

INDONESIA

SUMMARY REPORT

Navigating
Indonesia's
Science and
Technology
Diplomacy
Ecosystem





Country Focused Workshop Series 2025

“Navigating Indonesia’s Science and Technology Diplomacy Ecosystem”

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Note

The information presented in this Summary Report is based on the webinars of the [Country Focused Workshop Series on Indonesia](#) for the Asia-Europe Science and Technology Diplomacy Initiative for Young Professionals. The views and information presented in the Summary Report are based on what was shared by the speakers in the webinars as part of the series, and do not necessarily reflect the official position of the Asia-Europe Foundation (ASEF) or its partners for the project. The author bears full responsibility for the content and contextualisation of information and any potential inaccuracies in the webinar series.

Country Focused Workshop Series on ‘Navigating Science & Technology Diplomacy Ecosystems’

Introduction

The [Asia-Europe Foundation \(ASEF\)](#) launched the [Asia-Europe Science & Technology Diplomacy Initiative for Young Professionals](#) in 2024 to serve as a platform for dialogue, knowledge sharing, and collaboration among young academics, diplomats, and professionals involved in the international science, technology and innovation sectors in Asia and Europe – using Science and Technology Diplomacy as a tool to come together to address global challenges.

In 2024, young leaders from 40+ countries contributed to the research titled [Asia-Europe Science & Technology Diplomacy Report](#), which mapped Science and Technology Diplomacy strategies and actions in the two regions.

Based on the report, this [Country Focused Workshop](#) series titled “Navigating Science and Technology Diplomacy Ecosystems” in 2025 highlighted four (4) selected Asian countries’ diverse Science and Technology Diplomacy approaches, their objectives, and how international partners can engage and collaborate with them.

Each country was introduced in a three (3) session-long workshop series as follows:

Session 1: The role of **Government Strategy and Actions** in the science and technology diplomacy ecosystem;

Session 2: The role of **Academia and Research Institutions** in the science and technology diplomacy ecosystem and how to work with them; and

Session 3: The role of **Businesses** in the science and technology diplomacy ecosystem and how to work with them.

This report is a summary of the three webinars conducted as part of the Country Focused Workshop Series on ‘**Navigating Indonesia’s Science and Technology Diplomacy Ecosystem**’ which took place from 1 July to 22 July 2025 and was organised in partnership with the [National Research and Innovation Agency \(BRIN\) Indonesia](#) and with the support of [EURAXESS ASEAN](#).

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Navigating **Indonesia's** Science and Technology Diplomacy Ecosystem

1. The Role of Government Strategy and Actions

Overview

The first session on 'The Role of Government Strategy and Actions' in Indonesia's Science and Technology Diplomacy Ecosystem' took place on 1 July 2025.

The session opened with welcome remarks by the Asia-Europe Foundation (ASEF) and partner representatives. **Mr Zhang Lei**, Deputy Executive Director of ASEF highlighted in his remarks the importance of Indonesia as Southeast Asia's largest economy, and the undeniable potential in participating in the global ecosystem of science and technology development, for example through utilising Indonesia's natural resources, their vibrant business ecosystem, and strategic geopolitical position.

Furthermore, **Dr Laksana Tri Handoko**, the Chairman of the Indonesian National Research and Innovation Agency (BRIN), welcomed all distinguished guests and panellists to the workshop series and pointed to the workshop's importance in promoting Indonesia's commitment to international collaboration in science. Finally, **Ambassador Soemadi Brotodiningrat**, ASEF Governor for Indonesia, and Independent Commissioner, PT Bank DBS Indonesia, delivered his remarks and highlighted the importance of science and diplomacy collaboration which become the cornerstone for Indonesia in advancing their further interests.

The session continued with a Keynote presentation, which was delivered by **Dr R. M. Marty Natalegawa**, Former Minister of Foreign Affairs of the Republic of Indonesia (MoFA). Sharing his perspective from working with MoFA, Dr Natalegawa presented several key insights concerning the diplomatic element within Indonesia's Science and Technology (S&T) diplomacy. He mainly outlined the aspect of: (a) Indonesia's approach towards S&T diplomacy; (b) International inputs that MoFA recognises in their S&T diplomacy; and (c) benefits that MoFA believes can be extracted for Indonesia through S&T diplomacy.

Dr Natalegawa shared that there are two international factors that have sparked an initial desire of building Indonesia's S&T diplomacy ecosystem. First are the growing uncertainties from a geopolitical perspective. These uncertainties are the main drive forcing the country to adapt rapidly and cooperate between many sectors, including academia, building as many alliances as possible. Secondly, he observed how diplomacy has caused several issues to converge – it is no longer possible to differentiate between, on the one hand, political security, and on the other, social, cultural, and economical challenges. This convergence, then, forces the country to establish more multistakeholder cooperations and for more wide-spread collaboration, which once again, could only be sustained, according to him, through the continued development of S&T diplomacy.

To understand the approach of Indonesia's S&T diplomacy, Dr Natalegawa's presentation also provided an explanation focusing on three general approaches of science diplomacy. He explained the concepts of: (1) diplomacy for science; (2) science for diplomacy; and (c) science in diplomacy.

Currently, as Dr Natalegawa remarked, Indonesia still focuses on the first approach of 'diplomacy for science' – the technicalities of science diplomacy that Indonesia conducts are still centred within the mainstream diplomacy agenda.

To improve Indonesia's S&T diplomacy performance, Dr Natalegawa suggests that the approach needs to shift towards including 'science in diplomacy' in its strategy. This approach calls for more active participation from local academic institutions on the global stage and for extensive collaboration accordingly. As such, the coordinating role of S&T diplomacy does not only lie with the Ministry of Foreign Affairs, but could be improved by the alignment between Indonesia's S&T diplomacy agenda with the actual domestic needs and coordination between multiple ministries. Furthermore, he also mentioned that the country would have to increase its soft power, should 'science in diplomacy' be Indonesia's of interest to explore.

Following the keynote presentation, the session continued with a panel discussion with distinguished experts in the field:

- **Dr Boedistoeti Ontowirjo**, Deputy Chairman for Research and Innovation Policy, National Research and Innovation Agency (BRIN), Indonesia
- **Dr Dudi Hidayat**, Director, Directorate for Political Law, Defence and Security Policy, National Research and Innovation Agency (BRIN), Indonesia
- **Mr Dedy Saputra**, Senior Policy Analyst, Ministry of Higher Education, Science and Technology, Indonesia

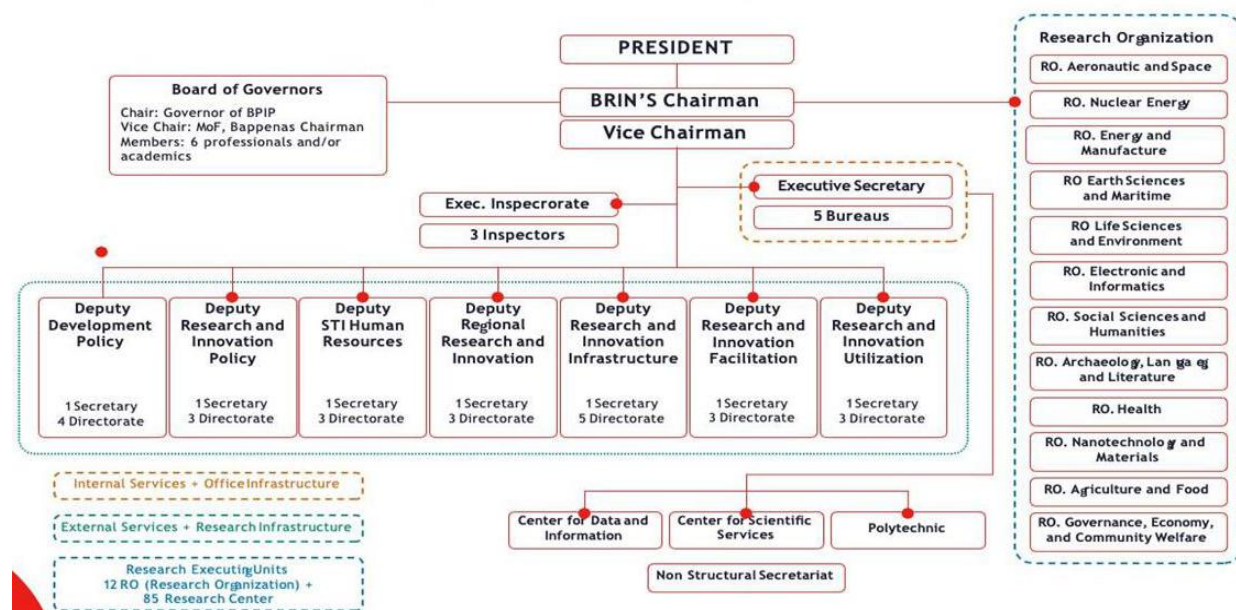
The panel discussion was moderated by **Dr Joannes E. Tandjung**, Director for Strengthening Partnership on Infrastructure Research and Innovation, National Research and Innovation Agency (BRIN), Indonesia.

1.1 Institutions In-Charge of Indonesia's Science & Technology (S&T) Diplomacy

As shared by Mr Dedy Saputra, the current president of Indonesia, Mr Prabowo Subianto (in charge since 2024), wants to use science and technology to strengthen the state's sovereignty. This indicates that, on the one hand, Indonesia possesses the desire to get into the global stage of science and technology, while on the other hand, they are also not willing to just "follow the waves" of emerging S&T diplomacy trends. With the Ministry of Education (MoE) as the main coordinator, Indonesia may target its focus on issues related to science and technology. MoE can also formulate strategic level decisions, while the operationalisation could be assisted by other ministries/agencies. Furthermore, Dr Dudi Hidayat shared that MoFA provides high contribution within the operational or technical aspects during S&T diplomacy implementation.

In driving the strategic planning of science diplomacy, the MoE is mainly assisted by the National Research and Innovation Agency (BRIN) and the Deputy for Development Policy. The structure of Indonesia's BRIN was also presented by Dr Hidayat through the Figure below.

Figure 1. National Research and Innovation Agency (BRIN), Indonesia internal structure



1.2 Domestic Interests Carried Out by Indonesia's S&T Diplomacy

After being elected in 2024, President Subianto laid out his vision containing eight pillars of a five-year development plan called "[Asta Cita](#)". These pillars include:

- Strengthening the state's ideology (*Pancasila*), democracy, and human rights
- Optimising the state's national defence system through domestic self-sufficiency of food, water, and energy supplies
- Creating high-quality jobs by supporting small and medium enterprises, creative industries, and infrastructure enhancement
- Improving national human resource quality through science, technology, and education
- Constructing facilities to support national downstream and industrialisation process
- Improving the quality of villages and conducting poverty alleviation efforts in rural areas
- Strengthening political, law, and bureaucracy reform to prevent the spread of corruption and drugs
- Creating a peaceful and harmonious society

As underscored by BRIN officials in the webinar, these eight development pillars are employed to support Indonesia's ambition in achieving 8% annual economic growth by 2029. With a current growth rate of 5-6%, to achieve an 8% growth means that Indonesia should double-up the amount of its factories and maximise the potential of their growing workforce. This also indicates that Indonesia needs to prepare for increased consumption, particularly in the areas of food, water, and energy supplies. Therefore, achieving resilience on all those aspects is a must, not only through extensive production but also through a more efficient usage of technological devices. That is where

strengthening education and technology sectors become important, being the area where Indonesia's S&T diplomacy may play its part.

Besides these three essential aspects for development (water, energy, and food), Dr Dudi Hidayat also expressed that the country's interest in S&T diplomacy can function as a way to enhance its national defence, especially through the development of a larger technological enhancement agenda. The current administration believes that the increased capability of the defensive sector would create more job opportunities for the country's rapidly growing workforce. Through S&T diplomacy, Indonesia hopes that it could: (a) get access to frontier research; (b) mobilise joint-infrastructure and funding; and (c) exchange best practices and talents through talent and knowledge transfer – all considered as essential instruments to bring innovation towards the national defence system.

Finally, the panellists shared the sentiment that S&T diplomacy is believed to be the future bridge in improving the quality of the country's human resources. Development through technology in the previously mentioned sectors requires a strong degree of research and innovation. Indonesia cannot rely solely on foreign technological and talent transfers, and diplomacy should also benefit the development of domestic research environments, as well as the improvement of its involved personnels.

1.3 International Cooperation

Indonesia's S&T diplomacy is reflected by its participation in multiple international institutions. As shared by Dr Boediastoeti Ontowirjo, currently BRIN officials are tasked to represent the country at 18 international institutions – ranging from general international organisations like INSERT to more specific cooperation forums like the G20 and the Center for International Forestry Research (CIFOR).

Dr Ontowirjo shared that another diplomatic pathway on scientific cooperation that BRIN provides is to conduct joint research, embracing relevant stakeholders abroad. The funding for this initiative comes mainly from Indonesia's public fundings held by BRIN, but also could come from joint-venture schemes. Public funded research mainly focuses on solving domestic issues, with foreign authors welcome to share their insight or even share their methodology.

1.4 Summary

To conclude, this first session set the main frameworks of Indonesia's S&T diplomacy ecosystem. Some essential elements of the country's S&T diplomacy were also discussed (summarised by the table below):

Scope	Answers
Objective(s)	Two-level policy-making: • Fulfilling domestic interests • Growing international pressure
Main actor(s) & key stakeholder(s)	Mainly coordinated by the Ministry of Higher Education, Research, and Technology (MoE) through the National Research and Innovation Agency (BRIN)
Key Issue(s)	• Self-sufficiency in water-food-energy sectors/resources • Defence and military industries • Technological-enhancement • Improving the quality of the country's human resources
Implementation, and coordinating mechanism(s)	• Participation in international institutions and networks • Coordination with related ministries/ agencies • Joint-research initiatives • Bilateral cooperation on science, technology, and innovation

From the discussions, we can conclude that Indonesia's science diplomacy ecosystem is the result of a 'two-level game' policy-making process, triggered by both international inputs and domestic interests. For the implementation, the coordination is mainly led by the Ministry of Education (MoE) through the National Research and Innovation Agency (BRIN).

Representatives from BRIN underscored several domestic issues aligning with President Subianto's plan, which includes: achieving a secured supply of water, energy, and food; improving Indonesia's defense industry; enhancing its scientific technology; while also developing human resource quality within Indonesia's academic ecosystem.

2. The Role of Academia and Research Institutions

Overview

The second webinar took place on 15 July 2025, focusing on 'The Role of Academia and Research Institutions' in Indonesia's science and technology diplomacy ecosystem. The session started with a keynote delivered by **Dr Edy Giri Rachman PUTRA**, Deputy Chairman of the National Research and Innovation Agency (BRIN), Indonesia.

Dr Putra, in his role as Deputy Chairman, explained BRIN's profile within Indonesia's research ecosystem and provided technical explanations on some of BRIN's programmes focusing on global engagement. He highlighted three key roles that BRIN holds in supporting Indonesia's general research ecosystem: 1) supporting the government's evidence-based policymaking through conducting intensive research activities; 2) acting as the parent institutions of multiple research centres in Indonesia; and 3) being one of the main providers of research funding in Indonesia.

On the second role in particular, BRIN is connected with 12 research organisations, 85 research centre branches, 28 research collaboration centres, and another 770+ joint-research groups across the country. In addition, BRIN currently employs around 7,400 researchers spread across divisions and branches. Furthermore, expanding on the third point, the research funding is not limited just to strictly monetary contributions. BRIN also provides laboratory facilities, contributes to conversion of research to policy briefs, and provides opportunities for mobility or human resource development.

BRIN's strong domestic foundation allows them to look abroad and engage in more global cooperation and dialogues. This foundation starts with by conducting studies on several transnational issues. By aligning these issues and studies with their domestic objectives, BRIN's global engagement also allows them to facilitate and provide capital to research. For example, to conduct S&T diplomacy initiatives, BRIN allocates parts of the grants it offers for joint research with foreign institutions.

Before closing his presentation, Dr Putra explained how BRIN is actively setting up talent management programmes. Recalling the first session of the Workshop Series, these talent management initiatives also align with the government's main interest in engaging in S&T diplomacy. Indonesia is hopeful that engaging in S&T diplomacy not only allows technological and knowledge transfer through collaborative research, but it could also support the improvement of domestic human resources quality.

After the keynote, the session transitioned into a panel discussion with the following experts:

- **Dr Ocky Karna Radjasa**, Chairman of Research Organization for Earth Sciences and Maritime, National Research and Innovation Agency (BRIN), Indonesia
- **Prof Ni Luh Putu Indi Dharmayanti**, Chairman of Research Organization for Health, National Research and Innovation Agency (BRIN), Indonesia
- **Dr Andes Hamuraby Rozak**, Chairman of Research Organization for Life Sciences and Environment, National Research and Innovation Agency (BRIN), Indonesia
- **Prof KRMH Tatas Brotosudarmo**, Representative for ASEAN, EURAXESS Worldwide

The panel discussion was moderated by **Ms Tri Sundari**, Head of Bureau for Legal and Cooperation, BRIN.

2.1 General Objectives

When looking at current global developments, the panellists shared a similar understanding that Indonesia's S&T diplomacy should become one of the bridges to improve the country's technological capacity. Globally, the use and development of new technologies have been rapidly growing, especially in the past few years. However, domestically, Indonesia is still several years behind other advanced countries and needs to improve their technological development – especially in areas such as Artificial Intelligence (AI) and cybersecurity.

Global changes in the past few years also highlight the importance of multilateral collaboration in science, which is something that the panellists admit has been underutilised by Indonesia. Multilateral collaboration in science could deliver many tangible and intangible benefits. The panellists highlighted the fight against climate change through the Paris Agreement as one of the most successful examples of this type of collaboration. Indonesia, with its participation, should leverage these multilateral initiatives, to trigger more inward-oriented studies while still equipping itself with rich global perspectives.

In combining the insights from both Dr Putra's keynote and reflections by panellists, Indonesia's academic institutions can be presented to have the following objectives within the field of S&T diplomacy: 1) catching-up with technological innovation and development in some issues such as the use of Artificial Intelligence (AI) and cybersecurity; 2) participating in global scientific collaboration; 3) improving human resource quality in conducting research and triggering innovation; and 4) supporting the willingness in the country to broaden its scope of evidence-based policymaking.

2.2 Key Issues from the Academic Perspective

Due to Indonesia's vast geographical and diverse demographic profile, the research scope is generally diverse. Therefore, several research priorities are set to enable Indonesia's national growth target. As shared by the speakers, these priorities include:

[1] Energy Security & Climate Change

- a. Assisting the decarbonisation process through intensive studies, aligning with Indonesia's vision to achieve Net-Zero by 2060.
- b. As the number of workforce and factories is growing, so does the energy consumption. Therefore, Indonesia's great potential in renewable energy should be converted to fulfilling this energy demand.
- c. BRIN, on their energy security roadmap, also focuses on how climate change has increased Indonesia's vulnerability to natural disasters. Therefore, improving public infrastructure, enhancing the mapping procedures, and determining new early warning

measurements have become the focus that BRIN sets to improve Indonesia's disaster resilience.

- d. In addition to having a large amount of renewable energy sources, Indonesia also possesses a vast biodiverse environment. However, transnational wildlife trade, climate change, and possible extinction for some species have threatened that rich biodiversity.

[2] Food Security

- a. Achieving food self-sufficiency (Indonesian: *swasembada pangan*) is one of the core priorities set by Indonesian President Subianto. It also correlates as a strategy to optimally use the country's strong agricultural profile.
- b. However, similar to the energy issues, some problems are still to be addressed. Indonesia still relies on imports to supply their food. Furthermore, technological innovation, quantified with the number of patents submitted annually in agriculture, is still low – indicating that increased quality research is required for proper improvement of Indonesia's food security.

[3] Human Security

Another issue that the panellists addressed is human security, which directly points to the problem of sufficient health infrastructure, as well as tracking of disease spread patterns. Collaboration to enhance Indonesia's research capacity on health and diseases is also a part of the nation's S&T diplomacy agenda. For Indonesia, the COVID-19 pandemic revealed the vulnerability of Indonesia's health system. Prolonged issues such as unpredictability of tropical disease spread are also still to be addressed. Addressing these issues successfully requires strong collaboration, as processing and testing of large number of samples and tests (especially in healthcare) are required.

2.3 Empowering Local Research Institutions: Who and How?

Panellists from the National Research and Innovation Agency (BRIN) shared how it has established many cooperation initiatives with other local research institutions. These institutions include study centres, think-tanks, and even campus branches focusing on research and innovation. With the current emergence of S&T diplomacy, panellists from BRIN shared that they expect that BRIN's local institutional partners could also step up onto the global stage and engage with foreign institutions. Several frameworks that BRIN representatives explained could be followed by local institutions in conducting international collaborative research include:

1. Mapping the domestic needs of relevant research themes first, particularly answering the questions of “what are the local issues that the local institutions are willing to solve?”
2. Communicating with international partners that are also familiar in assisting the studies under particular issues.
3. Focusing the cooperation on knowledge sharing and joint projects and not allowing the cooperation to only become the platform of data exchanges.

4. Committing to continue the cooperation until the studies' completion and also committing to solve possible technical challenges that might halt the cooperation.

The panellists also mentioned that BRIN is looking at three groups of countries that Indonesian research institutions could refer to for further international cooperation. Those groups of countries include:

1. *Global South countries*: Indonesia's current diplomacy agenda is centred on the willingness to conduct more South-South cooperation. The engagement with global south countries is also backed up with strong historical foundations, as the Indonesian government has facilitated multiple student exchanges coming from the Global South through scholarship initiatives of '*Kemitraan Negara Berkembang* (Developing Countries Partnership' and '*Dharmasiswa*').
2. *ASEAN Member States*: Due to geographical proximity and strong ASEAN's regional contributions, research partnership with ASEAN-based institutions would be more convenient and their insights would also be more relevant to Indonesia's local context.
3. *European Union countries*: In comparison with the Global South and ASEAN countries, partnership with the EU might not be supported with a similar context of geographic and development purposes. However, the EU remains a strong potential partner for Indonesia, as they are known for having strong experience in science & innovation. Indonesia could extract substantial knowledge from partnership with the EU's most advanced countries.

2.4 Summary

The second webinar provided an overview of the role of academic and research institutions' roles in the science and technology diplomacy ecosystem in Indonesia. This session was mainly filled by the insights coming from Indonesia's National Research and Innovation Agency (BRIN).

At the domestic level, BRIN mainly serves three functions in Indonesia's general research ecosystem, which is to: 1) assist the government in evidence-based policymaking through studies, 2) function as the parent institution of other local research centers, and 3) act as the main platform for providing public research funding in Indonesia.

Panellists shared that the main objectives of Indonesia's S&T diplomacy strategies should be aligned with the desire to catch-up with global development on technology and innovation. Furthermore, S&T diplomacy should work as an international platform for Indonesia to actively participate in multilateral scientific collaboration. Another objective mentioned is also to bridge Indonesia with the global research ecosystem through S&T diplomacy and help increase domestic human capital on research.

Regarding their priority sectors, currently BRIN is building its research ecosystem based on three priorities of: (a) energy security and climate change; (b) food security; and (c) human security (within a focus of healthcare infrastructure and control of the spread of diseases). BRIN has the potential to help Indonesia to accelerate its development goals through research and innovation, while also contributing to the global research ecosystem.

As BRIN also support other local research institutions, they also encourage their local partners to enter the global S&T diplomacy ecosystem and engage in international research partnerships, focusing on: (a) Global South countries; (b) ASEAN member states; and (c) the European Union. By collaborating with countries in those groups, the quality

3. The Role of Businesses

Overview

The final webinar of the Country Focused Workshop Series on Indonesia focused on 'The Role of Businesses' in the Indonesian science and technology diplomacy ecosystem and took place on 22 July 2025.

The Keynote Presentation was delivered by **Dr Ilham Akbar Habibie**, Co-founder of PT. ILTHABI Rekatama and Chief-Executive of Indonesia Chamber of Commerce and Industry (KADIN). In this session, four panellists joined Dr Habibie was:

- **Dr Peter Eisner**, Deputy Institute Director, Fraunhofer Institute of Process Engineering and Packaging
- **Mrs Josephine Satyono**, Executive Director, UN Global Compact Network Indonesia
- **Dr R. Hendrian**, Deputy Chairman for Utilization of Research and Innovation, National Research and Innovation Agency (BRIN), Indonesia
- **Mrs Nidya Kartikasari**, Director for American and European Intra- and Inter-regional Cooperation, Ministry of Foreign Affairs, Indonesia

The session was moderated by **Dr Intan Suci Nurhati**, the Head of Research Center for Deep Sea at the National Research and Innovation Agency (BRIN).

3.1 Aligning Science Diplomacy with Indonesia's Economic Growth

Dr Ilham Akbar Habibie opened his keynote by highlighting the importance of focusing on Indonesia's economic potentials in the strengthening of its use of science diplomacy. At the moment, as Dr Habibie explained, Indonesia is still far behind its ambition of reaching an annual growth of 8% (indicated by the value of the country's Gross Domestic Product (GDP)) by 2029. The majority of the country's exports remain dependent on raw materials, especially in the fossil and mineral resource sectors. A large portion of the workforce also continues to rely on nature-extractive industries such as agriculture, maritime resources, and energy. These dependencies are among the central challenges Indonesia must address if it seeks to increase the value of the products to offer to the global market. Transformation is imminent, and this call once again highlights how a stronger science and innovation system could significantly improve the nation's economic standing. On the other hand, Dr Habibie emphasised that becoming an "advanced country" requires more than just rapid growth. It also demands the modernisation of industry, the creation of higher economic value, and the equipping of Indonesia's workforce with technological knowledge – all of which point to the indispensable role of science and innovation to be spread across the nation.

According to Dr Habibie, Indonesia must begin by building facilities that focus on downstream processing of the country's abundant resources. While the government can provide substantial support through capital investment, progress will remain limited if Indonesia lacks the technological

capability to process these resources effectively. In this regard, Dr Habibie also underlined three areas in particular where this can be optimised further: renewable energy, digital industries, and creative industries.

On renewable energy, he talked about the importance of developing Indonesia's geothermal potential, where, currently, Indonesia holds around 40% of the world's total geothermal reserves – a tremendous comparative advantage. Beyond geothermal, the country also possesses vast potential in wind, solar, biomass, and marine-based energy, including micro-hydro and ocean current. Harnessing these resources would allow Indonesia to ride the global wave of energy transition, while also strengthening the movement of labour and goods, fostering technological transfer, and increasing human capital simultaneously.

In the digital industries sector, Dr Habibie observed that growth in this sector could generate significant spillovers, particularly for Indonesia's small and medium enterprises. Digital industries also provide critical technical infrastructure that can boost the competitiveness of the broader manufacturing sector in the country. However, sustained progress in this field requires a robust science and technology ecosystem, which becomes a challenge considering that Indonesia still allocates only about 0.3% of its GDP for research and development. It's still far below the global benchmark of 1%.

Finally, in the sector of creative industries, Dr Habibie emphasised how Indonesia's rich cultural heritage has fuelled the rise of fashion, handicraft, culinary, film, and photography industries in recent years. Here, Indonesia can further elevate the global profile of its creative industries, extract greater value and position them on the world stage. To do this, Dr Habibie stressed the importance of effective collaboration, particularly partnerships that are strategic, feasible, and aligned with Indonesia's long-term economic vision, where S&T diplomacy can be used to establish these partnerships.

Science and technology diplomacy can also be used to tackle national challenges halting the country's economic growth. Here, Dr Habibie highlighted two examples related to technology transfer and policy consistency. Dr Habibie described technology transfer as one of the key weaknesses in Indonesia's innovation development. While the country has benefited from the flow of goods and labour through active international participation, especially via multilateral trade agreements and bilateral deals, the same cannot yet be said for the transfer of technology. Indonesia still largely exports raw materials and imports advanced goods, without ensuring the transfer of technical processes that would allow the country to utilise the value of its own resources.

The second challenge lies in policy inconsistency. In closing, Dr Habibie acknowledged that Indonesia's government still lacks the organisational knowledge and institutional practices necessary to attract sustained foreign technological cooperation. By strengthening evidence-based policymaking, ensuring greater policy coherence, and creating an environment more conducive to long-term innovation and growth, Indonesia can increase international cooperation and strengthen their position on the global market.

3.2 Enhancing the Science Ecosystem within Indonesia's Businesses: Cross-Sectoral Perspective

Continuing with the panel discussion Dr Peter Eisner presented several best practices from Germany on how science and technology (S&T) diplomacy can enhance industrial productivity. Using examples such as palm oil and sunflower protein extraction, he illustrated how scientific innovation can maximise resource utilisation and drive economic growth. He also underscored the importance of business-academia linkages in strengthening S&T diplomacy. Establishing the linkage is also a pathway he described as crucial for economic development. Drawing from his own experiences working with BRIN, he explained how the agency has actively engaged with Indonesian industries to ensure that research projects are designed with the capacity to generate tangible economic benefits.

Building on the points made by Dr Eisner, Mrs Josephine Satyono and Mrs Nidya Kartikasari reflected on their respective experiences. Both continued by highlighting a need for increased focus on the importance of science engagement with global governance, rather than being stuck at domestic research management. Global engagement could bring multiple benefits, with the most tangible one being the improvement of the country's research quality.

While the panellists agreed on the importance of S&T diplomacy and largely shared a common vision of why it must be pursued, the question of how to implement it effectively remains a significant challenge. Mrs Kartikasari noted that Indonesia focuses its diplomacy on 'not only receiving, but giving' but there is still a need to utilise the tools to advance their own national development goals and being part of global solutions to common challenges. As further discussed between the panellists, Indonesia has undertaken two main approaches: (a) international research-based collaboration and (b) domestic innovation enhancement. Yet, the impact of these efforts has so far been minimal. For instance, Indonesia has engaged in international collaborations with 135 countries on areas such as renewable energy, sustainable agriculture, and disease management. However, the country's technological capabilities in those sectors still fall far below global standards.

The discussion turned to the problem of 'research down-streaming,' where Indonesia still falls behind more observably technology-driven countries, such as China. Dr R. Hendrian elaborated on the complexities of this issue, pointing to a persistent mismatch between research outputs and market demand. Studies may be completed and there are policy incentives in place for development, but the domestic market may be underprepared. As a result, industries find their primary markets abroad, leaving Indonesia once again dependent on exporting raw or semi-processed products rather than capturing higher added value.

To follow up, Dr Eisner shared more about 'research commercialisation'. Within industry, he argued, research incentives should not only aim at solving existing problems but also focus on identifying potential market values and integrating them into research outcomes. Researchers themselves must also adopt this paradigm if they are to maximise the economic impact of their work. For an emerging economy like Indonesia, research commercialisation is not just an added benefit but a crucial pathway to sustained growth.

Moreover, research commercialisation opens new avenues for collaboration that Indonesia's S&T diplomacy could pursue. Instead of relying solely on government-to-government channels, the state could facilitate linkages across a wider ecosystem of actors: research institutions, government agencies, and private enterprises. On this point, the panel highlighted that research commercialisation offers a mechanism for industry to bring real-world problems to the table, enabling researchers to address them while simultaneously enhancing their collaboration. This approach, in turn, would help Indonesia bridge the gap between research and market application, thereby strengthening both its innovation ecosystem and its S&T diplomacy agenda.

At the same time, panellists cautioned that Indonesia's business ecosystem must first overcome structural obstacles. Mrs Satyono pointed to the critical role dialogue plays in understanding between different stakeholders. In addition, overlapping policies and corruption were highlighted as critical barriers that deter investment and undermine economic potential. As Dr Eisner noted, Indonesia still requires substantial inflows of capital to translate its demographic and resource advantages into real economic gains. Without policy reforms that create a more welcoming environment for investment, Indonesia risks underutilising its abundant human and natural resources.

3.3 Empowering Youth in Science and Technology Diplomacy

Beyond discussing how Indonesia should advance S&T diplomacy to accelerate growth, the panellists also discussed the importance of involving youth in this sector. This role is particularly crucial given Indonesia's favourable demographic structure. By 2045, the centenary of independence, today's youth will reach their prime productive age. It will also be the time when Indonesia is expected to achieve its peak economic growth. This so-called demographic bonus has long been recognised by the national government as a key opportunity for development but then requires optimised youth involvement within the country's growing business ecosystem.

Mrs Satyono, in particular, underscored the role of youth as current drivers of innovation, pointing to initiatives such as the [SDGs Innovation Accelerator Programme](#) by UN Global Compact, that she observed by herself is evidence of their active leadership. The discussion again touched on the persistent mismatch between scientific research and business needs, highlighting the urgency of fostering collaboration to address challenges like limited data accessibility. Such gaps not only slow down business growth but also complicate investment decisions. Collaboration, however, is an area where youth can excel, thanks to their adaptability and strong interpersonal skills.

3.4 Summary

Indonesia's path toward becoming an advanced economy by 2045 requires more than ambitious growth. Reaching that goal would demand modernisation, technological capability, and innovation-driven industries. Dr Ilham Habibie emphasised in his keynote on renewable energy, digital industries, and creative sectors, demonstrated how S&T diplomacy can serve as both a bridge and a catalyst for this transformation.

Collaboration across academia, government, industry, and international partners can form the backbone of a stronger science ecosystem. The discussions can be summarised as follows:

- Cross-sectoral collaboration is critical. Effective S&T diplomacy cannot be achieved by the government alone. Synergies among academia, industry, and state institutions is needed;
- Research down-streaming and commercialisation remain weak. Indonesia's innovation ecosystem still struggles to convert research outputs into market-ready products;
- Youth must be integrated as drivers of innovation. With the demographic bonus expected by 2045, young Indonesians can bring creativity, adaptability, and collaborative skills towards the broader business ecosystem; and
- Global governance engagement cannot be overlooked. Indonesia's S&T diplomacy must extend beyond domestic concerns to actively shape global agendas, ensuring Indonesia is not merely a participant but also a rule-shaper.

The discussion revealed both opportunities and challenges in bridging the gap between knowledge and market application. For youth involvement, the panellists crucially underscored the unique opportunity of Indonesia's demographic bonus, where the younger generation could inject new energy into both S&T diplomacy and the country's business ecosystem. The speakers also acknowledged that without overcoming structural barriers—such as overlapping regulations, corruption, and insufficient investment inflows, Indonesia risks underutilising both its human capital and natural resources.

Taken together, the discussions highlighted a common message: Indonesia's business sector, working hand-in-hand with academia, government, and youth, must become a central player in driving science and technology diplomacy. Only through such integration can the country not only seize the benefits of globalisation and the energy transition, but also position itself as a truly advanced economy by 2045.

Conclusions

The three webinars of the Country Focused Workshop Series on 'Navigating Indonesia's Science and Technology Diplomacy Ecosystem' have collectively painted a comprehensive picture of how Indonesian government, academia and business actors – all collaboratively, perceive, direct, and implement strategies of Indonesia's S&T diplomacy. The first session began with the government representatives explaining major interests and key issues in Indonesia's S&T diplomacy. It was explained that Indonesia is focusing on a two-level approach – aiming to fulfil its domestic interests, as well as participating in a growing environment of global innovation – the two main objectives for their S&T diplomacy agenda.

Since President Prabowo took office in 2025, the government has been working under one single ambition: to achieve an 8% economic growth by 2029. Priority issues to help achieve those targets are also mentioned clearly, they include improvement on water, food, and energy nexus, domestic defence industries, tech infrastructure, and the quality of human resources. We see that the responsibility of implementation of these goals and strategies fall mainly on the Ministry of Foreign Affairs (MoFA) and the Ministry of Education (MoE), with support in operationalisation by the state's National Research and Innovation Agency (BRIN).

More of BRIN's work was highlighted in the second session, focusing on research and academic institutions. Speakers and panellists from BRIN elaborated the key issues that Indonesia's science environment is focusing on. They include energy security, food security, environment security, and human security. The session highlighted how BRIN, together with other national and local research institutions, also actively participate in global S&T diplomacy, so that the diplomacy agenda does not stop as a centralised discourse in Indonesia.

Later, in the third session, we also heard the perspectives of the private sector regarding Indonesia's S&T diplomacy. Based on the speakers and panellists' contributions, we can conclude that the private sector is aware that science, technology, and innovation are inseparable parts to achieve sustainable economic growth in the country. S&T diplomacy cooperation between government, academia, and the private sector could become a "bridge" for Indonesia to ensure the achievability of industrial down-streaming, research commercialisation, as well as ensuring youth involvement within the economic system. These are the important elements for Indonesia to grow its economy and unlock its global potential.

Across all sessions, Indonesian government, academia, and private sectors agree that Indonesia could use S&T diplomacy as a pathway to increase the synergies among stakeholders in the country. It was underlined that the synergies do not stop at domestic-international collaboration – which simply is the backbone of S&T diplomacy – but it could also facilitate public-and-private collaboration. By achieving a number of its national objectives, participating in a global innovation environment, and ensuring multi-stakeholder collaboration, Indonesia could achieve its ultimate goal: becoming an advanced economy by 2045.

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