research and innovation results are expected from the collaboration of local researchers and the diaspora. The expected outcomes of the results are opening opportunities to share access to research and scientific facilities, creating a good research ecosystem, and encouraging innovation that will affect the public.

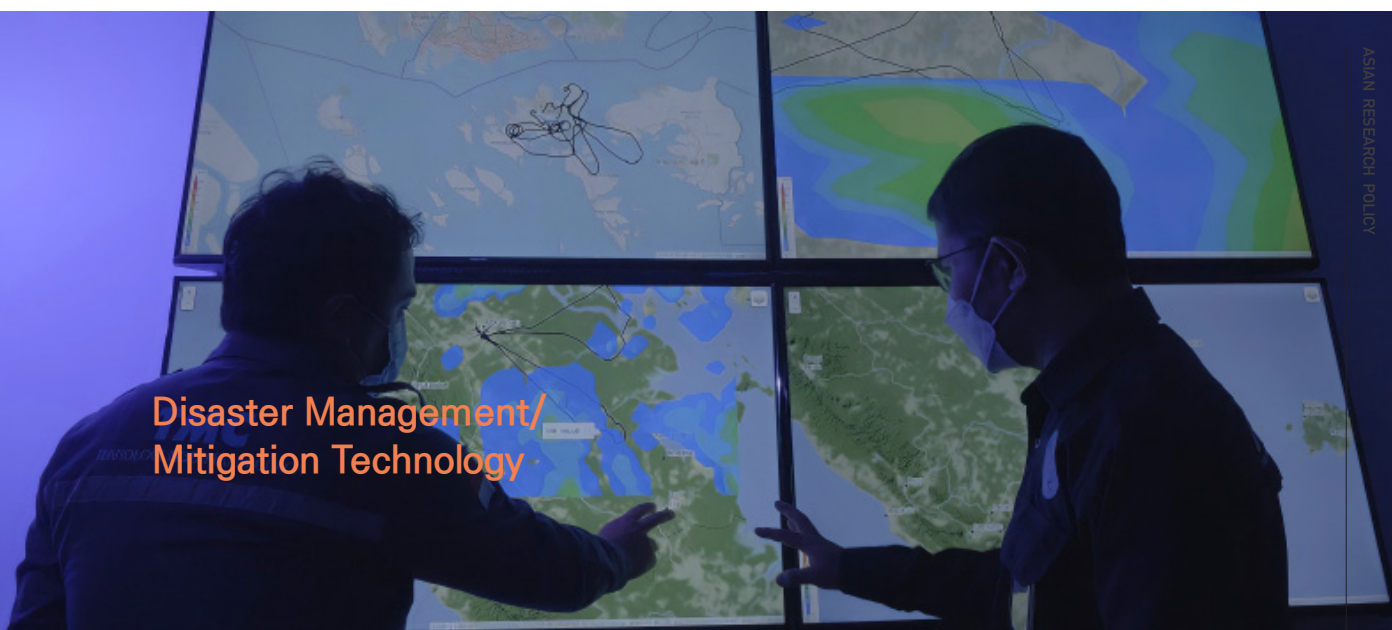


Human Resources Development

BRIN, as an institution, focuses on national research and innovation activities. However, BRIN does not only develop infrastructure but also develops and improves the quality of human resources as it is an integral part of the national development program. The competitiveness of national research can be measured by numerical indicators such as the number of researchers and their qualifications. Thus, high-quality human capital is essential for implementing national-scale research and innovation. Another critical issue is the process of creating, developing, and optimizing researchers' roles in various research, as Indonesia's absorption capacity for research and innovation is decided by the number of researchers and how they are maximalized.

It has been said that a country's progress rate is determined by the quality of its human resources. The Indonesian government is developing the quality of human resources for research and innovation through BRIN. BRIN's development of research and innovation human resources is done through their programs. One example is RIIM, a funding grant to research institutions for research novelties and result utilization. Other examples are BARISTA which is a program to find research and innovation talents in

Indonesia; PPBR, for cultivating research-based startups in the research and innovation ecosystem; FIAR, for facilitating and supporting innovation from grassroots communities; and MBBM, which is a research and innovation result dissemination program and the development of human resources capacity building in utilizing research and innovation result. These programs are evidence of BRIN'S commitment to developing human resources for science and technology for the betterment of Indonesia.



Disaster Management/ Mitigation Technology

Another agenda that becomes BRIN's current priority is related to disaster management/ mitigation. It is due to Indonesia's high disaster risk status, evidenced by yearly disasters. It occurs due to Indonesia's location on the Pacific Rim, a seismic belt where many tectonic plates intersect. Among the 450 volcanic mountains in Pacific Rim, around 127 are in Indonesia. Indonesia is also located on the Alpide belt, another seismic belt formed from the intersection of Eurasian, Indian, and Australian tectonic plates. As Indonesia is also situated in a tropical area along the equator line, there is a high risk of storms, typhoons, and tropical cyclones. As a tropical country, Indonesia is also at high risk of floods and landslides due to the high rainfall index, around 1,000 to 4,000 yearly.

A breakthrough in science and technology research and innovation is needed to face these disaster challenges. Engineering technology is vital in reducing disaster risk. Technology utilization plays a central role in disaster management. Technology is crucial as it is a catalyst in disaster preparedness, emergency response, recovery, and mitigation; access to vital preparedness

information to the public; a decision support system (DSS); a communication means for emergency response and aid distribution; and a collection of knowledge warehouses to support policy-making and planning. Thus, BRIN prioritizes disaster management/mitigation technology in research and innovation activities in Indonesia.

Human Resources

To realize its Vision and Missions, BRIN has the full support of the best human resources in Indonesia. Researchers/experts in BRIN are the best youths in the nation with competence in their fields.

As of now, BRIN has 14,867 competent personnel and professionals across 12 Research Organizations (85 Research Centers), 7 Deputies, 5 Bureaus, and 3 Supporting Units.

Little by little, this number is expected to increase in the future. BRIN also collaborates with other ministries/institutions to increase the number of researchers.

For example, BRIN appointed 1,648 researchers from various ministries/institutions as transitional human resources in June 2022. With said addition, 3,621 transitional researchers from ministries/institutions have officially joined BRIN.

Alongside the increase in personnel, BRIN's human resources quality needs to be improved, as only 15% of the total number of employees have doctoral degrees as of March 2022. BRIN aims to increase the number of human resources with a doctoral degree, as high competency in human resources might increase productivity and institutional capacity.

14.867

competent and professional human resources
in the field of science, innovation, and technology.

51% S&T Management
Human Resources

49% S&T
Human Resources

BRIN

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