

ANALYSIS OF THE IMPACT OF THE POLICY OF INTEGRATION OF RESEARCHERS INTO BRIN ON THE DEVELOPMENT OF HUMAN RESOURCES IN THE FIELD OF RESEARCH

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ABSTRACT

Keywords:	BRIN; Researchers; Policy impact; Policy Implementation; Human resources.	This article provides information on integrating researchers into Indonesia's National Research and Innovation Agency (BRIN). Discuss BRIN's objectives, plans for developing research resources, and collaboration with educational and research institutions. The document also mentions challenges national research faces in Indonesia, such as limited human resources for research. Integrating researchers into BRIN is a solution to improve the quality and quantity of research in Indonesia. BRIN aims to improve the quality and quantity of researchers in Indonesia by integrating researchers into its system. This integration involves cooperation with educational and research institutions at national and international levels. This article highlights the importance of human resources in research and the need to address expertise shortages in some complex regions. BRIN was established based on the merger of five institutions, including the Indonesian Institute of Sciences (LIPI) and the National Nuclear Energy Agency (BATAN). It also mentions the use of various research analysis methods, such as policy analysis and evaluative analysis, to assess the impact of policies and the implementation of research programs.
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Introduction

The development of national research in Indonesia still faces several obstacles, including limited human resources (HR) to excel in the field of research. This is a significant obstacle to improving national research quality and accelerating national innovation. For this reason, the National Research and Innovation Agency (BRIN) seeks to overcome these problems by integrating researchers into BRIN (Arjul, Madhakomala, & Rugaiyah, 2023).

Laksana Tri Handoko said superior human resources (HR) play a 70 per cent role in the research ecosystem. Infrastructure now plays a role of 20% and budget plays a role of 10%. BRIN's expertise as an institution depends on researchers, but training good scientists takes a long time (ESDM, 2015)

"The main problem is human resources. BRIN is relatively good in the fields of biological sciences and materials science. However, human resources in complex fields such as nuclear power, space, and others are still insufficient. Handoko said in the press conference, "It is Time for BRIN to Respond" on Friday, February 10, 2023, in Jakarta.

The National Research and Innovation Agency (BRIN) seeks to overcome these problems by implementing a policy of integrating researchers into BRIN. As part of the

integration, BRIN will integrate all research institutions in Indonesia, including research institutions and universities, into one integrated system (Sofanudin, 2022)

The National Research and Innovation Agency (BRIN) was established based on Presidential Decree (Perpres) No. 78 of 2021 as a merger of 5 (five) bodies, namely the Indonesian Institute of Sciences (LIPI), the Agency for the Assessment and Application of Technology. (BPPT) National Nuclear Energy Agency (BATAN), National Institute of Aeronautics and Space (LAPAN), and Research and Technology / BRIN (Fatiha, Fadhlina, & Wardani, 2023).

Based on this Presidential Decree, BRIN is responsible for implementing government duties in research, development, assessment, and application, as well as invention and innovation, nuclear power implementation, and space administration at the national and integrated levels (RAMADHAN, 2023)

BRIN divides its institutional structure into three main functions: the internal service function, the research and innovation service function, and the technical research and innovation function. Figure 1 shows the flow of BRIN business processes according to the separation of three main functions. BRIN is committed to conducting research and innovation activities based on more effective and efficient business processes.

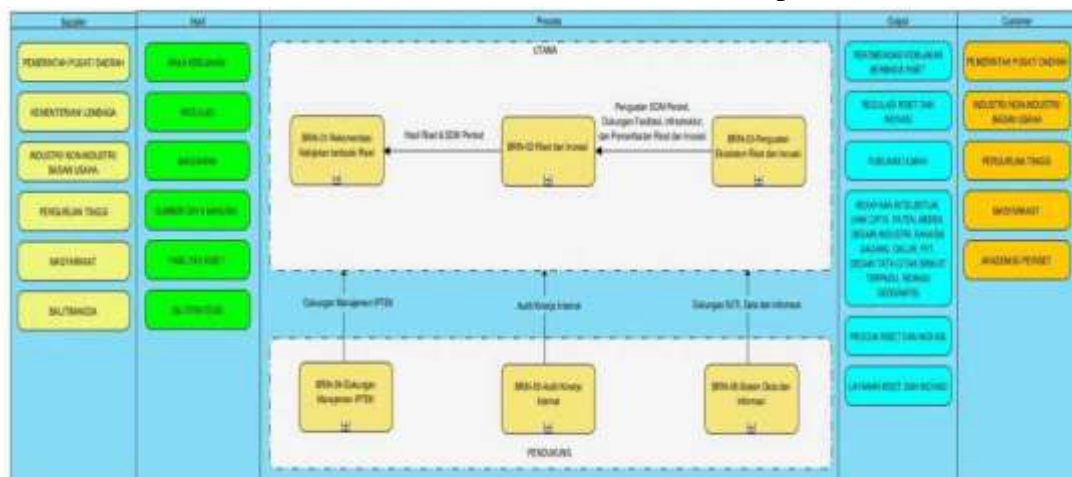


Figure 1. BRIN Business Process Level-0

(Source: Renstra BRIN 2022 and 2024)

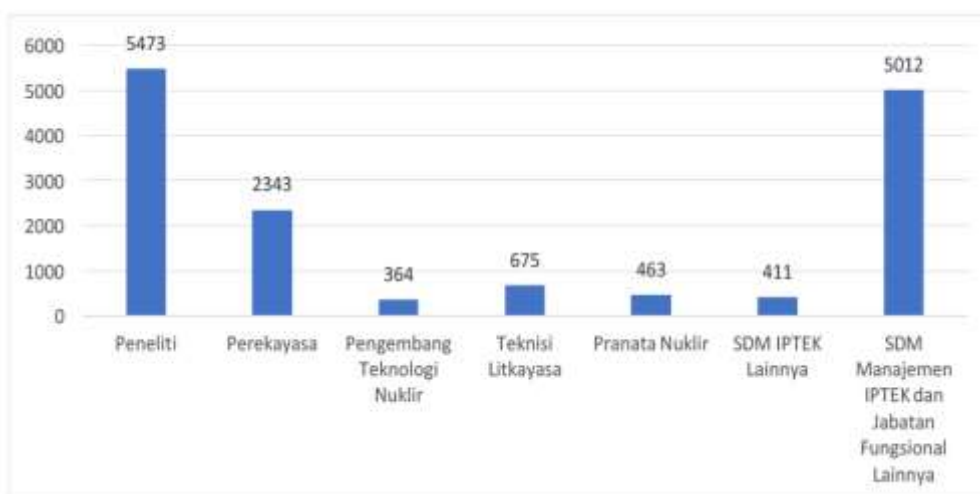
BRIN, as a leading government research and development institution, plays a vital role in efforts to achieve the 2020-2024 RPJMN. However, BRIN is also responsible for actively solving the problem of a low critical mass of Indonesia's research and innovation sector in line with the RIRN National Research Master Plan 2017-2045. Without efforts to address these fundamental problems, the research sector will not be able to contribute to or accelerate Indonesia's advanced development.



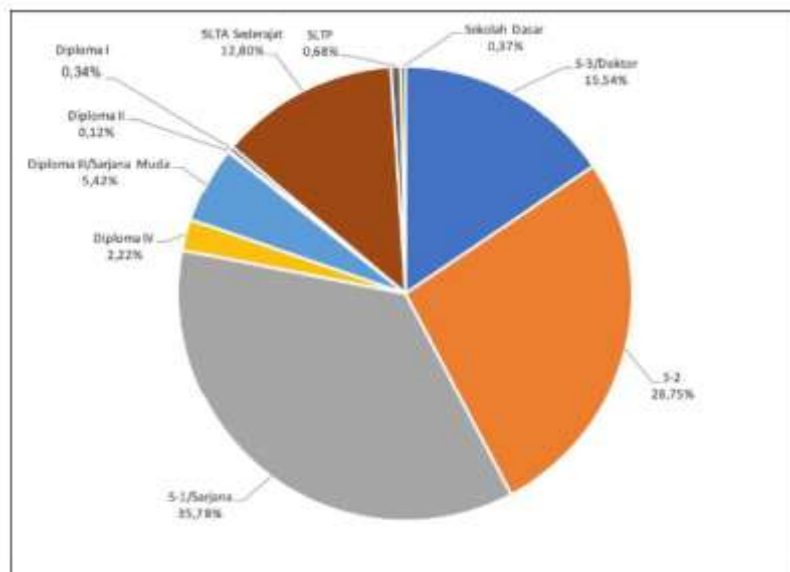
Figure 2. Policy Direction and Strategy for Science and Technology Development and Innovation 2020 - 2024

(Source: Outlook for the 2021 Work Plan of the National Research and Innovation Agency)

Based on its functional position, BRIN's human resources department is divided into two groups: Human Resources in the Field of Science and Technology and Human Resources in Science and Technology Management. At the end of 2022, BRIN's science and technology personnel totalled 9,729 people, and science and technology management personnel totalled 5,012 people. In terms of functional positions, researchers are the most critical functional positions in BRIN.



Graph 1. BRIN HR Based on Functional Position



Graph 2. BRIN Human Resources Based on Education Level

As a follow-up to Article 71 of the Presidential Regulation of the Republic of Indonesia Number 78 of 2021 concerning the National Research and Innovation Agency (BRIN), it is necessary to transfer employees from the Ministry of Research and Technology (Kemristek), the Agency for the Assessment and Application of Technology (BPPT), the National Nuclear Energy Agency (Batan), the Indonesian Institute of Sciences (LIPI), the National Institute of Aeronautics and Space (Lapan) (Annisa, 2022)

The Head of BRIN submitted a proposal for the mutation of BRIN employees to the Head of the State Public Service Agency (BKN) through a letter dated September 20, 2021, with the proposal scheduled for October 1, 2021. He said employee mutations are divided into two stages, namely. The initial stage began with transferring the Ministry of Research and Technology / BRIN, BPPT, Batan, LIPI, and Lapan employees to the State Civil Apparatus (ASN) BRIN.

Then, we must proceed to Phase II, namely the mutation of scientists and other supporting personnel from ministries/agencies by Article 65 of the Presidential Regulation of the Republic of Indonesia Number 78 of 2021, which proposes the transfer of researchers and other supporting human resources to BRIN, which aims to carry out the transfer to be determined on January 1, 2022.

In addition to integrating ministries, institutions, and LPNK (BATAN, BPPT, LAPAN, LIPI), BRIN redistributes human resource budgets and research within ministries/agencies. It mutates employees who carry out research and development functions of ministries/institutions to employees of the National Disaster Management Agency (Batan, BPPT, LAPAN, LIPI). Research and Development. Research and innovation. Transferring ministerial/institutional employees to BRIN employees in 2022 is as follows: General ledger employees are transferred to BRIN employees. 3 out of 38 K/L.847 employees transferred (3,319: middle and junior JF experts; 528: primary JF experts).

Labor 28 L/L. In the second stage, another 5 L/L was added. "There are now 11 L/Ls registered, and in this second phase, the nature of the proposal complements each other." A total of 33 L/L are integrated," he explained. For information, HR researchers who joined BRIN this time came from 15 ministries/lists, namely the Geospatial Information Agency, the National Population and Family Planning Agency, the Attorney General's Office, and the General Secretariat of the House of Representatives, the Ministry of Religious Affairs, Ministry of Home Affairs, Ministry of Law and Human Rights, Ministry of Communication and Information, Ministry of Education, Culture, Research and Technology,

Ministry of State Defense, Ministry of Agriculture, Ministry of Defense, Ministry of Social Affairs, Ministry of Health, Ministry of Energy and Mineral Resources, and Ministry of Environment and Forestry.

The transfer of research budgets in Ministries/Institutions is shown below.



Figure 3. Recapitulation of the Transfer of Ministerial/Institutional Budgets into DIPA BRIN in 2022

(Source: Sestama Performance Report - BRIN)

This policy has had a tremendous impact; BRIN has become a super large organisation, and BRIN has become the sole body or the only institution that carries out research, development, study, and application activities, as well as invention and innovation. With the strength of human resources, a considerable budget, and broader tasks and functions, competent and visionary management must manage it.

The purpose of this journal is to analyse the impact of the policy of integrating researchers into BRIN on the development of human resources in Indonesia's research field. In this analysis, it will be seen how the policy of integrating researchers into BRIN can help improve the capacity and competence of researchers' human resources, as well as other impacts arising from this policy.

Research Methods

The type of research used in this study is descriptive research using qualitative approach methods. The focus of his research is the background of the policy of

transferring research functional officials from ministries and institutions into BRIN. In this study, researchers used the location to conduct research, the BRIN Office, Jl. Thamrin. The research site is the Deputy of SDMI BRIN. Data analysis, as revealed by Miles and Huberman in Sugiyono (2009, p.246), is data reduction, data presentation, and conclusion drawing or verification.

Results and Discussion

Policy analysis

Prospective policy analysis is an analysis of a policy made by a particular party. The analysis focuses on the consequences before and after the policy is made. In other words, prospective policy analysis makes it possible to assess how a policy has impacted both before and after implementation. This model is known as a predictive model. Retrospective policy analysis (Wahab, 2021)

Retrospective policy analysis is policy analysis where the focus is on how the policy will impact once established and implemented. This type of analysis is usually referred to as evaluative analysis. Integrative policy analysis

Integrative policy analysis combines prospective and retrospective policy analysis. Policy analysis starts from the agenda of making to implementing and evaluating policies and the consequences of implementing these policies. Policy analysis has several characteristics, as stated by Joko Widodo in his book entitled Public Policy Analysis, that the characteristics of policy analysis are as follows (Aziz et al., 2020):

1. Policy analysis as a cognitive activity
2. Policy analysis is part of the policy process that is generated collectively so that it is the result of collective activity.
3. Policy analysis is an applied intellectual discipline.
4. Policy analysis that is closely related to public issues

Policy outputs differ from policy impacts theoretically. Therefore, according to Dye (1981), it is essential to measure the benefits of government actions and consider this because the measurement of government activity solely measures policy output. In discussing the determinants of public policy, the size of public policy output is significant to pay attention to. However, to evaluate the impact of public policy, it is essential to identify the types of changes in the environment that relate to efforts to measure government action.

In a broad sense, policy analysis includes research findings on policy processes and the methods used to implement them. For many years, policy analysis has always aimed to provide policymakers with information to consider to resolve policy issues. In a broad sense, policy analysis involves the result of knowledge about the policy process and how the policy process is conducted. Policy analysis has provided policymakers with information to solve policy problems for many years.

Policy analysis focuses on problem formulation and problem-solving. Problem appreciation, problem search, definition, and specification are four interdependent stages

in the problem formulation. Each stage produces information about the problem situation, meta-problem, substantive, and formal (Nawi, 2021).

Positive Impact

The policy of integrating researchers into the National Research and Innovation Agency (BRIN) has a significant positive impact. Here are some of the positive impacts of the policy of integrating researchers into BRIN on the development of human resources in the field of research:

1. **More Effective Research Collaboration:** Integrating researchers into BRIN encourages more effective collaboration between researchers from different research institutions and universities. Empirical data shows that collaboration between researchers from different institutions can lead to higher-quality research and accelerate discovery and innovation. In a study by (Guerrero & Urbano, 2019), collaboration between researchers from different institutions is associated with improved research quality and a more significant impact on science. Here are the collaborations carried out by BRIN:
 1. BRIN research collaboration with Jayapura University of Science and Technology involves community participation. BRIN collaborates with Jayapura University of Science and Technology in this research collaboration involving community participation. It aims to obtain more accurate and relevant data to the local community's needs.
 2. BRIN opens access to interdisciplinary research collaboration; BRIN opens as much access as possible for interdisciplinary research collaboration. This aims to strengthen the network of researchers and increase the research level of all BRIN work units, including BRPSDI, in the future.
 3. BRIN's collaboration proposal with universities for research on the use of AI in agriculture uses the COVID-19 Handling Research and Innovation Consortium as a means of expertise collaboration that optimizes the use of science. With the consortium, it is easier for Indonesia to conduct evaluations to prepare provisions to face other unexpected challenges (emerging issues). BRIN collaborates with universities in research on the use of AI for agriculture. It aims to improve the effectiveness, efficiency, and sustainability of agriculture in Indonesia.
 4. BRIN – BPS research collaboration: BRIN collaborates with BPS in research that aims to obtain more accurate and relevant data to the community's needs.

In a more effective research collaboration at BRIN, several things need to be considered, including Involving community participation to obtain more accurate and relevant data to the needs of local communities. Open as much access as possible for cross-disciplinary research collaboration to strengthen research networks and increase the research level of all work units in BRIN. Increase research effectiveness, efficiency, and sustainability by utilizing technologies such as AI. Obtain data that is more accurate and relevant to the community's needs.

1. Access to Better Resources and Infrastructure: Researchers integrated into BRIN have more accessible and more secure access to research resources and infrastructure managed by BRIN. This includes access to research facilities, laboratories, libraries, and available research data. In a study by (Walsh et al., 2021), researchers with easy access to research resources reported higher research productivity, resulting in more publications.

Here are examples of better access to resources and infrastructure that BRIN High-Performance Computing has done

- a. BRIN's Mahameru High-Performance Computing (HPC) Research Infrastructure, BRIN consolidates the computing resources contained in BRIN to make it more efficient. BRIN also made SOPs for infrastructure access to facilitate the use of these resources.
- b. BRIN's Strategic Research Focus on the Deep Sea: BRIN focuses on human resources and infrastructure for deep-sea research, including using submarines and submersibles as examples of infrastructure used.
- c. With the creation of more than 61 innovative products of the Covid-19 Research and Innovation Consortium, BRIN played a role in creating more than 61 innovative products of the Covid-19 Research and Innovation Consortium under the coordination of the Ministry of Research and Technology/National Research and Innovation Agency.
- d. Better ICT Infrastructure and Frequency Resources: BRIN improves ICT infrastructure and frequency resources to support better communication and information.
- e. More Open Access to Funding Sources, BRIN helps PT. Pegadaian and BPR/BPRS will gain more open access to funding sources from third parties (DPK) to strengthen microfinance infrastructure.
- f. Increased Research Funding: Integrating researchers into BRIN provides better access to research funding sources. BRIN has a role in allocating research funds to various research projects. By integrating into BRIN, researchers have easier access to funding opportunities offered by BRIN. A study by (Ebadi & Schiffauerova, 2016) states that researchers who get adequate funding have a more significant opportunity to conduct high-quality and significantly impactful research.
- g. Socialization of Research and Innovation Funding Scheme: BRIN socializes research and innovation funding program schemes. The aim is to encourage the improvement of the quality of research and innovation in Indonesia.
- h. BRIN proposes to increase the Research Endowment Fund by IDR 5 trillion for the 2024 fiscal year.
- i. Research and Innovation Funding Scheme for Advanced Indonesia (RIIM) Expedition, BRIN, in collaboration with LPDP of the Ministry of Finance, opened a Research and Innovation funding scheme for Advanced Indonesia (RIIM) Expedition.

- j. Focusing on Research Infrastructure Improvement, BRIN has provided and increased the capacity of strategic research infrastructure to support more effective and efficient research.
- k. Sharing Funding and Global Research Partnerships, BRIN has a joint funding scheme to conduct and improve research.

Negative impact

The policy of integrating researchers into the National Research and Innovation Agency (BRIN) has had a significant negative impact. Here are some of the negative impacts associated with the policy, supported by concrete data and supporting journals:

- 2. Deterioration in Research Quality: Integrating researchers into BRIN can decrease research quality. A study conducted by (Hamdan Wafa, 2021) shows that the policy of integrating researchers into government institutions can hinder researchers' academic freedom and independence. This can result in researchers being unable to keep up with their research interests, reducing the quality of the research produced.

The decline in research quality at BRIN can occur in various aspects; here are examples of decreased research quality at BRIN:

- a. Lack of data quality: One example of a decrease in research quality at BRIN is the lack of data quality used in research. This can happen if the data is invalid, inaccurate, or unverified. For example, if a study uses unverified or invalid data, then the results of that study are unreliable.
 - b. Improper research methods: Research conducted at BRIN can also experience a decrease in quality if the research methods used are not appropriate. For example, suppose the research uses methods that do not meet the research objectives or do not meet the criteria of good research. In that case, the study results are unreliable.
 - c. Lack of validity and reliability of research instruments: Research conducted at BRIN can also experience a decrease in quality if the instruments used do not have sufficient validity and reliability. For example, the results are unreliable if a research instrument cannot measure the variables studied accurately or inconsistently.
 - d. Lack of variable control: Research conducted at BRIN can also experience a decrease in quality if adequate variable control is not carried out. For example, if the study does not control for variables that can affect the results, then the results are not reliable.
- 3. Limited Access to Data and Resources: Integrating researchers into BRIN can also result in limited access to data and resources needed to conduct research. A study by (Gruber et al., 2021) suggests that integrating researchers into government agencies can restrict researchers' access to the data necessary to conduct quality research. This can hinder the progress of research and innovation in the country.

These examples illustrate some of the limitations of data access and resources that may arise due to the policy of integrating researchers into BRIN, namely:

- a. There are limitations in employee recruitment due to regulations that only allow recruitment through the civil servant and PPPK schemes until 2023. This results in the termination of employment of contract workers at the end of each fiscal year, which can limit the availability of research. Resources.

- b. The lack of human resources is a big obstacle for national research, including at BRIN. Internal problems within BRIN must be resolved first before targeting further objectives
 - c. BRIN's limited number of researchers, scientists, and engineers affects research in all fields and impacts the research ecosystem. The lack of human resources is a significant limitation that must be overcome to accelerate national innovation.
 - d. The role of data librarians in improving research literacy and data management is vital in the research ecosystem. However, a limited number of data librarians can limit access to data and research sources.
4. Political and Bureaucratic Influence: The integration of researchers into BRIN can bring political and bureaucratic influences that have the potential to undermine research independence. A journal by (Edler, Kuhlmann, and Helfrich, 2023) highlights that integrating researchers into government agencies can result in more polarised research and influenced by particular political interests. This can reduce the objectivity and quality of the resulting research.
5. Low Research Collaboration and Network: Integrating researchers into BRIN can reduce research collaboration and networking. A study by (Spatola & Macdorman, 2021) revealed that integrating researchers into centralized government institutions can hinder collaboration and knowledge exchange between researchers in different institutions. This can hinder the creation of sustainable innovation.

Conclusion

Based on the problems raised in this study, namely "how the policy of integrating researchers into BRIN can help improve the capacity and competence of human resources researchers," this study uses Federick W. Taylor & Henry's theory of human resource development and William Dunn's policy analysis theory to analyze the impact of researchers' integration policies into BRIN on human resource development in the field of research. The results showed a positive impact of the policy of integrating researchers into BRIN. First, there is a more effective research collaboration between researchers integrated into BRIN. This allows the exchange of knowledge and experience between researchers that can improve the quality of research.

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