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RESEARCH AND INNOVATION FUNDING POLICY IN INDONESIA IN THE POST-2019 NATIONAL SCIENCE AND TECHNOLOGY SYSTEM ERA

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Abstract. *This paper aims to examine the regulatory framework for funding innovation and science research in Indonesia, with a specific focus on the 2019 National Science and Technology System Law implementation. Through a directed qualitative content analysis of sixteen national laws, the present study identifies various shortcomings and fragmentation of governance frameworks, instruments, public-private partnerships (PPPs), and outcome-based performance assessment mechanisms. The paper highlights important shortcomings like the lack of thorough integration of innovative funding mechanisms and homogeneous performance assessment frameworks with an orientation towards outputs. Relying on international policy reports—including the OECD's and the United Nations Economic Commission for Africa's—as well as supported by corresponding academic scholarship, the study identifies the necessity for adopting performance assessments with an orientation towards outputs, regulatory harmonization, as well as enhanced policy coherence between the federal government and regional administrations. This study concludes with strategic recommendations with a view towards enhancing the effectiveness, transparency, and inclusiveness of Indonesia's innovation and science funding framework. These recommendations include enhancing coordination across multiple ministries, expanding the reach of output-based funding schemes, adopting a national PPP framework, and introducing a matching fund scheme for linking efforts between federal and local governments.*

Keywords: *Research and innovation funding; Science, technology, and innovation (STI) policy; Regulatory governance; Fiscal incentives; Public–private partnerships*

Reikšminiai žodžiai: *mokslinių tyrimų ir inovacijų finansavimas; Mokslo, technologijų ir inovacijų (MTI) politika; Reguliavimo valdymas; Fiskalinės paskatos; Viešojo ir privataus sektorių partnerystė.*

Introduction

Over more than two decades, the public sector has played a pivotal role in shaping the financial approaches to science, technology, and innovation (STI) in Indonesia. Approximately 80% of research and development (R&D) budgetary expenditures originate from government and public university budgets, while private sector involvement is significantly restricted (Rizal et al., 2024). The government has put in place numerous mechanisms such as research grants, tax incentives, subsidies, and technology insurance schemes; however, the success of these programs is often undermined by complex bureaucratic procedures, insufficient fiscal incentives, and difficulties in inter-agency coordination, further heightened by the absence of a comprehensive national innovation framework (Damuri, Aswicahyono, & Christian, 2018). Efforts to develop an ecosystem—such as technology parks, incubators, and technology transfer centers—have relied mainly on top-down approaches, often being transitory and lacking genuine interaction with the industrial sector.

The structural issues delineated are also emphasized in the report titled R&D Trends and Science and Technology Governance Reform in Indonesia (Takeshi et al., 2024). Indonesia's Gross Expenditure on Research and Development (GERD) ratio in 2020 accounted for only 0.28% of its GDP, lagging behind the averages of ASEAN and OECD nations. Government expenditure accounted for 63.8% of overall research and development spending, while the private sector's contribution was 29.5%—a percentage that has not improved, reflecting the unattractiveness of the national funding mechanism to industry. Institutional consolidation and streamlining of the research framework have been achieved through the establishment of the National Research and Innovation Agency (BRIN); however, budget synchronization across ministries and the deployment of output-based funding instruments are only in the initial stages of implementation (Burhani, Mulyani, & Pamungkas, 2021). The report emphasizes the need for stronger public-private partnerships, the implementation of more targeted fiscal incentive policies, and the provision of sustained investments for both strategic and basic research initiatives.

Similar challenges are found in the context of higher education. Since the early 2000s, there has been a shift from a centralized input model to performance-based funding systems—competitive grants, block grants, and matching funds—aimed at enhancing efficiency and encouraging innovation (Aprimadya, 2024). While this shift has been beneficial to top-ranked universities, it runs the risk of widening institutional disparities, as only flagship campuses can adequately leverage competitive funding sources. At the same time, due to political pressures and public calls for accessibility, government control of tuition fees persists, thereby limiting universities' ability to seek alternative funding sources from the private sector or philanthropic institutions. Thus, universities are at a turning point in terms of autonomy, accountability, and financial resilience—dimensions critical to their strategic role as promoters of knowledge and innovation.

International studies suggest that public interventions—such as grants, tax incentives, government venture capital, and public-private partnerships—can address market failures in R&D but are also vulnerable to government failures, including crowding out private investment or inefficient resource allocation (Veugelers, 2021). The key lies in well-designed instruments, strong institutional capacity, and evidence-based evaluation at both micro and macro levels.

The United Kingdom experience provides a prime example. The UK Research and Development Funding Policy (Rough, Hutton, & Housley, 2023) illustrates a strong commitment to reaching a goal of 2.4% of GDP spent on research and development in 2027, complemented by a systematically organized public-private financing model (underpinned by UK Research and Innovation and R&D tax credits), mission-led policies defined in the Industrial Strategy Challenge Fund, and robust provisions for transparency and continuous assessment. The flexibility of UK policy in responding to the challenges of Brexit and the COVID-19 pandemic highlights the importance of adaptability in both domestic and global contexts. Therefore, the purpose of this study is to assess how Indonesia's science and technology funding policy—particularly after the implementation of Law No. 11/2019—is structured and operationalized across

the dimensions of regulatory governance, financial instruments, public–private sector collaboration, and evaluation mechanisms.

RQ = "How are Indonesia's research and innovation funding policies characterized after the enactment of Law No. 11/2019, with regard to regulatory governance, fiscal instruments, public–private partnerships, and performance evaluation mechanisms?"

Methodological approach

The qualitative content analysis (QCA) research design is applied in this study, defined as the systematic method of thematically and contextually studying and interpreting the meaning of regulatory documents. Unlike quantitative approaches, which center on the occurrence of given terms or phrases, QCA is based on the understanding of substantive meanings in the context of social, institutional, and policy contexts (Zhang & Wildemuth, 2009; Roller, 2019; Gustina et al., 2024). In applied practice, QCA can take the form of either deductive or inductive research designs. For the present research, the deductive method, also called directed content analysis (Hall & Steiner, 2020; Roller, 2019), is applied, based on pre-established analytical categories set for the analysis of regulatory information's compliance with relevant policy issues (Gheyle & Jacobs, 2017).

Deductive research design utilizes an analytical system as the starting point for the initial coding of pertinent text. Directed content analysis, as explained by Hall and Steiner (2020), is applied to assess the extent of policy compliance with set norms or theoretical constructs (Hall & Steiner, 2020). Similar research designs were applied in the research and innovation policy context, as examined by Putera et al. (2022), who grouped regulations into four categories: (1) program implementation; (2) human resource and skill development; (3) policy facilitation including licensing and taxation; and (4) regional institutional impacts (Putera et al., 2022). This specific research design has been adopted in assessing the policy responses towards COVID-19 in the context of science, technology, and innovation (STI) policy (Prakoso Bhairawa Putera, Widianingsih, et al., 2022). Therefore, the application of the deductive qualitative content analysis is essential in assessing the consistency of policy, ascertaining the regulatory gaps, and providing a systematic foundation for evidence-based policy recommendations.

Table 1. *Data Collection and Categorization Protocol for Regulatory Content Analysis*

Content analysis of regulations	**Data sources:** • https://www.peraturan.bpk.go.id/ • https://jdih.brin.go.id/ • https://jdih.kemenkeu.go.id/home
	Data period: Agustus 2019 – Juni 2025
	Type of data: regulations from the level of the Law to Ministerial Regulations
	Implementation of regulatory data collection: 1 -- 30 June 2025
	The number of regulations analyzed **(n = 16)**
The scope of regulation used in the analysis	Research and Innovation Funding Policy in Indonesia After the Enactment of Law of the Republic of Indonesia Number 11 of 2019 on the National Science and Technology System (NSTS).
Data analysis and Policy categorization	Governance, fiscal instruments, public–private partnerships, and performance-based evaluation mechanisms

Source: Authors.

Sample and Data Collection

The scope of the present research includes legislative and regulatory documents related to research and innovation funding in the wake of the enactment of Law Number 11 of the year 2019 related to the Republic of Indonesia's National Science and

Technology System. Procuring the documents was done via the National Legal Documentation and Information Network (JDIHN), the official online channels of the various departments and ministries, as well as the regulatory repository handled by BRIN. Inclusion involved regulations that had provisions related to funding, financing, facilitation, or incentives regarding research and innovation at the national as well as subnational levels. Sixteen regulatory documents were analyzed in this regard. To ensure transparency and replicability, Table 1 presents the protocol used for collecting and categorizing regulatory documents, including data sources, selection criteria, and the total number of regulations analyzed.

Data Analysis

The research applied the deductive method, using four main analytical themes from the existing literature and prior studies: governance, fiscal mechanisms, public-private partnerships, and performance-based evaluation frameworks. They were selected based on their presence in the OECD (2024) and the United Nation Economic Commission for Africa (2023), as well as in empirical studies in developing countries that identified essential components for the creation of efficient, measurable, and inclusive research innovation funding systems (OECD, 2024; United Nation Economic Commission for Africa, 2023). Each of the regulatory instruments was analyzed at the article or primary paragraph level, using the hierarchical coding method that allowed for tiered classification towards the more specific subcategories from the broader categories (Eduardo et al., 2023; Prakoso Bhairawa Putera, Suryanto, et al., 2022). This research design aimed not only tos determine the presence and structure of funding components within legal instruments but also to assess the extent of regulatory compliance with the adopted conceptual design.

The four categories were further broken down into subcomponents: governance included institutional coordination and stakeholder engagement; fiscal tools encompassed tax incentives, public funding, and blended finance; PPPs addressed co-financing and enabling regulations; while performance-based mechanisms involved transparency, incentives, impact assessment, and output monitoring. This method enabled systematic cross-regulatory comparison at both document and variable levels. Table 2 presents an illustrative mapping of regulatory provisions against these categories and subcomponents, demonstrating how specific articles align with the hierarchical coding scheme for research and innovation funding.

Table 2. *Illustrating the Regulatory Mapping*

Regulation	Code	Category → Subcategory	Excerpt from the Regulation
BRIN Regulation Number 9 of 2024 on Research and Innovation Funding Governance	(1.1)	Governance → Inter-agency Coordination	"The research and innovation funding manager… may involve relevant work units in accordance with their respective duties and functions." (Article 8)
	(3.4)	Public–Private Partnerships → National/International Consortia	"Recipients of research and innovation funding may receive facilitation for global partnerships and industry partnerships…" (Article 15 paragraph 1)
	(4.1)	Performance-Based Evaluation Mechanisms → Output Monitoring and Reporting	"Monitoring and evaluation shall be conducted on the management of research and innovation funding…" (Article 19 paragraph 1)

Source: Authors

Inter-Coder Reliability

To maintain consistency and validity during the coding, inter-coder reliability tests were carried out using two independent coders who worked individually applying the coding structure to a sample of 16 regulatory filings. Each filing was analyzed in four primary categories. Agreement was measured using

Cohen's Kappa coefficient, taking into consideration the probability of agreement due to chance. The results indicate strong agreement for all the categories assessed, with the governance and fiscal instruments showing the coefficient of $\kappa = 0.667$. Public-private partnerships showed the coefficient of $\kappa = 0.636$, while performance-based evaluation mechanisms had the best agreement with the coefficient of $\kappa = 0.714$. All these values of the coefficient belong to the range of substantial to nearly perfect agreement (Landis & Koch, 1977). These outcomes indicate that the coding system applied in this research is operational as well as reproducible, helping to generate trustworthy as well as verifiable results.

Results and discussion

Key Points of the Indonesian Financial Support Instruments for Research and Innovation

To gain an understanding of the dynamics and direction of research and innovation funding policy in Indonesia following the enactment of Law No. 11/2019 on the National Science and Technology System, a comprehensive and meticulous analysis was conducted on several regulations issued between August 2019 and June 2025 (Table 3). This analysis aims to clarify key elements of the funding architecture, including governance aspects, financial models, public-private partnership models, and performance-based systems. The results of this analysis provide a structured explanation of the extent to which current regulations enable the development of an inclusive, responsive, and sustainable national research and innovation system.

Table 3. *Matrix of Regulatory Aspects in Research and Innovation Funding Policy*

No.	Regulation	Type of Regulation	Research and Innovation Funding Context	Policy Aspect			
				(1)	(2)	(3)	(4)
1.	Law of the Republic of Indonesia Number 11 of 2019 on the National Science and Technology System	Law	A mainstream component of the State Budget that is allocated adequately and sustainably, and serves as an integral part of the master plan for the advancement of science and technology.	V	V	V	V
2.	Presidential Regulation Number 12 of 2019 on the Education Endowment Fund	Presidential Regulation	Research funding is one of the main pillars of the utilization of the Education Endowment Fund, which is managed through investment returns. This fund supports national strategic research and ensures the sustainability of scientific advancement through accountable governance, with LPDP serving as the primary implementing agency.	V	-	-	-
	Presidential Regulation Number 111 of 2021 on Endowment Funds in the Education Sector	Presidential Regulation	Research funding is institutionalized through the Research Endowment Fund, which not only ensures the continuity of financial support for R&D activities but is also aimed at promoting strategic national inventions and innovations through governance based on the principles of perpetual investment and institutional synergy.	V	-	-	-

No.	Regulation	Type of Regulation	Research and Innovation Funding Context	Policy Aspect			
				(1)	(2)	(3)	(4)
3.	Regulation of the National Research and Innovation Agency Republic of Indonesia Number 5 of 2023 on the Governance of Research and Innovation in the Regions	Agency Regulation	Research funding at the regional level is an integral part of a collaborative, decentralized, and locally-driven national research governance system, supported by fiscal resources drawn from various legitimate financing schemes.	V	-	V	-
4.	Regulation of the Minister of National Development Planning/Head of the National Development Planning Agency Number 6 of 2024 on Innovative Financing for the Achievement of the Sustainable Development Goals.	Ministerial Regulation	This regulation offers an alternative financing framework through non-government partnerships to support research aligned with the Sustainable Development Goals. Though not specific to research, it enables funding beyond state and regional budgets, expanding opportunities for impactful research with social, economic, and environmental relevance.	-	V	V	-
5.	Regulation of the National Research and Innovation Agency of the Republic of Indonesia Number 9 of 2024 on the Governance of Research and Innovation Funding	Agency Regulation	Research and innovation funding is a strategic instrument that is managed in a planned manner, based on both competitive and assignment-based mechanisms, and sourced from various financing schemes—both governmental and non-governmental—to promote impactful research outputs and support national development.	V	-	V	V
6.	Regulation of the Minister of Finance Number 81 of 2024 on Taxation Provisions for the Implementation of the Core Tax Administration System	Ministerial Regulation	Expanding the scope of research funding in Indonesia by activating private sector contributions through tax incentive schemes. This represents a fiscal policy approach that favors innovation, strengthens multi-stakeholder collaboration, and creates new sources of research funding beyond conventional government mechanisms. In other words, this regulation is a vital component of a sustainable and competitive national research funding policy architecture.	-	V	V	V

No.	Regulation	Type of Regulation	Research and Innovation Funding Context	Policy Aspect			
				(1)	(2)	(3)	(4)
7.	Regulation of the Minister of Finance Number 28 of 2024 on Taxation and Customs Facilities in the Capital City (Ibu Kota Negara)	Ministerial Regulation	Expanding research funding sources beyond conventional schemes such as the state budget or endowment funds, this initiative forms part of a multi-source funding strategy as mandated by Law Number 11 of 2019. By providing fiscal incentives to businesses operating in the capital city area, the government aims to encourage greater private sector involvement in financing research and development activities, which has historically shown low contribution levels in Indonesia.	-	V	V	-
8.	Regulation of the Minister of Finance Number 136/ PMK.02/2021 of 2021 on Guidelines for the Provision of Remuneration from Non-Tax State Revenue Royalties for Copyright to Creators, Patent Royalties to Inventors, and/or Plant Variety Protection Royalties to Plant Breeders	Ministerial Regulation	Regulation of the Minister of Finance Number 136/2021 strengthens the research funding ecosystem based on intellectual property by positioning research outputs as productive assets capable of generating royalties and serving as a source of sustainable financing. In this context, the regulation plays a vital role in the national strategy to promote the downstream commercialization of research results and to build a more self-reliant and economically impactful research system.	V	V	V	-
9.	Regulation of the Government Number 22 of 2023 on Types and Tariffs of Non-Tax State Revenues Applicable to the Ministry of Education, Culture, Research, and Technology.	Government Regulation	This regulation defines the types and tariffs of Non-Tax State Revenues (PNBP) from research activities within the Ministry of Education. Outputs like lab services, patents, and innovations used by third parties generate income that can be reinvested, expanding funding sources and supporting sustainable, outcome-based research financing.	V	-	V	V
10.	Regulation of the Minister of Education, Culture, Research, and Technology Number 1 of 2024 on the Amounts, Requirements, and Procedures for Imposing Non-Tax State Revenue (PNBP) Tariffs within the Ministry of Education, Culture, Research, and Technology.	Ministerial Regulation	This regulation sets tariffs and procedures for Non-Tax State Revenue (PNBP) on services by units under the Ministry of Education, including research-related activities. It enables institutions to generate funding through IP licensing and lab services, supporting R&D sustainability while reinforcing results-based funding and promoting the economic value of research outcomes.	V	-	V	-

No.	Regulation	Type of Regulation	Research and Innovation Funding Context	Policy Aspect			
				(1)	(2)	(3)	(4)
11.	Regulation of the Minister of Education, Culture, Research, and Technology Number 70 of 2024 on General Guidelines for the Disbursement of Government Assistance in the Ministry of Education, Culture, Research, and Technology.	Ministerial Regulation	This regulation outlines the disbursement of government assistance for strategic programs, including research and innovation. Funding may take the form of financial aid, goods, or services for eligible recipients. Supporting research, capacity building, and dissemination, it offers a flexible instrument that complements competitive funding schemes aligned with ministerial priorities.	V	V	V	-
12.	Regulation of the National Research and Innovation Agency of the Republic of Indonesia Number 35 of 2022 on Guidelines for the Management of Direct Grants within the National Research and Innovation Agency.	Agency Regulation	This regulation allows BRIN to receive and use direct grants from external sources, offering an alternative to limited state budgets. It supports resource mobilization from non-government actors, strengthens grant-based funding governance, and promotes diversified, non-binding partnerships aligned with national research priorities.	V	V	V	-
13.	Regulation of the National Research and Innovation Agency of the Republic of Indonesia Number 4 of 2024 concerning Amendments to Regulation of the National Research and Innovation Agency of the Republic of Indonesia Number 2 of 2022 on the Implementation of Cooperation within the National Research and Innovation Agency.	Agency Regulation	This regulation enables BRIN to receive research funding from external partners, including the private sector and international bodies. Article 19(2)(f) requires financing to be assessed for feasibility and accountability, positioning institutional collaboration as a key mechanism to diversify funding beyond the State Budget and endowment schemes.	V	V	V	-

No.	Regulation	Type of Regulation	Research and Innovation Funding Context	Policy Aspect			
				(1)	(2)	(3)	(4)
14.	Regulation of the Minister of Finance Number 62/ PMK.03/2021 of 2021 on Procedures for Involving the Central Government and/or Regional Governments in the Context of Allocating Donations and/ or Costs for the Development of Social Infrastructure That Can Be Deducted from the Gross Income of Taxpayers in the Mineral Mining Business Sector.	Ministerial Regulation	Regulation 62/2021 allows mining companies to receive tax deductions for R&D donations channeled through government-affiliated research institutions. It provides a legal and fiscal framework that incentivizes private sector contributions, expanding research funding sources through accountable, collaborative mechanisms between industry and public research bodies.	-	V	V	-
15.	Presidential Regulation Number 132 of 2024 on the Management of Plantation Funds	Presidential Regulation	This regulation introduces a plantation fund sourced from export levies and industry contributions to finance applied research and innovation. It enables cross-sectoral, sustainable, and multi-source funding, positioning research as both a national policy tool and a driver of science-based economic development in key sectors..	V	V	V	-
16.	Regulation of the Minister of Finance Number 129/ PMK.02/2022 of 2022 on Amendments to Regulation of the Minister of Finance Number 210/PMK.02/2021 on Types and Tariffs of Non-Tax State Revenues for Urgent Needs Applicable to the National Research and Innovation Agency (BRIN).	Ministerial Regulation	In national research funding, this regulation enables BRIN to utilize Non-Tax State Revenues (PNBP) from services like lab analysis and tech incubation, reducing dependence on the state budget. It fosters BRIN's role as a demand-driven science service center and supports a more adaptive, impact-oriented, and efficient research funding system.	V	V	V	-

Notes: (1) Governance | (2) Fiscal Instruments | (3) Public–Private Partnership | (4) Performance-Based Evaluation Mechanism
Source: Authors.

Thematic Analysis of Research and Innovation Funding Policy

Table 4 provides some major policy parameters drawn from the reviewed regulations. Governance stands out as a strongly highlighted factor, illustrating a practical institutional commitment to direction delivery, authority, and research funding administration orchestration. Nevertheless, decentralization of regulatory mandates among different ministries, without a coordinating center, seems to indicate institutional fragmentation, which can impede the achievement of strategic cohesion and policy uniformity.

Table 4. *Distribution of Policy Aspects in Research and Innovation Funding Regulations in Indonesia*

Policy Aspect	Number of Regulations	Percentage	Key Notes
Governance	13 out of 16	81,25%	Almost all regulations provide direction on the governance of research funding.
Fiscal Instruments	9 out of 16	56,25%	Dominated by tax incentives, endowment funds, grants, and non-tax state revenue (PNBP).
Public–Private Partnerships (PPP)	13 out of 16	81,25%	Increasingly open, ranging from super tax deductions to co-financing schemes.
Performance Evaluation	4 out of 16	25%	Still very limited. Only a few regulations mandate outcome monitoring.

Source: Authors.

Fiscal instruments have been widely utilized, best represented by traditional mechanisms of tax incentives, endowment funds, grants, and non-tax revenue sources, popularly known as PNBP. While these instruments have increased the fiscal space to support research activities, they primarily represent a conservative strategy, and few efforts have been made to make more exploratory funding options available, such as research bonds or performance-based funding schemes.

Incorporation of public-private partnerships (PPPs) into different regulatory environments represents a new policy direction seeking to augment participation by diverse actors. The shift itself reflects an emerging awareness that research achievement represents an ever-broader, cross-boundary responsibility extending well beyond the jurisdiction of the public sphere. Nevertheless, the lack of harmonious national standards, most importantly on risk-sharing, intellectual property rights, and co-financing arrangements, creates discrepancies in implementation, often limiting collaborative projects to single-episode initiatives.

Performance evaluation mechanisms remain underdeveloped. A small number of regulations address monitoring and evaluation explicitly, indicating a gap in accountability and policy feedback loops. Without standardized performance indicators and outcome-based tracking systems, financial resources risk being misallocated, and the effectiveness of funding initiatives cannot be adequately assessed. Despite these limitations, the future policy development direction implies a gradual shift towards funding models that focus on inputs to ones that rest on outcomes and performance. Early signs of this shift include the adoption of royalty contracts tied to intellectual property, production based on research-backed services, and financial planning rooted in quantifiable outcomes. The implementation of these developments can be made stronger through strong governance frameworks, more sophisticated financial instruments, well-developed public-private partnership models, and in-depth digital policy assessment, all geared towards strengthening Indonesia's research infrastructure to sustain development and technological advancement.

Strategic Implications and Policy Development Recommendations

A review of the regulatory mechanisms governing research finance and innovation financing in Indonesia discloses several strategic aspects that may inform future policy decisions. One of the identified issues is the lack of emphasis on performance-based evaluation systems in the current regulatory environment. The lack of a comprehensive methodology to monitor and analyze performance impedes the objectivity of evaluating the effectiveness of various funding channels, including the national budget (APBN), non-tax state revenues (PNBP), endowment funds, and fiscal incentives. Thus, there is a heightened need for the development of a national monitoring system that emphasizes outputs and outcomes. Ideally, such a system should be embedded in a digital platform that engages various governmental ministries, thus having the potential to enhance transparency towards research outcomes, facilitate tracking

of research expenditure, and allow for continued monitoring of institutional performance. The potential benefits of introducing such a system may include enhanced resource allocation, greater accountability, and enhanced productivity in research.

Another area that requires focus is the inadequate cross-ministry and institutional coordination in implementing funding programs. As it stands, many institutions exist separately, which can lead to redundancies or straying from general national objectives. To correct this situation, it becomes essential to institute mechanisms for institutional coordination, including a cross-ministerial coordinating forum. Comprised of representatives from BRIN, Ministry of Finance, Bappenas, and respective line ministries, it would have members undertaking a facilitating function to reconcile funding initiatives, optimize resource allocation efficiency, and ensure research initiatives align within a short- as well as long-term national development framework. In terms of fiscal innovation, research funding procurement relies mainly on tradition-based methods, including endowments and tax incentives. Future policy design may embrace a mixture of funding instruments geared to improved research commercial outcomes, including research bonds, outcome-based funding, and blended funding combining public and private funding sources. Development of an institutional environment friendly to such mechanisms can open the range of funding instruments and increase research and innovation investment attractiveness.

The growing relevance of public-private partnerships (PPPs) makes it imperative to develop comprehensive national guidelines. Though different legislative initiatives allow private participation in research funding, the absence of clearly defined standards around risk allocation, intellectual property rights, and long-term incentive arrangements remains a continuing barrier. Development of a professional national PPP framework focusing on research and innovation can lead to more balanced, responsible, and sustainable collaboration by different stakeholders.

The imbalance between national and subnational research funding remains a significant challenge to date. Most regional activities have not synchronized with the orientations, funding schemes, and results set by national research priorities. In its efforts to remedy this situation, the government might consider introducing a matching fund policy aimed at bridging the gap between central and regional governments. The policy may prove instrumental in balancing local needs and national goals while contributing a boost to local research capacity. Finally, it might be used to foster decentralized research policies that are uniquely suited to the regions' distinct socio-ecological and ecological features.

Addressing these challenges in a coordinated and step-by-step manner provides Indonesia with a significant chance to make its research funding framework more efficient, effective, and resilient. Strengthening this fundamental element can help promote the country's advancement in science and technology, putting innovation as a critical feature of sustainable national growth.

Conclusion

This research presents important insights into the development of Indonesia's policy funding for innovation and research using an organized qualitative content analysis of the policy texts. Rather than summarizing the policy texts, findings highlight four important points related to the development of future policies. The antecedent regulatory structure registers a significant bias towards financial instruments and governance arrangements, consequently indicating the government's commitment towards the formalization of funding for research. This focus is not, however, coupled with the creation of adequate performance-based assessment mechanisms. This leaves a significant gap in terms of tracking policy foresight and accountability frameworks. This unsatisfactory tracking mechanism could frustrate institutional capacity for efficiently demonstrating the impact and effectiveness of funded activities. In addition, even as PPPs are becoming more popular in the world of research, there still does not exist a unified national regulatory system to facilitate them. The lack of national harmonized guidelines, particularly on intellectual property rights and long-term risk-sharing arrangements, is a missed opportunity to better involve

external stakeholders and strengthen multi-sectoral innovation systems. Thirdly, the case highlights a persistent mismatch between national and regional funding policies for research. A matching funds scheme between national and local governments can serve as an important strategic solution for reconciling local needs with national goals, while also boosting research capacities that have contextual applicability for particular regions.

Overall, this study provides a regulatory analysis that can inform future reforms to Indonesia's research funding system. The highlighted strategic priorities include strengthening the legal framework about performance-based financing, enhancing intersectoral coordination, and enhancing policy coherence across levels. The implementation of these priorities is critical, as it will maximize research expenditure and mainstream science and innovation into Indonesia's broader development agenda.

Future Research

The findings of this study offer important directions for further research to strengthen innovation funding policies in Indonesia. Future research should evaluate the implementation of regulations following Law No. 11/2019, assess the effectiveness of instruments such as performance-based funding, tax incentives, and public–private partnerships, and conduct comparative analyses with ASEAN best practices. Further studies should also explore innovative funding mechanisms such as research bonds, blended finance, and impact investing, assess their impact on research outputs, and examine institutional coordination among key stakeholders to develop a unified, accountable national funding system aligned with national objectives and global best practices.

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TYRIMŲ IR INOVACIJŲ FINANSAVIMO POLITIKA INDONEZIJOJE PO 2019 M. NACIONALINĖS MOKSLO IR TECHNOLOGIJŲ SISTEMOS ĮSIGALIOJIMO: TURINIO ANALIZĖ VALDYMO, FISKALINIAIS IR PARTNERYSTĖS ASPEKTAIS.

Anotacija. *Šis straipsnis siekia išnagrinėti inovacijų ir mokslo tyrimų finansavimo teisinį reguliavimą Indonezijoje, ypatingą dėmesį skiriant 2019 m. Nacionalinės mokslo ir technologijų sistemos įstatymo įgyvendinimui. Pasitelkus kryptingą kokybinę turinio analizę, kurioje buvo analizuota šešiolika nacionalinių teisės aktų, tyrime nustatomi įvairūs trūkumai ir fragmentacija valdysenos struktūrose, finansavimo instrumentuose, viešojo ir privataus sektoriaus partnerystėse (VPPP), taip pat rezultatų vertinimu grįstuose veiklos vertinimo mechanizmuose. Straipsnyje pabrėžiami esminiai trūkumai, tokie kaip nepakankama inovatyvių finansavimo mechanizmų integracija ir vieningos, į rezultatus orientuotos veiklos vertinimo sistemos nebuvimas. Remiantis tarptautiniais politikos dokumentais – įskaitant Ekonominio bendradarbiavimo ir plėtros organizacijos (EBPO) bei Jungtinių Tautų Afrikos ekonomikos komisijos ataskaitas – ir atitinkamu akade-*

miniu mokslu, tyrime pabrėžiama būtinybė diegti į rezultatus orientuotus vertinimo metodus, harmonizuoti reguliavimą ir stiprinti politikos nuoseklumą tarp centrinės valdžios ir regioninių administracijų. Autorius pateikia strategines rekomendacijas, skirtas padidinti Indonezijos inovacijų ir mokslo finansavimo sistemos veiksmingumą, skaidrumą ir įtrauktį. Šios rekomendacijos apima koordinacijos stiprinimą tarp skirtingų ministerijų, rezultatų pagrindu veikiančių finansavimo schemų išplėtimą, nacionalinio VPPP sistemos įtvirtinimą ir bendro finansavimo schemos sukūrimą, skirtą sujungti centrinės ir vietos valdžios pastangas.

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