SWOT Analysis of Reverse Brain Drain Regulation for Excellent Human Resources to Support Indonesia's Non-Military Defense

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ABSTRACT: This study examines the persistent issue of brain drain in Indonesia and its underexplored link to non-military defense policy, offering a novel thematic perspective. It aims to assess the effectiveness of existing reverse brain drain regulations, identify implementation barriers, and propose evidence-based strategies to enhance policy attractiveness. Using a Systematic Literature Review (SLR) and SWOT analysis, the study synthesizes dispersed policies to evaluate their strengths, weaknesses, opportunities, and threats. The findings reveal fragmented regulations, limited career incentives, and inadequate research facilities as major obstacles rooted in policy gaps and weak institutional coordination. The study recommends targeted incentives, clearer legal frameworks, and stronger policy alignment to support human capital development as part of Indonesia's non-military defense strategy.

Keywords: Human Capital, Non-Military Defense, Policy Analysis, Reverse Brain Drain.

INTRODUCTION

Brain drain, defined as the migration of skilled labor abroad, poses a significant challenge for Indonesia's competitiveness and innovation capacity. (Dunia, 2020) reported that over 2.25 million skilled Indonesian workers are employed overseas. Key drivers include low domestic wages, limited access to advanced research infrastructure, and constrained career opportunities (BPS, 2022). These structural factors encourage highly educated individuals to pursue better prospects abroad, often resulting in a loss of human capital critical for national development.

Additionally, state-sponsored education programs in Indonesia continue to face significant challenges in retaining their graduates after the completion of overseas studies. Data released by LPDP (2023) indicate that 413 out of 35,536 scholarship recipients did not return to Indonesia upon finishing their education. Although the proportion appears relatively small, the cumulative impact of this phenomenon raises concerns regarding the effective utilization of national human capital. The non-return of highly skilled graduates may weaken knowledge transfer, innovation capacity, and institutional development within the country. If this trend persists without adequate policy intervention, it could undermine the long-term objectives of strengthening domestic expertise and leadership. Ultimately, such conditions may hinder Indonesia's transition toward a sustainable knowledge-based economy.

Countries like India and China have implemented systematic strategies to reverse brain drain, including strong diaspora engagement, financial incentives, and structured knowledge transfer programs (Zhao et al., 2019). Pakistan provides another example, offering competitive wage incentives and political guarantees to attract expatriates back home, which significantly reduced brain drain (Mahmood, 2019). These comparative examples highlight the importance of comprehensive policy frameworks and institutional coordination in facilitating the return of skilled professionals. Policy diffusion theory suggests that Indonesia could benefit from adopting similar mechanisms, tailored to local socio-economic and regulatory contexts.

In Indonesia, reverse brain drain initiatives remain fragmented and limited in scope (Ismail, 2021; Rizal et al., 2022). Although Law No. 12 of 2006 on dual citizenship and the diaspora card program represent important initial efforts to encourage the return of skilled migrants, their impact has so far been modest. These policies primarily focus on legal recognition and administrative facilitation rather than comprehensive reintegration strategies. As a result, returning professionals often face challenges related to employment placement, career progression, and access to research or innovation ecosystems. Moreover, the absence of integrated support mechanisms weakens the effectiveness of these initiatives. This situation is further compounded by the lack of coherent coordination between government institutions and the private sector, which limits the strategic utilization of returnees' skills for national development.

The absence of a clear long-term vision hinders the effective utilization of returning talent for national development. Compared to peer nations, Indonesia lags in integrating incentives, diaspora engagement, and knowledge transfer into a cohesive and sustainable strategy. This fragmentation reduces the potential contribution of returnees to innovation, productivity, and institutional capacity building. To address this gap, Indonesia must adopt a more systematic and forward-looking approach to reverse brain drain policies. Such an approach should encompass both financial and non-financial incentives to attract and retain skilled professionals. In addition, strengthening diaspora networks and developing integrated platforms for knowledge exchange are essential to maximizing the developmental impact of returning talent.

Highly skilled human resources are essential not only for enhancing economic competitiveness but also for strengthening Indonesia's non-military defense capacity. This form of defense emphasizes resilience in social, informational, and technological domains rather than conventional military power. In this context, non-military defense systems are designed to address complex threats such as disinformation, social conflicts, natural disasters, and cybersecurity challenges (Armawi, 2006; Yusuf et al., 2023). The effectiveness of these systems depends heavily on the availability of competent professionals with interdisciplinary expertise. Skilled human capital enables the state to anticipate, mitigate, and respond to non-traditional security risks more effectively. Therefore, investing in the development and strategic utilization of highly skilled human resources is crucial for strengthening Indonesia's overall national resilience.

The Indonesian diaspora represents a critical pool of expertise to support strategic sectors like technology, cybersecurity, and education (Pama, 2019). Leveraging this potential is essential for accelerating national development in an increasingly knowledge-based and digital global economy. Strengthening policies that facilitate reverse brain drain is therefore a strategic priority for

Indonesia. Such policies are closely aligned with Indonesia's Vision 2045, which emphasizes human capital development, innovation, and global competitiveness. Moreover, they are consistent with ASEAN regional cooperation frameworks that promote talent mobility and knowledge sharing among member states. By effectively engaging the diaspora, Indonesia can enhance its national resilience and strengthen its overall innovation capacity.

This study aims to analyze Indonesia's reverse brain drain regulations, evaluate their implementation, and identify key success factors. Employing a Systematic Literature Review (SLR) combined with a SWOT analysis, the study synthesizes dispersed literature to generate comprehensive and structured insights. This approach enables the identification of strengths, weaknesses, opportunities, and threats associated with existing policy frameworks and institutional practices. The study provides evidence-based recommendations designed to enhance the effectiveness and coherence of reverse brain drain policies. Its findings contribute uniquely by situating these recommendations within Indonesia's long-term development vision and the broader context of regional cooperation. Furthermore, the study offers practical strategies for both government and private sector stakeholders to optimize the reintegration and utilization of skilled professionals.

METHOD

This study employs SWOT analysis as the primary research methodology to evaluate reverse brain drain regulations in Indonesia. SWOT analysis provides a structured framework to systematically assess the strengths, weaknesses, opportunities, and threats associated with existing policy instruments. By examining both internal and external factors, this approach enables a comprehensive understanding of regulatory performance and institutional capacity. It allows for the identification of strategic gaps as well as potential leverage points for policy improvement. Through this analytical lens, the study explores how current regulations can be optimized to facilitate the return of skilled Indonesian professionals from abroad. Ultimately, the findings highlight the contribution of reverse brain drain policies to the development of highly competent human resources, particularly in supporting Indonesia's non-military defense capacity.

The analysis focuses on identifying strategic areas in which existing policies can be improved to enhance national innovation, knowledge transfer, and sectoral expertise. It emphasizes the alignment of regulatory measures with the evolving demands of a knowledge-based economy. External factors examined include global migration trends, patterns of international collaboration, and broader geopolitical dynamics that may influence policy effectiveness. At the same time, the analysis considers how these external conditions interact with domestic institutional capacities. Overall, the use of SWOT analysis facilitates the formulation of evidence-based recommendations for strengthening regulatory frameworks. These recommendations aim to align reverse brain drain policies with Indonesia's strategic objectives in human resource development and non-military defense.

RESULT AND DISCUSSION

This study examines the regulatory framework supporting reverse brain drain in Indonesia. Managing the outflow and inflow of skilled labor is critical to enhancing national competitiveness and innovation capacity in an increasingly globalized economy. The central challenge lies in designing policies that effectively motivate skilled professionals abroad to return and actively contribute to national development. To assess the current regulatory landscape, a SWOT analysis was conducted on key policies related to reverse brain drain, as presented in Table 1. This analytical approach enables a systematic evaluation of policy performance by capturing both internal and external dimensions. The findings identify the strengths, weaknesses, opportunities, and threats embedded within the legal and institutional frameworks that shape Indonesia's strategy for diaspora engagement.

Table 1. SWOT Analysis of Regulations Related to Reverse Brain Drain in Indonesia

No	Regulation	Strengths	Weaknesses	Opportunities	Threats
1	Article 31, Paragraph 5 of the 1945 Constitution on Science and Technology (IPTEK)	Provides a constitutional foundation for the development of science and technology as a national priority.	Lack of concrete policy implementation to support reverse brain drain.	Utilizing the constitutional foundation to encourage greater investment in science and technology.	Lack of integration between regulations and implementation at the ministerial level.
2	Law No. 12 of 2006 on Citizenship	Regulates dual citizenship, facilitating the diaspora's connection with Indonesia.	Does not fully provide optimal facilities for the diaspora to contribute.	Eases the return of the diaspora to contribute through citizenship pathways.	Potential legal conflicts regarding dual citizenship regulations.
3	Law No. 18 of 2002 on the National System for Research and Development in Science and Technology (SISNAS LITBANG IPTEK)	Supports the structured development of a national research and innovation system.	The focus on science and technology research is not matched with sufficient resources.	Strengthens international collaboration in science and technology.	Global competition in attracting top talent for innovation.
4	Law No. 13 of 2003 on Manpower	Protects labor rights, including foreign workers who bring expertise.	The regulation does not include specific incentives to attract skilled workers from abroad.	Enhances national competitiveness through skill-based workforce management.	Lack of flexibility in responding to changing labor market needs.

No	Regulation	Strengths	Weaknesses	Opportunities	Threats
5	National Long-Term Development Plan (RPJPN) 2025-2045 on Science and Technology Development	Establishes a strategic vision for developing highly skilled human resources and innovation.	There is still a gap between planning and policy implementation.	Encourages synergy between the public and private sectors to develop highly skilled human resources.	Challenges in maintaining policy consistency amid government changes.
6	Incentive Program for Researchers and Innovators (Ministry of Research and Technology, 2023)	Provides direct incentives to increase research and innovation productivity.	Limited incentive coverage for specific segments without a long-term strategy.	Enhances research productivity and outcomes to support economic development.	Risk of dependence on short-term incentives without sustainable results.

Source: Processed by the Author (2024)

The SWOT analysis highlights that Indonesia possesses a relatively robust legal and policy framework to support reverse brain drain; however, the country continues to struggle with policy implementation.

Legal and Policy Strengths

The SWOT analysis indicates that Indonesia possesses a relatively strong legal and policy foundation to support reverse brain drain initiatives. A key strength lies in the constitutional basis for promoting science and technology (*ilmu pengetahuan dan teknologi* / IPTEK), which is explicitly articulated in Article 31, paragraph (5) of the 1945 Constitution, mandating the state to advance science and technology as an integral component of national development. This provision reflects a firm constitutional commitment to innovation and the enhancement of human capital. Such a mandate creates a normative foundation for policies aimed at attracting and utilizing highly skilled professionals. In addition, Law No. 18 of 2002 on the National System of Research, Development, and Application of Science and Technology establishes a comprehensive legal framework for strengthening domestic research and innovation capacity. Together, these legal instruments provide an enabling environment for the formulation and implementation of reverse brain drain policies in Indonesia.

The establishment of the National Research and Innovation Agency (BRIN) exemplifies these efforts by integrating and coordinating national research activities under a centralized institutional framework. Such arrangements reflect Indonesia's long-term vision of leveraging science and innovation as key drivers of sustainable development. Nevertheless, despite the presence of strong legal and institutional underpinnings, a significant gap persists between constitutional mandates and their practical implementation. This gap is evident in the absence of concrete mechanisms and

detailed operational programs specifically designed to facilitate the repatriation and reintegration of skilled diaspora professionals. As a result, existing policies have limited capacity to translate legal commitments into measurable outcomes. Consequently, while Indonesia's legal structure for supporting reverse brain drain is relatively robust, its policy execution remains fragmented and insufficiently developed.

Indonesia possesses a relatively strong legal and political foundation to support reverse brain drain initiatives, as reflected in its constitutional mandate to advance science and technology. This commitment is explicitly articulated in national legal instruments that emphasize the strategic role of research, innovation, and human capital development. The regulatory frameworks governing the national research and innovation system further reinforce the state's responsibility to create an enabling environment for scientific advancement. Through these regulations, the government provides formal recognition of the importance of attracting and retaining highly skilled professionals. Such a framework also facilitates the reintegration of Indonesian scholars and experts who have gained international experience. Consequently, the alignment between constitutional principles and regulatory policies positions Indonesia favorably in implementing sustainable reverse brain drain strategies (Abdullah et al., 2022; Syuhada et al., 2024).

The establishment of the National Research and Innovation Agency (BRIN) represents a strategic institutional initiative to integrate and coordinate national research activities within a unified governance framework. This integration is intended to strengthen domestic research capacity by reducing fragmentation across research institutions and optimizing the use of national resources. Through centralized coordination, BRIN seeks to enhance the effectiveness, efficiency, and accountability of research and innovation policies at the national level. Furthermore, the agency plays a critical role in fostering synergy among academia, industry, and government to support the development of evidence-based policies and technological advancement. Such collaboration is expected to accelerate knowledge transfer and promote innovation that is responsive to national development priorities. Ultimately, the establishment of BRIN reflects the government's commitment to building a robust and sustainable national research and innovation ecosystem (Amelia, 2022).

Nevertheless, empirical studies on the brain drain phenomenon reveal a persistent gap between legal mandates and actual policy implementation. This gap is particularly evident in the absence of clear and comprehensive operational mechanisms to facilitate the repatriation of skilled professionals from the diaspora. In many cases, existing policies emphasize normative commitments without providing practical guidelines or institutional arrangements for execution. As a result, reintegration processes for returning professionals remain fragmented and insufficiently supported. These structural limitations reduce the ability of policies to harness the expertise and global networks of skilled migrants. Consequently, the overall effectiveness of brain drain mitigation policies is significantly constrained (Permatasari, 2023). Thus, although Indonesia's legal structure is considered solid, the implementation of more specific and coordinated policies to attract and retain skilled talent remains fragmented and requires the formulation of more concrete technical programs (Jumadi et al., 2024).

Opportunities and Legal Challenges in Citizenship Policies

One of the most promising opportunities for reversing brain drain lies in reforming citizenship policies. The proposal to introduce dual citizenship for the Indonesian diaspora offers a strategic pathway to enhance national competitiveness in science, technology, and innovation. By allowing dual citizenship, Indonesia could strengthen its global networks, promote smoother reintegration of professionals returning from abroad, and facilitate investment and knowledge transfer from overseas nationals. Nevertheless, such reform faces significant legal challenges. Law No. 12 of 2006 on Citizenship upholds the principle of single nationality, which creates a barrier to implementing dual citizenship schemes. Any amendment would require constitutional and legal feasibility studies to ensure compatibility with Indonesia's legal system. Scholars such as (Ayuni, 2022; Lazuardi, 2020; Syafitri & Abdulloh, 2022; Taruna & Wibisana, 2020b; D. Wulansari et al., 2021) emphasize that dual citizenship could bring substantial benefits, yet must be balanced with constitutional integrity and national identity considerations. In the absence of dual citizenship, Indonesia has introduced alternative mechanisms, such as the Limited Stay Permit (ITAS) and diaspora card program, to grant partial rights and privileges to diaspora members. While these instruments provide limited economic and legal benefits, they do not fully capture the potential advantages of dual citizenship, such as investment incentives and long-term participation in national research and innovation projects.

Reforming citizenship policies presents a significant opportunity for Indonesia to advance its *reverse brain drain* agenda, as the introduction of dual citizenship is considered a strategic mechanism to enhance global talent mobility, strengthen transnational networks, and support national innovation capacity (Lazuardi, 2020; Syafitri & Abdulloh, 2022). Empirical studies further demonstrate that dual citizenship can facilitate smoother reintegration of returning professionals and promote investment as well as knowledge transfer from overseas nationals, thereby contributing to national competitiveness in science and technology (Ayuni, 2022). However, the implementation of such reforms is constrained by substantial legal barriers, particularly the single-nationality principle embedded in Law No. 12 of 2006, which scholars argue requires comprehensive constitutional and legal feasibility assessments to ensure alignment with Indonesia's legal framework and protection of national identity (A. Wulansari et al., 2021). As an interim solution, Indonesia has introduced alternative instruments such as the *Izin Tinggal Terbatas* (ITAS) and the diaspora card program, yet these mechanisms while offering limited economic and legal benefits remain insufficient to fully realize the broader advantages associated with dual citizenship, including long-term investment incentives and sustained involvement in national research and innovation initiatives (Taruna & Wibisana, 2020a).

Research and Innovation Regulations

Law No. 18 of 2002 serves as the cornerstone of Indonesia's national research and innovation system (LITBANG IPTEK). Through this regulation, institutions like BRIN were established to coordinate and strengthen the country's research ecosystem. Despite this progress, several persistent challenges undermine the system's effectiveness.

Budget constraints remain a primary obstacle, limiting the scope, quality, and sustainability of research programs (Handoyo et al., 2024; Wigati & Setiawan, 2019). Moreover, the lack of advanced research infrastructure deters many Indonesian scientists abroad from returning home (Liu & Arifin, 2021; Putera et al., 2022). Another major issue is the mismatch between research outcomes and industrial needs, which weakens innovation linkages and reduces the attractiveness of Indonesia's research environment for diaspora professionals (Fatimah et al., 2020; Riyani & Hanita, 2020). Although new initiatives such as the 2023 Researcher and Innovator Incentive Program have been launched by Kemenristek to boost domestic productivity, these programs remain limited in reach and do not explicitly engage diaspora researchers. To enhance effectiveness, Indonesia must adopt a more inclusive research policy that facilitates collaboration with overseas professionals and leverages diaspora expertise to bridge technological gaps.

Labor Regulation Constraints

Labor policy remains one of the most significant barriers to diaspora reintegration. Law No. 13 of 2003 on Manpower guarantees general labor rights, including those for foreign workers (Rokhmah, 2019), but it does not provide specific incentives or flexible employment pathways for returning diaspora professionals. This rigidity hampers their reintegration into Indonesia's workforce and limits their ability to contribute to the national economy. Studies indicate that legal and administrative barriers often discourage diaspora members from re-entering the domestic job market (Yuliana, 2019). Furthermore, competency-based training and international certification recognition programs remain underdeveloped, making it difficult for professionals trained abroad to have their qualifications acknowledged locally (Rosnaeni et al., 2024). These constraints reveal that existing labor laws are misaligned with the goals of diaspora engagement. Therefore, labor regulation reform is needed to introduce flexible contractual schemes, tax incentives, and skill recognition systems that accommodate global mobility while promoting national human capital development.

Indonesia faces significant labor regulation constraints in its efforts to reintegrate diaspora professionals, as the provisions of Law No. 13 of 2003 on Manpower were not designed to provide specific incentives or flexible employment pathways for returning skilled migrants (Studi Hukum, 2024). The rigidity of labor rules and administrative procedures is viewed as a major obstacle that hinders their reintegration into the domestic job market and limits the economic contributions that returning professionals could offer (ASEAN, 2021). Moreover, competency recognition and international certification equivalency mechanisms remain underdeveloped processes for diploma equivalency and recognition of work experience continue to encounter procedural barriers, making it difficult for foreign-trained professionals to have their qualifications acknowledged in Indonesia (Country Report — Indonesia: Recognition Frameworks and KKNI Issues, 2022; Padjadjaran), 2024). Consequently, the literature emphasizes the need for labor regulation reform that includes more flexible contractual schemes, fiscal incentives, and competency recognition systems based on the KKNI and *Recognition of Prior Learning* to facilitate global mobility while strengthening national human capital development (OECD, 2021).

Strategic Integration and Policy Synergy

Despite various legal and institutional efforts, the lack of policy integration and coordination remains a critical threat to reversing brain drain. Different ministries and agencies such as Kemenkumham, Kemenaker, and BRIN often operate in silos, resulting in fragmented implementation and limited inter-agency cooperation. As (Gürel & Tat, 2017) note, fragmented governance structures hinder the effectiveness of policies intended to mobilize diaspora talent. To address this issue, Indonesia must pursue a synergistic and cross-sectoral policy approach. This involves aligning legal reforms in citizenship, labor, and research policies under a unified national strategy for diaspora engagement. The Long-Term National Development Plan (RPJPN) 2025–2045 explicitly emphasizes the role of human capital and innovation as key pillars of Indonesia's future competitiveness. Therefore, integrating diaspora policies into the RPJPN framework could enhance coherence, efficiency, and impact.

Implications

The findings indicate that Indonesia's legal frameworks are normatively strong yet operationally weak. While constitutional and statutory foundations supporting innovation and human capital development are already in place, practical barriers legal, bureaucratic, and institutional continue to hinder their effective implementation. These obstacles limit the translation of normative commitments into tangible policy outcomes. The introduction of dual citizenship or comparable legal innovations has the potential to unlock significant opportunities for investment, technology transfer, and enhanced global collaboration. Such measures could strengthen Indonesia's engagement with its skilled diaspora and international networks. However, any legal reform must be carefully designed to remain consistent with constitutional principles and national interests.

Furthermore, reforming labor and research regulations to align more closely with diaspora engagement objectives would substantially enhance Indonesia's capacity to attract, integrate, and retain global talent. Such regulatory alignment would reduce structural disincentives faced by returning professionals and foreign-trained experts. It would also create a more supportive ecosystem for knowledge exchange, innovation, and long-term professional mobility. Ultimately, achieving a successful reverse brain drain in Indonesia requires strong policy coherence, institutional synergy, and sustained political commitment. Strengthening legal frameworks alone is insufficient without effective implementation mechanisms. Therefore, adequate funding, robust governance arrangements, and consistent inter-ministerial collaboration are essential to transform Indonesia's diaspora potential into a tangible and sustainable national asset.

Indonesia's efforts to optimize diaspora engagement further require a multidimensional policy approach that integrates legal reform with institutional redesign. Although the legal framework has affirmed the importance of human capital development, weak interagency coordination and overlapping regulations often hinder the effectiveness of policy implementation. In addition, geopolitical dynamics and global competition for talent exert external pressure on Indonesia to accelerate regulatory modernization. Therefore, harmonizing policies among relevant ministries, including the Ministry of Foreign Affairs, the Ministry of Manpower, and the Ministry of

Education, becomes crucial in creating a conducive ecosystem for the reintegration of diaspora professionals.

Furthermore, the success of reverse brain drain strategies requires strengthening the national innovation ecosystem through research incentives, institutional reforms, and sustainable international partnerships. Countries that have successfully attracted global talent typically possess open research systems, competitive funding mechanisms, and strong legal protections for innovators. Indonesia can draw valuable lessons from these practices by expanding incentive schemes for diaspora researchers and professionals. Providing flexible career mobility pathways would enable smoother transitions between domestic and international research environments. In addition, promoting cross-border research collaborations could strengthen knowledge exchange and innovation capacity. Such measures would help integrate diaspora expertise into national research and development agendas. Without comprehensive structural reforms in the research and technology sectors, the potential contributions of the diaspora are likely to remain fragmented and underutilized. Consequently, this condition would undermine the achievement of Indonesia's long-term strategic national development objectives.

CONCLUSION

This study shows that Indonesia has established a regulatory framework to support reverse brain drain, yet gaps in implementation, limited incentives, and insufficient research infrastructure constrain its effectiveness. A more integrated approach is required to maximize the benefits of these policies. By developing a comprehensive diaspora reintegration framework including coordinated policy implementation, expanded financial and non-financial incentives, improved research facilities, and structured stakeholder collaboration Indonesia can better harness the expertise of its global talent. Such a framework not only strengthens national competitiveness and non-military defense but also offers a model for other emerging economies facing similar challenges. This research contributes to interdisciplinary discussions at the intersection of human capital policy and national security, providing practical recommendations for policymakers and institutions aiming to optimize diaspora engagement.

To enhance the effectiveness of future initiatives, policymakers should prioritize the development of a synchronized, cross-ministerial governance model that ensures consistency across legal, labor, and research policies related to diaspora engagement. Strengthening monitoring and evaluation mechanisms is essential to identify bottlenecks in implementation and adjust programs in real time. Future studies should also examine the specific needs and motivations of different diaspora segments to design more targeted incentive schemes and reintegration pathways. Additionally, comparative research involving other emerging economies could provide valuable insights for refining Indonesia's policy architecture. By integrating these recommendations, Indonesia can advance toward a more evidence-based, adaptive, and sustainable diaspora engagement strategy.

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