

JICA Ogata Sadako Research Institute for Peace and Development  
Empirical Research Project on Impacts of Study Abroad in Developing Countries - based on Study  
Abroad Experiences of Academic Professionals of Major Universities in ASEAN

# **Higher Education in Indonesia: Impacts of Study Abroad Programs on Academic Institutions**

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**JICA OGATA SADAKO RESEARCH INSTITUTE  
FOR PEACE AND DEVELOPMENT**



## **Empirical Research Project on Impacts of Study Abroad in Developing Countries - based on Study Abroad Experiences of Academic Professionals of Major Universities in ASEAN:**

The JICA Ogata Sadako Research Institute for Peace and Development is currently (2018-2023) conducting research on the impact of study abroad on societal and institutional development in ASEAN. The research employs a large-scale survey and interviews with academic professionals at ten top universities in four ASEAN countries (Cambodia, Indonesia, Malaysia and Viet Nam) to examine the impacts of study abroad on university development and their current activities at the university. Further, shifts in study abroad trends over time are identified in the data. For more details about the project, please refer to the site below.

[https://www.jica.go.jp/jica-ri/research/human/strategies\\_20180401-20210331.html](https://www.jica.go.jp/jica-ri/research/human/strategies_20180401-20210331.html)

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This report was prepared as part of the JICA Ogata Research Institute Research Project on Impacts of Study Abroad in Developing Countries, intended to gather essential information on the history and current status of higher education as well as the impacts of study abroad on academic professionals in Indonesia. The Project commissioned Dr. Moeliodihardjo to prepare this report and the work was supported by JSPS KAKENHI Grant Number 20H00094.

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## Abbreviations

ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
BAN-PT	<i>Badan Akreditasi Nasional – Perguruan Tinggi</i> National Accreditation Agency for Higher Education
Bappenas	<i>Badan Perencanaan Pembangunan Nasional (Bappenas) / Kementerian Perencanaan Pembangunan Nasional</i> National Development Planning Agency / Ministry of National Development
Planning	
BPPLN	<i>Beasiswa Pendidikan Pascasarjana Luar Negeri – Overseas Graduate Scholarship</i>
BUDI	<i>Beasiswa Unggulan Doktor Indonesia – Scholarship for Excellent Lecturers</i>
BRIN	<i>Badan Riset dan Inovasi Nasional - National Research and Innovation Agency</i>
CIDA	Canada International Development Agency
DGHERT	Directorate General of Higher Education, Research, and Technology
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDB	Islamic Development Bank
ITB	Institut Teknologi Bandung
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KfW	<i>Kreditanstalt für Wiederaufbau - Reconstruction Credit Institute, Germany</i>
LPDP	<i>Lembaga Pengelola Dana Pendidikan – Education Fund Management Institute</i>
MoECRT	Ministry of Education, Culture, Research, Technology
MoRA	Ministry of Religious Affairs
PDPT	<i>Pangkalan Data Pendidikan Tinggi – National higher education database</i>
PMDSU	<i>Program Magister Menuju Doktor untuk Sarjana Unggul –Master toward Education</i> Doctorate Program
SDF	Saudi Development Fund
UGM	Universitas Gadjah Mada
USAID	United States Agency for International Development
WB	The World Bank

## Executive Summary

This study aims to collect information on the impact of studying abroad for developing countries in the Association of South East Asian Nations (ASEAN), with Indonesia, Cambodia, Malaysia, and Viet Nam selected as examples. For this paper on Indonesia, two major institutions have been chosen—the Institut Teknologi Bandung in Bandung (ITB) and Universitas Gadjah Mada (UGM) in Yogyakarta.

Chapter 2 provides an introduction to the Indonesian National Higher Education System in considerable detail, including its history, profile, current and future challenges, as well as major policies. The national system has been significantly improved, particularly in regard to the gross enrolment rate. However, several emerging issues may prove more challenging, including the proliferation of private institutions, disparities, quality and relevance. In order to maintain consistency in its ability to provide support, over the last few years, the National Development Planning Agency (Bappenas) has been relying more on international assistance as its major source of funding for national higher education development.

The Ministry of Education, Culture, Research, Technology (MoECRT) has set sciences, technology, engineering, mathematics (STEM) and vocational education as national priorities in human resources development. However, in terms of studying abroad, a national strategy—in which clear priorities in selecting the destination country, institution, and specific fields would be established—has not yet been developed. Among the proposed recommendations is the need to design a pre-departure training program for scholarship recipient candidates and a re-entry program for returnees.

Chapter 3 presents data and analysis of programs for university lecturers studying abroad. It offers information on the distribution of destination countries, academic fields, and home institutions. Information on government scholarships and those from other donors is presented in this section, along with a brief discussion of the roles played by alumni associations of the major destination countries. A thorough discussion on the impact of studying abroad is presented in this chapter.

Chapter 4 presents the main findings of the interviews and document analysis, with a brief overview of a visit to Institut Teknologi Bandung (ITB) in Bandung. It describes the early history of ITB's establishment, as it was closely linked with the critical moments of the Republic of Indonesia's struggle for independence. It also presents an overview of the institution's profile, staff development policy, sources of funding, and the challenges due to the limited campus area. The individual benefits and impacts for overseas scholarship recipients are clear and the institutional benefit of studying abroad is also obvious.

Two interesting cases are presented to illustrate the institutional impact of studying abroad on two different levels, i.e., national level and unit/institutional level. The first case describes the impact of study abroad on national policy on technology and its industries. The second case focuses on the importance of finding relevant research to address problems in the home country.

Chapter 5 presents the findings and brief analysis of the Universitas Gadjah Mada (UGM) in Yogyakarta. This chapter is written based solely on a literature review without any physical visit to UGM.

The conclusion in Chapter 6 summarizes the main findings of the paper and presents two recommendations.

# **Chapter 1: Introduction**

## **1.1 Objectives**

The objective of this study is to collect information on the impact of study abroad in developing countries in the Association of South East Asian Nations (ASEAN), with Indonesia, Cambodia, Malaysia, and Viet Nam selected as examples. In Indonesia, two major institutions were selected, namely the Institut Teknologi Bandung in Bandung (ITB) and Universitas Gadjah Mada (UGM) in Yogyakarta, to acquire basic information on the Indonesian higher education system. The basic information survey is essential for the research team as it provides an overall understanding of the Indonesian higher education system and the target universities. This next section will further elaborate on the research plan.

## **1.2 Methodology**

The study was carried out between May and August 2018. It does not include any quantitative survey; instead, it comprises a qualitative analysis based on the secondary information publicly available and in-depth interviews with selected officials at ITB and UGM, the Ministry of Research, Technology, and Higher Education, as well as the Ministry of Development Planning/National Development Planning Agency. Since the report is written based on qualitative observations and secondary data analysis, it is unavoidable that the author's personal opinions have been included in some sections of this document.

The interview and visit to the Ministry of Research, Technology, and Higher Education (MoRTHE), National Development Planning Agency/Ministry of National Development Planning (Bappenas / MPPN), and ITB were carried out in May and June 2018. A visit to UGM was not undertaken, as it occurred before the conclusion of a formal agreement on the project.

In order to meet the deadline, the author has gathered information on UGM from various sources, mostly accessible through the internet. A few informal discussions were also conducted with selected individuals and staff of UGM. Therefore, the report on UGM in Chapter 4 is not as comprehensive as that of ITB in Chapter 3.

## **1.3 Acknowledgments**

The author is grateful for the opportunity provided by the Japan International Cooperation Agency (JICA) and the funding from the University of Tokyo to carry out this study. Sincere gratitude and high appreciation are also extended to the respondents from the Ministry of Research, Technology, and Higher Education (MoRTHE); Ministry of Education, Culture, Research, and Technology (MoCERT); National Development Planning Agency/Ministry of National Development Planning (Bappenas/MPPN); Institut Teknologi Bandung (ITB); and Universitas Gadjah Mada (UGM).

## **Chapter 2: National Higher Education**

### **2.1 Historical Background**

#### **2.1.1 Early Development**

Higher education in Indonesia does not have a long history, beginning at the end of the 19th century with the establishment of a medical education program for Indigenous doctors in Jakarta. Before the Second World War, the number of active students hovered around 200, even though almost 1,000 students were likely to have been registered at the time. After independence in 1945, several professional schools (engineering and sciences in Bandung, agriculture in Bogor, and medicine in Surabaya) were consolidated under *Balai Perguruan Tinggi* in Jakarta, which became the Universitas Indonesia in 1950. Shortly after independence, two private universities were established, Universitas Islam Indonesia (1945) in Yogyakarta and Universitas Nasional (1949) in Jakarta. Driven by the blossoming spirit of nationalism after independence due to the conflict with the Netherlands Indie Civil Administration (NICA), a national public university, Universitas Gadjah Mada, was established in Yogyakarta in 1949.

In the 1950s and early 1960s, schools located outside Jakarta gradually rose to become independent universities, including Universitas Airlangga (UNAIR) in Surabaya (1954), Universitas Hasanuddin (UNHAS) in Makassar (1956), Institut Teknologi Bandung or ITB (1959), and Institut Pertanian Bogor or IPB (1963). During the 1950s, nine new universities and three teacher training colleges (IKIP) were established.

In the 1960s, a new law was passed calling for the establishment of at least one public university in each province (UU 15/1961). No less than 23 new universities, institutes, and IKIPs were established during that period. The new education law also provided a basis for private participation in higher education, allowing any citizen to establish a new private school.

#### **2.1.2 Systemic Development**

In 1975, the first initiative to develop a national higher education policy was launched by developing the first Higher Education Long Term Strategy (KPPT-JP) for the period between 1975–1985. The structure of the national system was defined, emphasizing relevance by affirming the need to establish strong linkages with regional and national development. A dual track of academic and professional streams was introduced, as well as three program levels in higher education: a diploma program lasting three years, a Sarjana program of four years, and a graduate program. The organizational and management aspects were also given serious attention through the introduction of a credit system, student academic evaluations, student learning loads, and a staff promotion system.

From 1986 to 1995, higher education development was focused on consolidating previous achievements and the need to increase educational quantity, improving productivity and relevance, as well as providing more access. The economic downturn caused by the sudden drop in oil prices, however, prevented student enrollment from expanding further, although moderate expansion was still observed in the private sector.

During this period, the higher education sector had to rely more on foreign aid and loans. The Asian Development Bank (ADB) loan for developing the Institut Teknologi 10 Nopember Surabaya in 1975 was the first major intervention by a multilateral agency, followed by Polytechnics I in 1978.

#### **2.1.3 New Paradigm**

The financial crisis hit the Indonesian economy in 1997–1998, followed by a succession of economic, political, and social crises. In order to respond to the changes in political, economic, and social structure experienced after these turmoils, a new higher education strategy was launched in 2003. The first



strategy was to improve the nation’s competitiveness by increasing the higher education’s sensitivity of its natural and social environment. The second was decentralization and autonomy by promoting greater autonomy for institutions. The third strategy was to strengthen the health of organizations. Since improving internal management and developing healthy organizations require gradual implementation over a longer period, decentralization and autonomy was considered essential.

From 1995–2005, a “new paradigm” was implemented, comprised of autonomy, accountability, accreditation, and evaluation. As part of this initiative, the government's role shifted more towards that of facilitator than regulator. Increased autonomy, together with higher accountability, was expected to strengthen institutional governance and internal management, with four leading institutions (UI, IPB, ITB, and UGM) piloting a mandate to become legal entities.

At the same time, competitive or performance-based funding mechanisms were introduced to improve the efficiency and effectiveness of the allocated funds. The new funding mechanisms were implemented in a series of World Bank and ADB projects to support higher education. The fundamental difference with other, previously implemented mechanisms lies in the concept of autonomy, whereby units and institutions are invited to develop funding proposals based on rigorous self-evaluation. Later, the concept was also adopted by programs fully funded by the government.

The implementation of such competitive funding mechanisms need to be carefully designed. As disparities between regions and the level of development remain far from satisfactory, competition could potentially become politically risky. Therefore, a tiered system needed to be designed to prevent older and more established institutions to compete against the less developed institutions in the same league.

In 2009, to accommodate the government strategy of providing greater institutional autonomy, the Parliament agreed to pass a new law (UU 9/2009) making it possible for educational institutions to convert their legal status from government implementation units into independent legal entities. Unfortunately, the law had to be annulled when challenged in the Constitutional Court. A new revised draft submitted by the government to the Parliament later passed, becoming Law 12/2012 on Higher Education.

## 2.2 Current Higher Education Landscape

### 2.2.1 Institutions

As of April 2022, there are a total of 4,481 institutions offering higher education in Indonesia (PDPT 2022). In Table 2.1, institutions are grouped into four categories according to their status: universities, Islamic institutions, service colleges, and Open University.

Table 2.1: Distribution of institutions

	Public	Private	Total
Universities	124	2,990	3,114
Islamic institutions	90	1,105	1,195
Service colleges	171		171
Open university	1		1
<b>TOTAL</b>	<b>386</b>	<b>4,095</b>	<b>4,481</b>

Source: PDPT 2022

Universities are institutions under the jurisdiction of the Ministry of Education, Culture, Research, and Technology (MoECRT) and are open for admission to any high school graduate. Islamic institutions focus on Islamic studies under the responsibility of the Ministry of Religious Affairs (MoRA). Service colleges aim to produce graduates with special competencies to serve the government’s needs. In such

colleges, students are typically provided with board under government scholarships and are obliged to work as civil servants after graduation.

There are several types of institutions in the Indonesian context. *Universitas* and *Institut* are comprehensive institutions offering academic programs in various scientific disciplines. *Sekolah Tinggi* or colleges are institutions that offer programs in one single scientific discipline, e.g., medical, engineering, accounting, or arts. A *Politeknik* is an institution offering a variety of vocational programs. An *Akademi Komunitas* is an institution offering a variety of vocational programs of 1–2 years. In Table 1.2, the term “universities” is used to represent all types of institutions.

### 2.2.2 Governance

Law 22/1999 decentralizes the responsibility for managing most sectors—including education—to the districts and municipalities. Although basic education is decentralized to regional governments, the responsibility for managing the higher education system is still in the hands of the central government due to its role in promoting national integration. Currently the higher education sector is under the responsibility of the Directorate General of Higher Education (DGHE).

Under the current administration (2019–2024), the Ministry of Education, Culture, Research, and Technology (MoECRT) is responsible for all levels of education, as well as culture. Under this Ministry, the Directorate General of Higher Education, Research, and Technology (DGHERT) is responsible for managing higher education, excluding vocational institutions. All non-university research institutions have been merged under the National Research and Innovation Agency (BRIN).



Ministry of Research,  
Technology and Higher  
Education

Following the enacting of Law 12/2012, seven additional institutions were converted to become legal entities. A legal entity has a governing board as its highest authority, although a representative of the Minister of MoECRT is also an ex-officio member of the Board. As for now, 16 institutions have been granted legal status as autonomous:

- Universitas Sumatera Utara (USU)
- Universitas Indonesia (UI)
- Institut Pertanian Bogor (IPB)
- Institut Teknologi Bandung (ITB)
- Universitas Padjadjaran (UNPAD)
- Universitas Pendidikan Indonesia (UPI)
- Universitas Diponegoro (UNDIP)
- Universitas Gadjah Mada (UGM)
- Universitas Airlangga (UNAIR)
- Institut Teknologi 10 Nopember Surabaya (ITS)
- Universitas Hasanuddin (UNHAS)
- Universitas Andalas (UNAND)
- Universitas Negeri Padang (UNP)
- Universitas Sebelas Maret (UNS)
- Universitas Brawijaya (UB)
- Universitas Negeri Malang (UM)

The government also granted special status to 30 public institutions, allowing them more flexibility in managing their financial matters, including any self-generated revenue. The remaining public institutions still have to follow the strict regulations applicable to all government service units. Since

private institutions do not have any legal status, they are entirely under the control of their respective private foundations.

### 2.2.3 Funding

After the independence war of 1945–1949, the initial focus of the young republic was its survival. It had to tackle a series of separatist rebellions, culminating with a failed coup attempt in 1965. During this period, the higher education sector was largely neglected. Even during the first years of the Suharto administration, priority was given to ensuring people received sufficient staple food. In terms of funding for higher education, bilateral grants from a few foreign countries (the US, Japan, Germany, Netherlands, and Australia, among others) were available, with a limited number of overseas scholarships.

However, allocated public funds for education have been steadily increasing over the last decade, particularly after the Supreme Consultative Assembly (*Majelis Permusyawaratan Rakyat - MPR*) amended the Constitution in 2005, mandating that 20% of the government budget had to be allocated to the education sector. Table 2.2 shows the steady increase in the allocated budget, growing from IDR 7.24T (2004) to IDR 32.60T (2012) and IDR 41.29T (2018).

Table 2.2: Government budget for higher education 2004-2021, in IDR trillion<sup>1</sup>

	2004	2007	2012	2018	2021
Operation & maintenance	3.386	5.062	9.817	16.430	16.168
Investment	2.364	4.746	11.672	15.150	17.607
Self-generated	1.487	3.150	11.116	9.700	10.603
Total	7.237	12.958	32.605	41.280	44.378

Source: MoECRT 2022

The 2018 budget shows the combined budget of DGHE and MoRT, indicating that the increase shown in Table 2.2 might be misleading. The allocated government budget for higher education institutions has actually decreased since 2015 after the new President was sworn in. Due to concerns over public outcry on high tuition and fees charged by public institutions over the last few years, MoRTHE has recently introduced a cap on tuition tariffs. For this reason, the 2018 budget in Table 2.2 shows a significant decrease in self-generated revenue.

### 2.2.4 Participation Rate

The Gross Enrolment Rate (GER) has significantly improved from 18.26% in 2004 to 39.17%—or over 9.28 million registered students in 2021, as shown in Table 2.3. However, the GER is considered moderate compared to neighboring ASEAN countries, such as Malaysia (43%) or Thailand (49%) (World Bank 2021).

Table 2.3: Student enrolment

	2004	2007	2012	2018	2021
Enrolment (million)	3.86	4.37	5.38	6.12	9.28
GER (%)	18.26	20.6	27.1	33.37	39.17

Source: MoECRT 2022

Although the issue of quantity is always important, more equitable access to higher education for disadvantaged populations is considered a more pressing issue for Indonesia in the near future, with social disparity posing serious social and political risks. With the rapid advancement of technology, it is relatively easy now to carry out an expansion of higher education.

<sup>1</sup> These figures do not take inflation into account.

## 2.2.5 Quality and Relevance

Data recently acquired from Statistics Indonesia (BPS) shows that the overall unemployment among workers is around 6.8 million, or about 5.5% of the total work force. The highest unemployment rate is observed among vocational secondary school (SMK) graduates. In higher education, the proportion of unemployment graduates is higher among three-year college graduates compared to university graduates. The trend is alarming, since vocational education is designed to produce skilled graduates who are better prepared to enter the job market.

The increasing percentage of unemployed graduates from the vocational program over the last 5 years, as illustrated in Table 2.4, is worrisome. Since vocational education requires much higher investment and per-student unit costs, this phenomenon deserves serious attention. It also indicates that the education sector has not been able to produce graduates relevant to employers' needs. This confirms the findings of the previous survey conducted by the World Bank in 2009 (World Bank 2009). The significant spike in 2020 is most likely due to the Covid-19 pandemic.

Table 2.4: Percentage of unemployed workers by education attainment

	2019	2020	2021
Primary or less	2.39	3.61	3.61
Junior secondary (SMP/MTs)	4.72	6.46	6.45
Senior secondary (SMA/MA)	7.87	9.86	9.09
Vocational secondary (SMK)	10.36	13.55	11.13
Three-year college (Diploma)	5.95	8.08	5.87
University	5.64	7.35	5.98

Source: BPS 2022

In addition to relevance, quality is also a central issue in higher education. One of the major indicators for measuring quality is the result of accreditation, which is conducted by the National Accreditation Agency for Higher Education (BAN-PT). Table 2.5 shows that just 34 programs (3.08%) successfully acquired an "excellent" accreditation rating. Only 1,103 institutions have gone through the accreditation process, demonstrating that quality is still problematic.

Table 2.5: The result of program and institutional accreditation

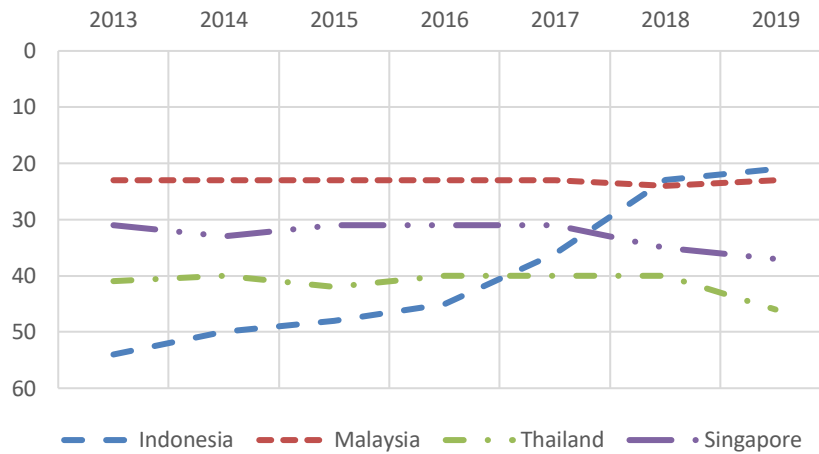
	A	B	C	Excellent	Very good	Good
<b>Public Islamic institutions</b>	6	49	7	1	8	10
<b>Private Islamic institutions</b>	0	34	253	0	9	301
<b>Service Institutions</b>	6	55	1	2	18	20
<b>Public institutions</b>	30	42	0	14	13	16
<b>Private institutions</b>	25	637	698	17	81	448
<b>Total</b>	67	817	959	34	129	795

Source: BAN-PT 2022

The number of international publications produced by a country's scientists and academics is also an indication of the quality of higher education. In 2010, Indonesia produced the fewest international publications among the major ASEAN countries. In order to rectify the problem, MoRTHE set the goal of increasing the country's international publications as its highest priority, resulting in a significant

improvement. Figure 2.1 shows that the number of publications from Indonesia, as indexed by SCOPUS in 2019, has surpassed Malaysia, Thailand, and Singapore for the very first time.

Figure 2.1: Rank of international publications as indexed by SCOPUS



Source: MoECRT 2022

## 2.3 Higher Education Policies and Strategies

In 2019, the new MoECRT administration launched new policies and programs designed to promote, encourage, and provide support for universities to strengthen their collaboration with stakeholders, including overseas institutions. The newly launched programs include matching funds for joint industrial research, downstreaming inventions/discoveries, supporting start-ups, competitive funding for selective programs, student credit-earning activities from placements in industry and the community, sabbatical leave for faculty members, staff exchange with industry, and international collaboration.

Since this study was conducted in 2018, further details on these activities are beyond the scope of this study and not included in this report. The following sections describe the previous MoECRT policies carried over by the new administration.

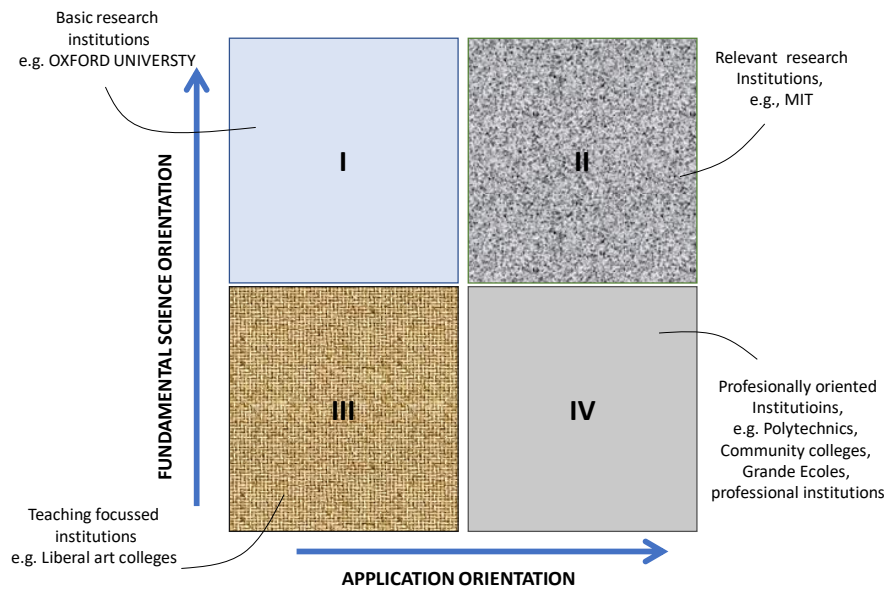
### 2.3.1 Mission Differentiation

In order to improve educational quality in coping with current global challenges, institutions are expected to consistently focus their activities according to their selected mission, as presented conceptually in Figure 2.2. It requires a much longer time, or is almost impossible, for any institution to rapidly improve quality without focusing on a specific mission. While higher education faces constant constraints in resources and time, there is an urgent need for it to contribute substantially to improving the nation's competitiveness.

The selection of the focal mission for each institution should be based on an in-depth analysis of institutional strengths, weaknesses, opportunities, and threats. The government offers support for institutions in choosing their appropriate mission by providing a variety of funding mechanisms and technical assistance, after reviewing their proposals.

The upper left corner of the rectangle represents institutions that focus on fundamental research (Oxford University might be a good example of such an institution). In the foreseeable future, however, it is predicted that institutions may not have sufficient resources or expertise to focus on fundamental research. Therefore, higher education institutions in Indonesia are encouraged to focus more on the right-hand side or the bottom-left of the rectangle.

Figure 2.2: Mission differentiation



Source: Stokes 1997; Hatakenaka 2008

### 2.3.2 Internationalization

The internationalization of higher education is imperative due to the increasing interaction among nations aiming to address global problems that require multi-lateral solutions. Internationalization at the level of individual institutions can be grouped into the following three levels of developmental stages (Cheng 2009):

- Level 1, or one-way, can be observed in the form of publicity in an international language. This includes webpages or prospectus, establishing international offices to plan and coordinate international matters, or hosting international events such as conferences. At this level, the objective is to make the institution more recognizable internationally.
- Level 2, or exchanges, refers to programs in which an institution actively engages in student and faculty exchange, undertaken reciprocally as part of an academic program.
- Level 3, or international profile, is the most advanced level, whereby programs are accessible to the international community, including faculty members and students. It is usually characterized by a campus with an international environment.

Until 2017, the non-trade barriers made it almost impossible for foreign universities to operate directly in Indonesia. The regulations required foreign universities to cooperate with a local university by jointly establishing a local foundation. Moreover, the bureaucratic requirements for foreign professors to teach in such institutions were onerous, scaring away most applicants.

To accelerate the number of institutions reaching level 3, in 2018, MoRTHE announced plans to open the higher education market to foreign universities. At the same time, Presidential decree 20/2018 has been enacted, easing the procedure for highly skilled foreign workers to acquire a working license and visa in Indonesia. Currently, MoRTHE is reviewing proposals from a few foreign institutions to establish campuses in Indonesia.

The internationalization program is implemented in many different modes, such as scholarships for Indonesian lecturers to pursue advanced degrees at overseas institutions, scholarships for overseas students to study in Indonesian institutions, and the exchange of scholars (academic staff as well as students). Other types of international collaboration could also be included in the internationalization process, for example, research collaborations, joint education programs (dual degrees), and joint publications. Currently, academic staff have access to government grants to support such activities, and MoRTHE plans to increase the budget allocations for this purpose in the future. Recent developments in ICT also allow students and staff to interact globally without physically moving from their home country.

The objective of internationalization should not be limited to improving quality but, more importantly, should include increased understanding between countries (and people) with different cultures, as well as social, political, and economic backgrounds. Such knowledge is fundamental for sustaining peace and improving prosperity in this highly complex globalized world.

### 2.3.3 Improving Equitable Access

The disparities between different groups and populations have serious social and political implications. Higher education can potentially provide opportunities for social mobility to reduce such gaps. However, access to higher education can be limited for those from disadvantaged groups. The following four different causes of access limitation can be identified:

- Economic background, whereby high school graduates cannot apply due to lack of funding support;
- Geographical isolation, whereby high school graduates live in isolated areas far from any higher education institution;
- Academic ability, whereby high school graduates do not have sufficient academic ability to undertake education programs in higher education; and
- Limited available spaces in higher education, whereby the higher education sector has very limited space to be able to accommodate demand from high school graduates.

Therefore, programs must be carefully designed and implemented to address these specific problems.

As of 2022, MoECRT has provided around 400,000 scholarships to support students from disadvantaged backgrounds through the *BidikMisi* scholarship program (see Box 2.1: Bidik Misi). In the current program, recipients need to have excellent academic performance, although many students from disadvantaged backgrounds cannot perform academically due to their circumstances, e.g., they have to spend time assisting their families in earning an income. In the future, therefore, MoRTHE plans to broaden the program to also include students with academic potential, which so far has not been recognized for a variety of reasons.

#### **Box 2.1: Bidik Misi**

*Bidik Misi* is a MoRTHE scholarship program designed to support high school graduates from disadvantaged economic backgrounds. Only students with excellent academic performance are eligible to apply. Recruitment is carried out when students commence their 12<sup>th</sup> grade, before the high school final examination. Selection is carried out through a rigorous evaluation process, including visits to the applicant's home and interviews with their parents.

Students from disadvantaged economic backgrounds are mostly discouraged from applying to universities since there is no guarantee that funds will be available until the end of the study period. Therefore, the scholarship is guaranteed for a maximum of four years, until they finish their studies. It includes tuition, living allowance, books, travel from their location to the targeted university, and research funds for final-year students.

So far, this program is considered to be the most successful scholarship program. Nonetheless, some critics of the program argue that, among other issues, it is exclusive to historical academic performance (rather than academic potential) and that the fixed scholarship amount does not take into account the variety of living costs across different regions in Indonesia.

Since 2015 MoECRT has launched an affirmative action program called *Afirmasi Pendidikan Tinggi* (ADik), which provides scholarships for school graduates from Papua and other isolated regions. In 2018 almost 3500 students benefited from this program. MoECRT has also gradually provided the necessary resources for all schools in isolated areas to improve connectivity. Since 2019, all high schools have been connected through the national internet backbone, reducing their previous isolation. In addition, to address the issue of geographical isolation, distance learning will also contribute to the expansion of access.

The higher education system is currently in the process of diversification through the establishment of many two-year community colleges—public as well as private. The aim is to prepare high school graduates who want to enter the job market directly.

### **2.3.4 Improving Quality and Relevance**

Higher education plays a vital role in contributing to the nation's competitiveness, without which it would be almost impossible for Indonesia to improve competitiveness and increase prosperity for its people. It is understood that the current programs in higher education have not met this expectation yet, particularly in terms of relevance to societal needs and contributions to improving the nation's competitiveness.

The government is eager to provide assistance and support for private institutions to improve their quality. However, it is not feasible to design an effective program for all of the existing 2,990 private institutions, as presented in Table 2.1. The government is encouraging the merging and amalgamation of small private institutions to establish new larger institutions. Currently, student enrolment in most private institutions is less than 1,000, making their operation very inefficient. Moreover, private institutions have to rely almost solely on the revenue from student tuition to survive. MoECRT plans to develop programs to provide technical assistance and subsidies for private institutions to improve the quality of their programs.

To improve relevance to the needs of industrial sector, the MoECRT policy also plans to establish more polytechnics, particularly in remote and isolated areas, improve the quality and relevance of the existing polytechnics, and provide incentives for relevant research.

## **2.4 Human Resources Development**

Following independence, scholarships to pursue advanced degrees were only available to university lecturers, mostly in public institutions. However, since the late 1970s, the policy on human resource development has been expanded to include other government agencies as well. To strengthen human resources supporting the reform in the financial sector, a significant number of staff from the Ministry of Finance, Bank of Indonesia, and other related agencies have been granted scholarships to pursue advanced degrees.

As most of the domestic graduate programs were insufficiently mature in the early stages, most recipients had to enroll in graduate programs offered by overseas institutions. A similar approach of sending students abroad was also implemented in the early 1990s to strengthen human resources in science and technology, particularly under the auspices of the Ministry of Research and Technology.

As local graduate programs developed their own resources and gained experience, quality and capacity increased significantly. The government has also improved its financial capacity to provide funds for



university staff to pursue advanced degrees abroad. Hence the combination of these two improvements has increased MoRTHE’s capacity to meet the challenge of increasing the proportion of PhD holders in universities.

Currently, the total number of lecturers is 320,052, with less than 50,000 or 16% holding PhD degrees. Supported by multilateral agencies, a project coordinated by the Ministry of Development Planning (BAPPENAS) plans to significantly increase the number of PhDs across the entire public sector, including university lecturers. The program is on top of the existing MoRTHE scholarship programs.<sup>2</sup>

Table 2.6: Distribution of lecturers

	Public	Private	Total
Universities	82,608	182,844	265,452
Islamic institutions	21,597	21,981	43,578
Service colleges	11,022	-	11,022
<b>TOTAL</b>	<b>115,227</b>	<b>204,825</b>	<b>320,052</b>

Source: PDPT 2022

In order to significantly increase the number of lecturers holding PhD degrees, MoRTHE has prioritized PhD scholarships. Although constantly increasing over the last decade, the capacity of domestic programs to produce PhDs is still limited, and the goal needs to be achieved by optimizing overseas programs. Currently, the Human Capability Development Program (HCDP) project has been effective in piloting this approach for eleven ministries and government agencies.

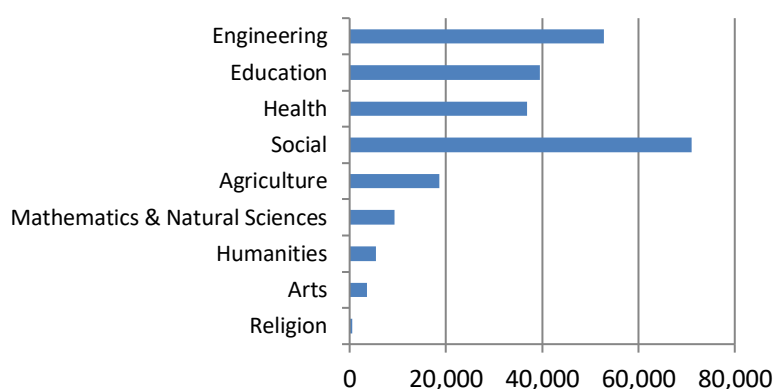
In 2011 the Ministry of Finance established an institute to manage the education endowment fund (*Lembaga Pengelola Dana Pendidikan* or LPDP) to provide scholarships for Indonesian citizens to study in domestic as well as overseas institutions.<sup>3</sup> Previously, the fund was accessible not only to university lecturers but also to the public at large. Currently, the scholarship is more focused on specific fields, such as science, technology, engineering, and mathematics (STEM), with additional strings attached, such as the obligation to devote a certain period of time to the home institution after graduation. Recently, some proposals have been submitted to involve relevant stakeholders more in the policy development of the scholarship distribution.

Nonetheless, the distribution of lecturers by their academic fields presented in Figure 2.3 shows that the highest percentage of lecturers is in the social sciences (including economics). Even if engineering is combined with mathematics and natural sciences, the percentage is still below the social sciences. The picture becomes even more unbalanced when education is added to social sciences.

<sup>2</sup> *Evaluation of USAID / Indonesia Program to Extend Scholarships to Achieve Sustainable Impacts (PRESTASI): Demand and Supply for PhD's in Targeted Sectors*, 2018. An attempt to confirm more accurate figures from the relevant authority, however, has failed.

<sup>3</sup> In the later stage, LPDP also provides research grants and reconstruction of educational facilities affected by natural disasters.

Figure 2.3: Distribution of lecturers by academic field



Source: MoRTHE 2016

Nowadays, MoRTHE does not have a strong or clear strategy for human resource development (Ahmad 2018). Without such a long-term strategy, it may prove challenging to achieve a critical mass of academics, delaying important breakthroughs and meaningful impacts.

## 2.5 International Aid and Assistance

Following the political reforms of 1998, Parliament has become much more involved in the decision-making process for the government budget, with the result that budget development is more vulnerable to specific political interests. A negative impact that has been observed is the move to a shorter-term investment program, mostly in the form of unfinished construction. In order to stop this trend, the government has preferred to acquire foreign assistance to fund its infrastructure projects.

By law, foreign assistance should be included in the government budget. All components of foreign assistance projects should be earmarked right after the agreement is signed by the government. Therefore, foreign-assisted projects will guarantee that any infrastructure projects, including all programs and activities, are well planned and well-funded, with rigorous quality control until completion (Alhumami 2018).

In recent years, donors for foreign-assisted projects have become more diversified, as demonstrated in Table 2.7. For example, the Islamic Development Bank and the Saudi Fund for Development have been actively supporting the higher education sector over the last seven years. This new trend allows the government to offer projects that align with the individual donor's priorities and policies. Previously, with fewer donors available, the government had no choice but to set its priorities according to the donor's policy.

Table 2.7: Major overseas development assistance 1975–2017 <sup>4</sup>

Year	Project name	Donor	in USD
1975	Institut Teknologi 10 Nop. Surabaya	ADB	14,500,000
1978	Polytechnics I	WB - IDA	4,900,000
1980	Agricultural Education Polytechnic	ADB	26,628,000
1980	Development of Universitas Hasanuddin	ADB	25,000,000
1980	University Laboratory Equipment I & 2	JBIC	21,887,000

<sup>4</sup> It does not include donor interventions in support of institutions under the responsibility of the Ministry of Religious Affairs.

1981	University Development I	WB - IBRD	43,060,000
1981	Development of Universitas Sumatera Utara	ADB	26,000,000
1983	Polytechnics II	WB - IBRD	106,000,000
1985	Accountancy Development Project	WB - IBRD	65,000,000
1985	Development of Universitas Sriwijaya	ADB	37,900,000
1985	University Development II	WB - IBRD	147,000,000
1985	IPB Development Project I & II	JBIC	67,157,470
1985	IPB Development Project I & 2	JBIC	61,537,096
1988	Higher Education Development Project - HEDP I	WB - IBRD	133,317,000
1988	Development of Marine Science Education	ADB	37,900,000
1990	Six University Development Project	ADB	114,000,000
1990	Higher Education Development Support	JBIC	9,740,000
1990	O&M of Higher Education Facilities	JBIC	27,503,000
1990	ITB Development Projects 1 & 2	JBIC	77,358,000
1990	Univ. Syiah Kuala Development Project	JBIC	47,539,000
1990	Environmental Studies Center	JBIC	9,574,000
1991	Higher Education Development Project - HEDP II	WB - IBRD	150,000,000
1993	Higher Education Project	ADB	102,584,000
1994	University Research for Graduate Education - URGE	WB - IBRD	38,300,000
1995	UGM Development Project	JBIC	65,209,000
1995	Universitas Mulawaran Development Project	JBIC	26,626,000
1995	Universitas Pattimura Development Project	JBIC	28,861,000
1996	Development of Undergraduate Education	WB - IBRD	55,750,000
1996	Engineering Education Development Project - EEDP	ADB	81,150,000
1997	Quality of Undergraduate Education	WB - IBRD	55,730,000
2001	Technological and Professional Skills Development Project - TPSDP	ADB	180,000,000
2006	Indonesia - Managing Higher Education for Relevance - I-MHERE	WB - IBRD	114,540,000
2007	Development of UNHAS – Faculty of Engineering	JICA	87,236,989
2007	Better Education and Reforming Management Teacher Up-Grading	WB - IBRD	3,976,207
2007	Integrated Diponegoro University Development Project	IDB	33,000,000
2008	Development of World Class Universities - UI	JICA	140,776,904
2009	Development of ITB	JICA	73,019,355
2009	Development and Upgrading of State University of Jakarta	IDB	24,691,759
2009	The North Sumatera University Hospital Of Sumatera Utara University	IDB	32,600,000
2010	Health Professional Education Quality Project	WB - IBRD	77,820,000
2011	Development of Universitas Negeri Semarang	IDB	31,693,548
2011	Quality Improvement of Universitas Padjadjaran	IDB	35,222,000
2011	Rehabilitation of Univ Negeri Padang	IDB	29,502,000
2011	Dev of Medical Education and Research Centers in 2 Universities	IDB/SDF	99,966,814
2013	Polytechnics Education Development Project	ADB/CIDA	75,000,000
2013	Research and Innovation in Science and Technology Project	IBRD	127,688,172

2013	Upgrading of 7 Universities	IDB/SFD	209,020,000
2017	Centers of Excellence in 4 Universities	IDB	238,256,223
2017	UGM - Socio Entrepreneurship	JICA	106,073,714
2017	Universitas Hasanuddin Hospital	KfW	42,552,000

*Source: Bastiaens 2012; MoRTHE 2018*

Most projects financed by multilateral agencies have covered multiple institutions as their beneficiary populations. Projects targeted to a particular institution can be identified by their titles, e.g., Development of Universitas Hasanuddin, UGM Development Project, Development of ITB, UGM – Socio-Entrepreneurship, or Development of World Class Universities – UI. Competitive funding mechanism was introduced in the Development of Undergraduate Education, Quality of Undergraduate Education, and Indonesia - Managing Higher Education for Relevance - I-MHERE. Funds were provided through competitive-based grants that had to be acquired through a rigorous evaluation of proposals submitted by programs or institutions. Some programs in ITB and UGM have successfully acquired such grants.

## 2.6 Schedule of the interviews

In-depth interviews were conducted with Professor Intan Ahmad at the MoRTHE, Dr. Amich Alhumami and Dr. Tatang Muttaqin at the Ministry of National Development Planning/National Development Planning Agency. The interviews aimed to develop an understanding of the national policy on human resource development, particularly regarding the program for studying abroad. The interview schedule was as follows:

### **Ministry of National Development Planning / National Development Planning Agency**

May 11, 2018 Amich Alhumami, Director of Higher Education, Science and Technology, and Culture  
Tatang Muttaqin, Head of Sub-directorate of Higher Education

### **Ministry of Research, Technology, and Higher Education**

May 18, 2018 Intan Ahmad, Director General of Learning and Student Affairs

### Chapter 3: Study abroad programs

Following the conflict with the former colonial government over the province of Irian Jaya, or Papua, many Dutch professors were sent home in the last part of the 1950s. To replace them, a group of young university staff was sent to the US to pursue advanced degrees under a USAID grant. This was the first time a large-scale study-abroad program was provided in Indonesia. Until early 2010 almost all lecturers studying abroad were funded by external development agencies.

With increasing prosperity, the number of self-funded students studying abroad has increased significantly. Nowadays, the total number of students studying abroad is estimated to be around 50,000 or more<sup>5</sup>. According to UNESCO, 46,232 Indonesian students are studying abroad, as shown in Table 3.1.

Nevertheless, the accuracy and reliability of the data collected by UNESCO should be cautiously taken. Data acquired from Australia's Department of Foreign Affairs and Trade (DFAT) is significantly different. According to DFAT data, the number of students studying in Australia is around 20,000 (Poole 2018), differing substantially from the 10,676 presented in Table 3.1. A similar situation can be found in the information acquired from the German Immigration office regarding the number of Indonesian students in Germany. According to data obtained from German Immigration, the number of students studying in Germany was 3,811 in 2015, compared to the 1,938 presented in Table 3.1.

Table 3.1: Major destination countries of students studying abroad

Australia	10,676
United States	8,922
Malaysia	8,039
United Kingdom	2,761
Japan	2,527
Egypt	2,189
Germany	1,938
Saudi Arabia	1,829
Canada	852
Korea (Rep. of)	841

*Source: UNESCO 2018*

Under the national regulations on the civil service, lecturers with civil servant status receiving government overseas scholarships will continue to receive their basic salary as civil servants. Other supplements, such as transport, hourly teaching honoraria, etc., are temporarily suspended. During their study period, it is also not possible to accumulate credit points, which are necessary for promotion. Nevertheless, once they have earned their doctorate degrees, their credit points increase significantly, and they are automatically promoted to a higher rank.

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<sup>5</sup> More accurate data is difficult to obtain.

### 3.1 Institute for Education Fund Management (LPDP)

The Constitution requires that 20% of the government budget be allocated to the education sector, as noted in Section 2.2.3. However, at the end of every fiscal year, there is always a portion left due to the unspent budget. In 2010 the Parliament and the government agreed to combine this unspent fund into an endowment fund for education.

Since the endowment is outside the government budget and acquires interest, the management of the endowment requires a special agency, the *Lembaga Pengelola Dana Pendidikan* (LPDP or Institute for Education Fund Management). LPDP was established in 2011 with the responsibility of managing this endowment. It provides funds for scholarships, research, and the reconstruction of education facilities (only in special cases due to natural disasters).

Although LPDP provides scholarships for both domestic and overseas study, this report limits itself to overseas study aspects. The government policy is to consolidate all funds allocated for scholarships in LPDP. Since the allocation of LPDP scholarships is on top of the MoECRT budget, the LPDP scholarship is not competing with other programs within the MoECRT's priority areas.

Previously LPDP did not impose any obligations on recipients after finishing their studies. The terms have been changed recently, and graduates are now required to work and teach in universities in Indonesia for a certain period of time. In the higher education sector, the LPDP fund is allocated through the existing MoECRT scholarship programs. LPDP endowment fund is also accessible by non-university applicants, though the data on its recipients is not publicly available.

### 3.2 MoECRT-sponsored Scholarships

Since MoECRT tracks all students studying abroad under government-sponsored scholarship programs, more accurate data is assured. However, it does not have access to any information on the number of self-funded students or recipients of other sources of scholarships. The database does not include lecturers from Islamic institutions or IAIN/UIN.<sup>6</sup> Currently, MoECRT provides several scholarship schemes for university lecturers to study abroad. The following sections provide an overview of these scholarship programs.

#### 3.2.1 Scholarships for Excellent Lecturers (BUDI)

Initially this program called the Overseas Graduate Scholarship (*Beasiswa Pendidikan Pascasarjana Luar Negeri* or BPPLN), later referred to as BUDI. The LPDP endowment is the source of funds for this program. This program does not require recipients to have a high undergraduate GPA, though a letter of admission from the targeted institutions is essential. The more lenient selection criteria for this program allow more recipients to be selected. In 2022, 551 university lecturers were studying abroad under this BPPLN program (MoECRT 2022).

Initially, this program was fully supported by the MoRTHE budget, but since 2016, it has been consolidated into LPDP-supported scholarships. BUDI provides both domestic and overseas scholarships but limits itself only to PhD scholarships. Two hundred and eighteen lecturers are currently studying abroad under BUDI, which draws funds from the LPDP endowment (MoRTHE 2018).

#### 3.2.2 Master Toward Doctorate Education Program (PMDSU)

The level of selectivity in the entrance examination for public universities is infamous, particularly in the most popular programs among high school graduates in elite institutions. A two percent selectivity rate is common for the Faculty of Medical Sciences at UI or Electrical Engineering at ITB. However, the program's appeal does not spread to its graduate programs. Most applicants to the graduate

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<sup>6</sup> IAIN = Institut Agama Islam Negeri, UIN = Universitas Islam Negeri

programs are university lecturers who, for one reason or another, have failed to study abroad. It contrasts sharply with the quality of the incoming students in the undergraduate programs.

In order to optimize the best students' potential, MoECRT provides scholarship to the best undergraduate graduates (*cum laude*) to directly continue their study up to PhD programs. This program is called the Master toward Doctorate Education Program (*Pendidikan Magister menuju Doktor untuk Sarjana Unggul* or PMDSU). Undergraduate students with high GPAs are lured to enter the graduate program directly, even before graduation. They can commence conducting graduate research while finishing their final year of undergraduate coursework—something that will significantly reduce the time required for finishing their thesis. The graduate program benefits from this program through its high-quality students and theses.

Under this program, 18 new PhDs graduated and 97 articles were published in reputable journals in 2017. In 2017, MoECRT provided support for 8,480 students studying in domestic PhD programs and 965 students in overseas programs (MoRTHE 2017).

### **3.2.3 Bilateral Scholarship Programs**

Since the establishment of LPDP, MoECRT has tried to optimize the available government funds by entering into agreements with bilateral agencies to co-finance scholarship programs. In one popular scheme MoECRT covers the travel expenses and travel documents for scholarship recipients, while the bilateral partner covers the tuition and stipend. Such schemes allow MoECRT to support a larger beneficiary population. This scheme has been implemented in some scholarship programs, among others in the Indonesian German Scholarship Program (IGSP-DAAD), the Netherland's Dikti-Neso Scholarship Program, the US's Dikti-Fullbright Grants, and the UK's Newton-Ristekdikti Scholarship Programme.

### **3.2.4 Philanthropic Organizations**

In addition to the aforementioned agencies, a few other countries and philanthropic organizations offer scholarship programs through a variety of different schemes. These programs are mostly small in terms of beneficiary population, most likely limited to one to three recipients per agency at most. To mention a few examples, there are the Hong Kong PhD Fellowship Scheme (HKPFS), Mexico's AMEXID scholarship, Saudi's King Fahd University of Petroleum and Minerals (KFUPM), Cambridge International Scholarships, France's INSEAD, the Oxford Clarendon Scholarship, ENS de Lyon, Leiden University Excellence Scholarship program (LExS), and the Warwick Chancellor's International Scholarship.

## **3.3 Destination Countries**

The highest percentage of lecturers studying abroad under MoECRT scholarships are those studying in Japan (24.58%), followed by the UK (19.89%), Netherlands (10.32%), and Australia (10.13%) as illustrated in Table 3.2.<sup>7</sup>

English-speaking countries, such as the UK and Australia require a certain level of English proficiency that is difficult to achieve for some lecturers, particularly from less established institutions located on outer islands. For these applicants, countries with more lenient language requirements, such as Malaysia, are preferable. In these cases, considerations regarding the targeted university's academic strength or the professor's research topics might be compromised.

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<sup>7</sup> Data is acquired from unpublished materials in MoECRT's database. Full disclosure of this information requires a formal authorization from the respective party.

Table 3.2: Distribution of students by destination country

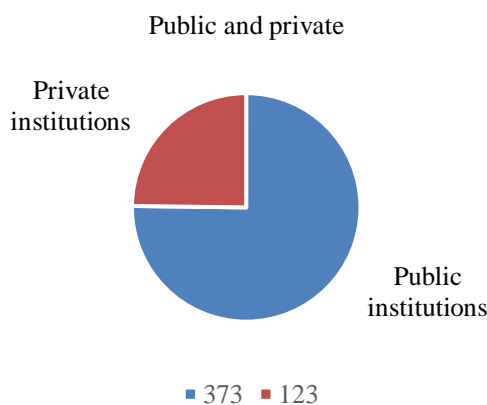
Destination country			Destination country		
Japan	131	24.58%	Denmark	4	0.75%
United Kingdom	106	19.89%	Malaysia	4	0.75%
Netherlands	55	10.32%	South Korea	4	0.75%
Australia	54	10.13%	Spain	3	0.56%
Taiwan	44	8.26%	Finland	2	0.38%
Germany	25	4.69%	Hong Kong	2	0.38%
France	24	4.50%	China	1	0.19%
New Zealand	22	4.13%	Czech Republic	1	0.19%
Thailand	20	3.75%	Ireland	1	0.19%
Austria	17	3.19%	Nicaragua	1	0.19%
United States	7	1.31%	Norway	1	0.19%
Belgium	4	0.75%			
			Total	533	

Source: MoECRT 2022

### 3.4 Home Institutions

The majority of scholarship recipients (373 or 75.2%) are from public universities, while private universities are only represented by 123 or 24.80%. A small number of remaining recipients come from within the MoECRT. Among those from public universities, 4 recipients are from ITB and 28 recipients are from UGM.

Figure 3.1. Distribution of recipients by home institutions



Source: MoECRT 2022

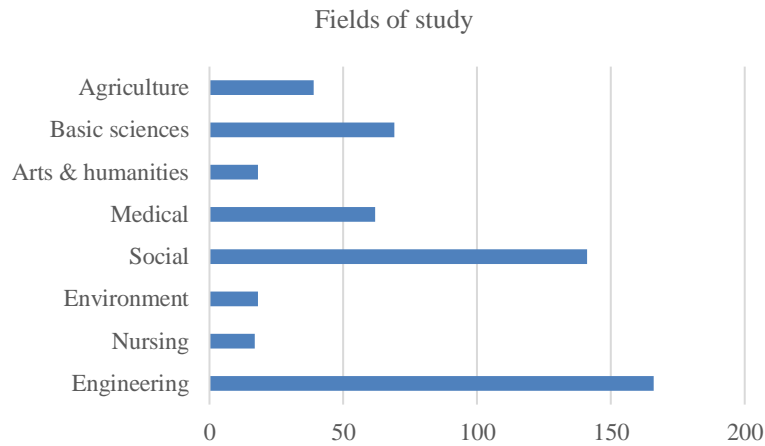
### 3.5 Fields of Study

In order to be relevant to national development, government policy is to prioritize STEM (Sciences, Technology, Engineering, and Mathematics) fields of study, as mentioned in Section 2.4. Therefore, after Engineering, it is surprising to find a relatively high percentage of lecturers currently studying abroad in Social Sciences. The percentage is almost double that of Basic Sciences, as presented in Figure 3.2.

It confirms the statement of a key MoECRT officer during the interview that the Ministry does not yet have a strong and clear strategy toward human resource development (see Section 2.4).



Figure 3.2: Distribution of students by field of study



Source: MoRTHE 2018

### 3.6 Alumni Associations

In order to capitalize on the common spirit of studying in the same country, graduates have established alumni associations. The largest memberships are the Association of Indonesian Alumni from Japan (*Persatuan Almuni Djepang – PERSADA*), the Association of Australian Alumni in Indonesia (*Ikatan Keluarga Alumni Australia – IKAMA*), the Netherlands Alumni Association in Indonesia (*Ikatan Alumni Nederland – IKANED*), and the German Alumni Association (*Ikatan Alumni Jerman – IAJ*).

Activities conducted by these associations vary depending on the officers in charge of the associations. Therefore, most activities are not continued beyond the terms of the officers in charge. *Persada* was very active in the 1980s, even successfully establishing a private university bearing its name, *Universitas Darma Persada*. However, in recent years, its activities have not been widely reported.

Activities conducted by the German Alumni Association (IAJ) were at their peak during President B.J. Habibie's term of office from 1998 to 1999<sup>8</sup> but slowed significantly after that. A private university, called the German Swiss University, was established during his term. Significant problems have been observed with other alumni associations. Even an attempt to visit IKAMA's website by the author was unsuccessful.

### 3.7 Reviews of the Impacts of Study Abroad

The main beneficiary of studying abroad is unquestionably the recipient themselves in terms of improvement of skills as well as knowledge. Thus, these benefits would be considered private goods. However, in many cases, additional intangible benefits are more important and can be considered public goods, as defined by Ari Kuncoro (Kuncoro 2009). These benefits are assessed in the following sections:

- In pursuing their degrees, recipients have to work hard by conducting their research and writing their dissertations. In this process, they will likely be exposed to a different work ethos and absorb the scientific culture of the academic atmosphere at the host institution. Such experiences, in many cases, play a vital role when they return to their home institution. Other

<sup>8</sup> President B.J. Habibie was a graduate of RWTH Aachen University.

experiences may take the form of leadership, governance, culture, and democracy, which are mostly public goods, as they could potentially spill over to the surrounding community.

- While knowledge can now be acquired via information and communication technology, such experiences can only be acquired on-site, exemplified by the phrase “*learn at the feet of the Master.*” In this context, research-based training may have a greater impact compared to course-based programs. Although the principles introduced by von Humboldt are mostly considered archaic, the basic concept is still relevant today. It is well understood that in an age of massification of education, a globalized world, and rapid technological advancement, the pure Humboldtian approach might be seen as out of date. A modification of the original concept to be more suitable for modern-age implementation is needed.

Many overseas scholarship programs were designed as segmented programs, with cost components limited to support overseas scholarships, i.e., travel, living costs, research, books, and tuition. The following points illustrate the observation during this study:

- a) In its early development, neither institutions nor scholarship recipients paid sufficient attention to the selection of host countries, institutions, or programs in pursuing their advanced degrees. They were grateful to have the opportunity to study in overseas institutions, an experience that was then considered an extreme luxury. Until 1970, returnees were allowed to bring a car with them as part of their personal belongings, and for many, this was the only possibility of achieving car ownership in Indonesia.

As prosperity has increased, overseas study is no longer considered such a luxury. Although most cannot afford to finance it privately, a growing number of middle-class families are more than willing to allocate a significant portion of their income to provide the best education for their children. Moreover, scholarships are now widely available without any stringent obligations.

- b) Nowadays, some premiere domestic institutions have already matured and developed graduate programs, supported by well-qualified professors and equipped with state-of-the-art laboratories. Some programs include, for example, Medical Sciences, Development Studies, Computer Sciences at UI; Electrical Engineering, Sciences at ITB; Geology, Water Management Engineering, Political Science at UGM; and Food Technology at IPB. These graduate programs require the best students from the undergraduate program as inputs to be able to grow and become world class. It means that these programs are in direct competition with graduate programs offered by the best overseas universities. Therefore, at least in some fields, students should be strongly encouraged to study in these domestic graduate programs unless overseas programs provide clear institutional benefits and advantages. Government overseas scholarship programs should discourage recipients from studying at overseas institutions that have fewer resources and can only offer mediocre quality.

While some returnees are quite successful in making a positive impact on society, many have failed to fully utilize their skills and knowledge. The following possibilities could be considered as potentially adverse outcomes for returnees:

- Some failed to make any changes or improvements to their home institutions. They were then co-opted by the mainstream “*Laissez-faire*” and no significant impact could be expected.
- Some tried hard to make changes but failed due to resistance from the surrounding academic community. They became frustrated and gave up after some time, and finally transferred to other institutions (mostly non-educational institutions) or even moved overseas. They might be personally or individually successful, but they failed to make any institutional impact.
- The third possibility, perhaps the rarest, is that they fought hard to make changes and have successfully made significant improvements to their institution.

The third possibility is more feasible when the number of returnees is sufficiently large to create a critical mass for introducing radical changes (see Box 3.1: The Berkeley Mafia). It also requires an environment that is critically conducive. It should include support from the stakeholders, i.e. supra structure, regulatory infrastructure, peers, and the local culture. The case of Politeknik Manufaktur

Bandung (see Box 3.2) shows that a holistic and complete design package from the beginning of the establishment can also make a difference.

Nonetheless, for well-established universities, such as ITB and UGM, the diversity of destination countries and institutions has more institutional benefits than a single complete development design package as was applied to the Politeknik Manufaktur Bandung. The single complete package approach is more suitable for newly established institutions or developing but relatively young institutions.

### **Box 3.1: The Berkeley Mafia**

In order to replace the Dutch professors sent back to their home country in the late 1950s, a significantly large number of young lecturers were sent to pursue advanced degrees at US institutions, receiving scholarship grants from USAID. Two of the largest groups were from the Faculty of Economics – Universitas Indonesia (in cooperation with the University of California at Berkeley) and Institut Teknologi Bandung (in cooperation with the University of Kentucky). The group from the Faculty of Economics was maybe the largest group from one single institution pursuing a degree at one single institution (UC Berkeley).

After returning from their studies in 1960-1965, most sought to be involved in developing the Indonesian economy. However, the political situation did not allow them to implement the theories they learned at school. After the failed coup attempt in September 1965, the army took control of the government and relied on the advice of professors from the Faculty of Economics under the leadership of the late Professor Widjojo Nitisastro in formulating the national economic policy.

The trust they gained from the top executive was so strong that, between 1970 and 1990, their influence was felt in almost all branches of the government. Other parties jealous of their success and privilege were resentful and called them “the Berkeley Mafia.” This is probably the best case to illustrate the impact of overseas study on national economic development in Indonesia. Another example of successful reform is the systemic development of higher education initiated by the returnees from the US to IPB and ITB in Indonesia in the 1980s. They introduced a more structured system of study to replace the old continental Europe “free” style of study.

### **Box 3.2: Politeknik Manufaktur Bandung**

In 1975 the Swiss government provided a grant to establish the Swiss Polytechnic Mechanics in Bandung, and it began to take admissions in 1976. The grant was not limited to civil works and equipment but included scholarships to study in Switzerland, visiting professors from Swiss institutions, and technical assistance to develop a Swiss model of vocational education.

The Swiss Polytechnic was so successful that in 1980 the World Bank provided a loan to establish six new polytechnics using the original institution as a model. Currently, more than 50 public and hundreds of private polytechnics have been established. A large majority of these see the Polytechnic Mechanics in Bandung (PolMan Bandung) as their role model for development. While the original Swiss grant was terminated long before 1980, the legacy of the Swiss culture of vocational education continues even today.

This is probably the best example of a coherent development package that has achieved a long-term impact, lasting much longer than the project itself. A similar example, in a different context, can be seen in the establishment in 1988 and subsequent development of Politeknik Elektronika Negeri Surabaya (PENS), supported by JICA assistance.

Without any intervention into the existing system in the home institutions, it is difficult for such programs to have a sustained positive long-term impact. When returnees fail to achieve the expected impact, the biggest loser is the student, who is denied the opportunity to gain benefits from a better-educated teacher. The author is of the opinion that a coherent and well-planned program of overseas

scholarship has a higher possibility of success. The following section explains further the suggestions in more detail.

- c) Pre-departure training for developing an understanding of appropriate issues and matters relevant to the social and natural environment in Indonesia is highly recommended. In addition to lectures or seminars on culture and the prevailing regulations of the destination country and institution, a small scholarship allowing candidates to visit relevant local industries and discuss possible problems and other issues would be beneficial.
- d) In some cases, after successfully defending their dissertation, recipients are offered the chance to extend their stay in the host country for a few additional semesters to continue their research work, either at the host university or in relevant industries. Since they are registered as government scholarship recipients, they need the approval of their employer (home institution), particularly due to the prevailing regulations on student visas. In most countries, fresh graduates holding student visas would not be able to work full time, receive a decent salary, or gain sufficient protection from insurance. Many recruiting employers require them to change their visa status with permission in order to acquire full-time employment.

This opportunity is very central in the endeavor to develop networks between the home and host institutions and relevant industries. Unfortunately, most proposals are rejected, either due to the prevailing regulations on passport extensions or the lack of understanding on the employer's side. Successful cases can only be observed in the case of "rebellious young Turks," whereby recipients and direct supervisors at the home institution agree to take the opportunity without formal government approval.

The most valuable benefit acquired from this scheme is the ability of graduates to understand the needs of industries and the challenges they are facing. After returning to their home institutions, for quite a significant period, they will be able to choose the most relevant areas for developing research agendas. In many cases, they are able to maintain good communication with their former host institutions and industries and even develop successful collaboration opportunities.

- e) On the home front, the home institution should change its paradigm by developing a long-term institutional strategy to become the basis for selecting the field and institution for study. The link between the institution's priority fields of study with the corresponding overseas program should become the primary criterion.

It will be much more effective when the professor's publications have been read and rigorously studied by a faculty committee before deciding whether to send a staff to an overseas institution. Nevertheless, many institutions may not possess such a level of sophistication and competence to conduct the required assessment. In this case, MoECRT could provide technical assistance by establishing a panel that comprises the best national experts in relevant fields to provide advice and recommendations.

- f) In the future, a re-entry program specifically designed for each type of institution will be required to prepare returnees to begin their "second life" in their home institutions. The re-entry program should accommodate the institution's unique and specific characteristics, and a centrally designed program should be avoided. Since many institutions might not have sufficient capacity to develop such programs, a panel of national experts could be selected by the MoECRT to provide assistance in preparing the program.
- g) In the case of Indonesia, the Center of Sciences and Technology (*Pusat Ilmu Pengetahuan dan Teknologi* or *Puspiptek*) in Serpong, previously administered under the Ministry of Research and Technology, is equipped with state-of-the-art laboratory equipment. As to date sharing these facilities with academic researchers is still hampered by bureaucratic procedures. This problem was also addressed by MoRTHE during an interview with the Director General of Learning and Student Affairs (Ahmad 2018). It would be very beneficial if these facilities could be shared by returnees for the benefit of the nation.

## Chapter 4: Institut Teknologi Bandung – ITB

### 4.1 Historical Perspective

*Institut Teknologi Bandung* (ITB) was established by the Dutch colonial government on July 3, 1920. During World War I, communication with the European continent was disrupted, and a local engineering school was needed to fulfill the demand for qualified technicians. At its commencement, the *Technische Hoogeschool te Bandoeng* (TH te Bandoeng, TH Bandoeng, or THS) had only one Department, namely the Department of Roads and Irrigation.

The history of ITB is closely linked to the struggle of the young nation in the first few years after the independence of the Republic of Indonesia. When World War II broke out, THS was closed on March 8, 1942. At this time, THS had three departments: Civil Engineering, Chemical Engineering, and Mechanical and Electrical Engineering.

A proposal to reopen the education programs at a later stage was rejected by the Japanese military government, although research activities in laboratories continued. Nevertheless, on April 1, 1944, the Japanese Military Government reopened THS using the name of *バンドン工業大学* or *Bandung Kōgyō Daigaku* (BKD).



West hall – ITB (1920)

After independence in August 1945, the name was changed to *Sekolah Tinggi Teknik Bandung* (STI-Bandung). In 1946, the Indonesian War of Independence broke out, and West Java was occupied by the *Netherlands Indies Civil Administration* or NICA. The central government was briefly moved to Yogyakarta. Some faculty members then became pioneers in establishing *Universitas Gadjah Mada* in Yogyakarta.

In 1946, NICA reopened higher education programs in Jakarta by establishing the *Nood-Universiteit van Nederlandsch Indie* as a substitute for the previously

closed STT-Bandung. In 1947, NICA also established *Universiteit van Indonesie*, while the campus in Bandung became its Faculty of Engineering (*Faculteit van Technische Wetenschap*). When Universitas Indonesia (UI) was formally established in 1950, the campus in Bandung became its Faculty of Engineering and Faculty of Natural Sciences. Finally, on March 2, 1959, these Faculties were separated from Universitas Indonesia to become a fully independent institution: the *Institut Teknologi Bandung*.

After its separation from UI, ITB had to establish its own organizational structure, including developing a new administrative staff. The critical challenge after its establishment was the sudden departure of most European professors in 1963 due to the conflict with the Dutch government over the province of Papua. Under a USAID grant, many young academics of ITB were sent to the US to pursue advanced degrees. The project was coordinated by the University of Kentucky.

The elite higher education institutions, including ITB, suffered in the 1970s and 1980s. Due to the windfall from the sudden increase in oil prices in the 1970s, the government requested that these institutions significantly increase their student enrolment. However, the oil price suddenly dropped in the 1980s, and the government failed to provide sufficient support to finance the expansion. The education sector had to rely more on loans and grants provided by multilateral and bilateral donor agencies.

Due to its inability to provide a decent salary, most public universities at that time became more permissive of their lecturers engaging in “moonlighting.”<sup>9</sup> The result was a deterioration in staff discipline while academic morale also suffered badly. Recognizing this problem, in the 1990s, the

<sup>9</sup> “Moonlighting” is a term that describes carrying out other jobs outside of one’s institution to supplement an insufficient salary.

government, with the assistance of multilateral agencies, introduced a new funding mechanism aimed at rectifying this problem. The competitive funding mechanism was greatly supported by academics in ITB and other institutions, leading to a “renaissance” of the academic atmosphere. Programs that paid more attention to student learning were developed, staff discipline was significantly strengthened, and performance-based incentives were introduced.

It was also realized that the government’s cumbersome bureaucracy was not always compatible with the academic spirit of encouraging creativity and innovation. Therefore, the government and the Parliament agreed to develop a new Law providing more autonomy to educational institutions. Unfortunately, the Law on Educational Legal Entities (*UU Badan Hukum Pendidikan*) was contested and annulled by the Constitutional Court. Therefore institutions (USU, UI, IPB, ITB, UGM) that had been converted to legal entities were left without any legal status from 2010–2013. After the government submitted a revised draft to the Parliament, ITB was converted to an autonomous legal entity on December 14, 2013.

## **4.2 Institutional profile**

### **4.2.1 Governance**

The highest prevailing regulation, the ITB statute, was decreed as Government Regulation 65/2013 and signed by the President of the Republic of Indonesia. The governing board of ITB is comprised of the 15-member Board of Trustees, with the Chair, Vice Chair, and Secretary elected by the Board Members.

The four ex-officio members of the Board are:

- Minister of Education, Culture, Reserach, and Technology
- Governor of West Java
- Rector, and
- Chairperson of the Academic Senate.

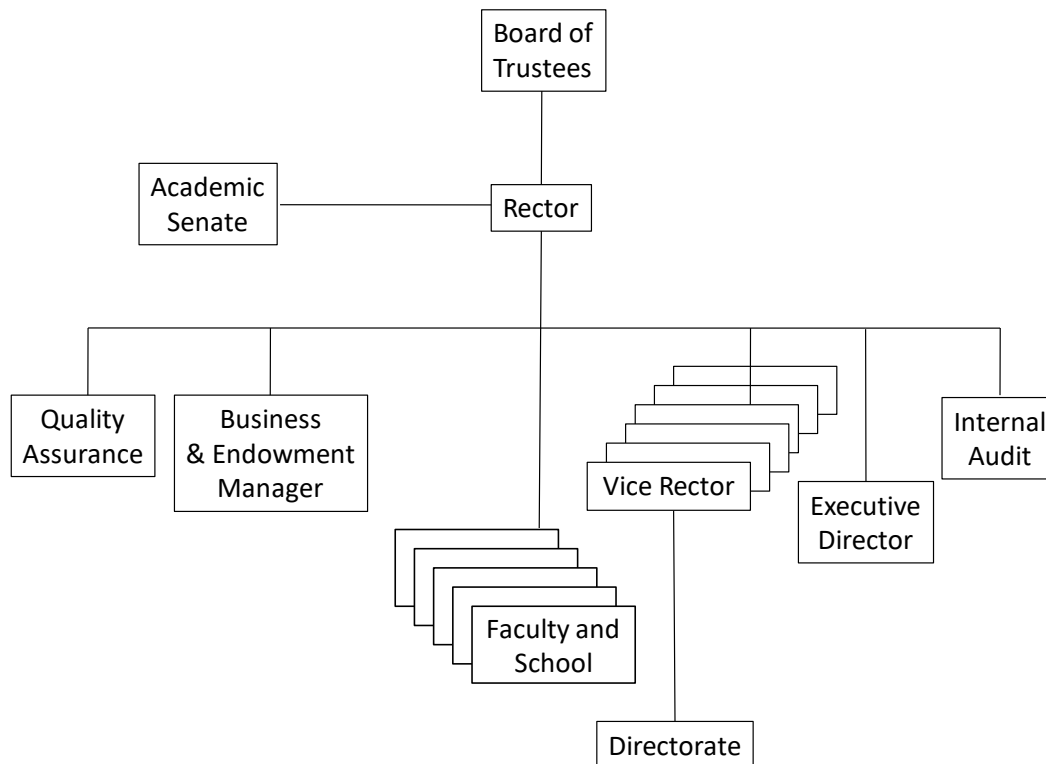
Four members are selected to represent the external stakeholders and an additional four to represent the internal academic community. One additional member is selected to represent each of the alumni, students, and support staff bodies, respectively.

The responsibilities of the Board, among other roles, are to define general institutional policies, approve revisions of the statutes, approve institutional norms and standards, approve the institutional strategy and master plan, appoint and dismiss the Rector, review the annual budget, evaluate the institution’s annual report, and oversee the overall operation of the institution.

As illustrated in Figure 4.1., the Rector is assisted by the following 5 Vice Rectors:

- Vice Rector of Academic and Student Affairs
- Vice Rector of Finance, Planning, and Development
- Vice Rector of Resources and Organization
- Vice Rector of Research, Innovation, and Partnership
- Vice Rector of General Administration, Alumni, and Communication

Figure 4.1: Organizational chart of ITB



The Central Administration is supported by the Quality Assurance Unit, Internal Audit, Business and Endowment Manager, as well as the Executive Director. Deans of Faculty and School report directly to the Rector.

The Academic Senate, the highest authority in academic matters, consists of lecturers representing academic disciplines. In addition to the elected members, the Rector, Vice Rectors, and Deans are ex-officio members of the Academic Senate.

The lowest resource unit, which is responsible for managing resources, is the Department. The chairperson of a Department reports to the Faculty's Dean. A Department can offer one or more academic (or study) programs. An academic program is a program unit, which does not have any responsibility to manage resources. A program could be established and terminated according to market needs, but a Department is permanent. Lecturers who have similar academic expertise teach in the same academic program. A group of lecturers with similar academic expertise and interests is called *Kelompok Keahlian* (KK) or Group of Expertise. KK develops the curriculum, distributes teaching assignments according to each lecturer's expertise, and develops a master plan for the program. Nevertheless, KK does not have the authority to manage resources and has to submit requests for resources to the respective Department or Faculty.

#### 4.2.2 Campuses

The main campus of ITB is located in the Bandung urban area, accommodating around 25,000 students. In the last 50 years, however, the city of Bandung has been overdeveloped, and the 29-hectare campus is now considered to be overcrowded, with no possibility of further expansion.

To accommodate more students as well as activities, an additional 40-hectare campus was acquired in Jatinangor in 2016. Jatinangor is located in the district of Sumedang, around a 30-minute drive to the

east of Bandung. By 2018, this campus housed around 300 students from the following seven faculties and schools.

- Faculty of Civil and Environmental Engineering
  - Technology and Management of Water Resources
  - Environmental Infrastructure Engineering
  - Management of Water Resources and Sanitation
- Faculty of Industrial Engineering
  - Bioenergy and Chemurgy<sup>10</sup>
  - Food Technology
- Faculty of Mining and Petroleum Engineering
  - Metallurgy Engineering
- Faculty of Architecture, Planning, and Policy Development
  - Landscape Architecture
- School of Business and Management
  - Entrepreneurship
- School of Electrical Engineering and Informatics
  - Bio Medical Technology
- School of Life Sciences and Technology
  - Life Engineering
  - Forestry
  - Agricultural Engineering
  - Post Harvest Technology

ITB’s policy is that all new study programs will be located on the Jatinangor campus.

Two additional campuses in the Cirebon and Walini areas are currently in preparation. The Cirebon campus, North East of Bandung, has commenced student admissions this year in three study programs, namely Industrial Engineering, Planning, and Craft. Walini area is currently under discussion and negotiation with the relevant parties, i.e., the regional government, private investors, and the central government.

### 4.2.3 Academic Programs

ITB offers education programs in a wide variety of academic disciplines across 32 study programs, from sciences, engineering, business and management, to arts and design. These programs are offered in the following 8 Faculties, 5 Schools, and a Graduate School:

Table 4.1. Programs offered at ITB

Faculty of Arts and Design <ul style="list-style-type: none"> <li>- Design</li> <li>- Arts</li> </ul>	<ul style="list-style-type: none"> <li>- Earth water engineering</li> <li>- Geodesy and geomatics</li> <li>- Geology</li> </ul>
Faculty of Civil and Environmental Engineering <ul style="list-style-type: none"> <li>- Water management and sanitation</li> <li>- Water resources management</li> <li>- Road system and engineering</li> <li>- Marine engineering</li> <li>- Environmental engineering</li> <li>- Civil engineering</li> </ul>	Faculty of Industrial Engineering <ul style="list-style-type: none"> <li>- Instrumentation and control</li> <li>- Logistics</li> <li>- Industrial management and technology</li> <li>- Engineering physics</li> <li>- Chemical engineering</li> </ul>
Faculty of Earth Sciences and Technology <ul style="list-style-type: none"> <li>- Earth sciences</li> </ul>	Faculty of Mathematics and Natural Sciences <ul style="list-style-type: none"> <li>- Actuarial</li> <li>- Astronomy</li> </ul>

<sup>10</sup> Chemurgy refers to the chemical and industrial use of organic raw materials.



- Physics	- City and regional planning
- Chemistry	- City planning
- Mathematics	- Development studies
- Computational sciences	- Defense studies
- Physics education	- Transportation
- Chemistry education	
Faculty of Mechanical and Aerospace Engineering	School of Business and Management
- Aeronautics and astronautics	- Business administration
- Material sciences	- Management sciences
- Mechanical engineering	School of Electrical Engineering and Informatics
- Nuclear science and engineering	- Electrical engineering
	- Informatics
Faculty of Mining and Petroleum Engineering	School of Life Sciences and Technology
- Mining engineering	- Biology
- Geophysics	- Biology management
- Metallurgy	- Biotechnology
- Geothermal engineering	
- Petroleum engineering	School of Pharmacy
	- Pharmacy
Faculty of Architecture, Planning, and Policy Development	- Industrial pharmacy
- Architecture	- Sports sciences
- Landscape architecture	
- Tourism planning	Graduate School

According to the prevailing government regulations, all graduate programs should be administered under the Graduate School.

#### 4.2.4 Academic Staff

According to the latest data acquired from the ITB website, the total number of teaching staff is 1,361 (ITB 2018). Around 75% of teaching staff hold a PhD degree, around 22% a Master's degree, with the remaining around 2% holding a Bachelor's degree.

As shown in Table 4.2, the Faculty of Mathematics and Natural Sciences has the highest number of teaching staff (205), while the School of Pharmacy has the lowest (57). The main reason for the high number of staff in the Faculty of Mathematics and Natural Sciences is the heavy teaching load, particularly for conducting service courses. All first-year students at ITB are required to take common basic courses in mathematics, physics, and chemistry. These courses need to be taught by teaching staff from the Faculty of Mathematics and Natural Sciences. Moreover, most programs still require relevant advanced courses in mathematics, physics, and chemistry, even after the common first year.

A significant number of the teaching staff in the Faculty of Arts and Design hold Bachelor's degrees, although many have produced internationally acclaimed artworks and are already considered maestros in their respective fields. In this discipline, achievements are not measured by academic degrees, and the artworks created are a more important indicator of achievement. Nonetheless, according to the Law on Lecturers and Teachers 14/2005, all university lecturers should hold at least a Master degree. To comply with the law, some lecturers have to pursue Master degrees in irrelevant fields, such as education management.

Table 4.2: Distribution of teaching staff

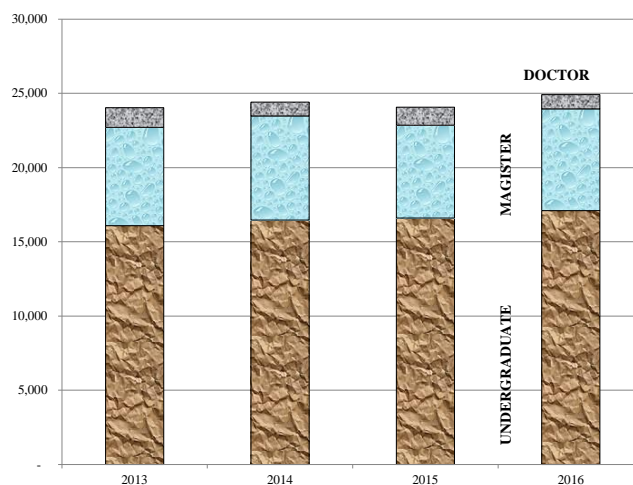
Faculty / School	Staff
Faculty of Mathematics and Natural Sciences	205
Faculty of Civil and Environmental engineering	155
Faculty of Industrial Engineering	115
Faculty of Electrical and Informatics Engineering	140
Faculty of Mechanical and Aeronautical Engineering	81
Faculty of Mining and Petroleum Engineering	93
Faculty of Earth Sciences and Technology	111
Faculty of Architecture Planning and Policy development	114
School of Business and Management	83
School of Biological Sciences and Technology	103
School of Arts and Design	104
School of Pharmacy	57
<b>Total</b>	<b>1361</b>

Source: ITB 2018

#### 4.2.5 Student Enrolment

The overcrowded urban campus in the city of Bandung did not previously allow ITB to expand its enrolment. Therefore the student enrolment was capped at 25,000, as shown in Figure 4.2. Only after its acquisition of the Jatinangor campus was gradual expansion possible.

Figure 4.2: Student enrolment 2013–2016



Source: ITB 2018

The enrolment in the Master and Doctoral level degrees is significantly lower than the undergraduate program since these programs require individual supervision.

#### 4.2.6 Financing

As an elite university, ITB has received international support through government funding. Previous major investment for research infrastructure and graduate education was provided under the World Bank projects, e.g., University Development II (IUC) and URGE (Center Grant). In 1990, three Inter-

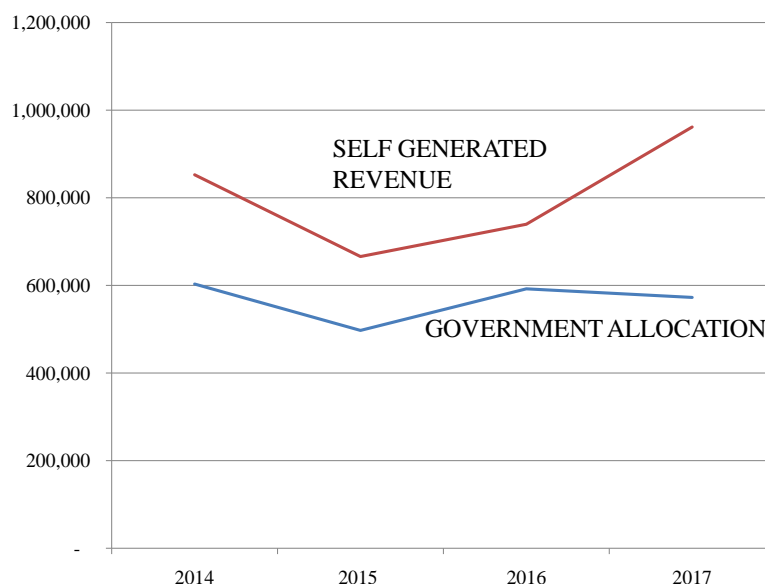
University Centers (IUCs) were established at ITB, namely IUC for Microelectronics, IUC for Biotechnology, and IUC for Life Sciences. The URGE project provided competitive grants for these centers' continuing support.

Under the World Bank-supported “Quality of Undergraduate Education” (QUE) project, ITB has successfully acquired funding for several of its programs. Significant investment in infrastructure has also been received under the JBIC’s ITB Development Projects 1 and 2.

Figure 4.3 presents the sources of funds in ITB in the last four years. Last year, the government allocated IDR 572,895 million for ITB, while IDR 961,304 million in self-generated revenue was collected by ITB (ITB 2018). As an autonomous institution, ITB is obliged to publicly disclose an audited financial report annually.

The government allocation was significantly decreased in 2015, from IDR 603,152 million in 2014 to IDR 497,243 million in 2015, or by 17.6%. It increased slightly in 2016 to IDR 592,078 million before falling again to IDR 572,895 million in 2017, a decrease of 3.2%. The government's contribution to ITB has been worrisome, with a declining trend over the last four years. Apart from 2014, it has never exceeded IDR 600,000 million.

Figure 4.3: Sources of funding 2014–2017 in IDR million



Source: LKITB 2017

On the other hand, self-generated revenue has consistently increased over the last three years, rising from IDR 665,789 million in 2015 to IDR 739,548 million in 2016 and to IDR 961,304 million in 2017. Sources of self-generated revenue include student tuition and fees, consultancy contracts, interest, profits, and private grants. The Law on Higher Education 12/2012 introduced a cap on the proportion of tuition and fees that can be acquired from students, while the option of expanding student enrolment was hampered by an overcrowded urban campus in the Bandung area. Therefore, the only option for ITB is to exploit more consultancy contracts and private grants, including private ventures.

## 4.3 Institutional Policy

### 4.3.1 Mission Statement

The institutional policy is stated in its vision and mission statement as formulated in the ITB Strategic Plan 2016–2020 document and described briefly in the following section (ITB 2015).

The vision of ITB is to be an outstanding, distinguished, independent, and internationally recognized university that leads changes toward welfare improvement of the Indonesian nation and the world.

The mission statement of ITB, as stated in its Strategic Plan 2016–2020, is to innovate, share, and apply sciences, technology, arts, social sciences, and humanities, to produce excellent human resources for the betterment of Indonesia and the world.

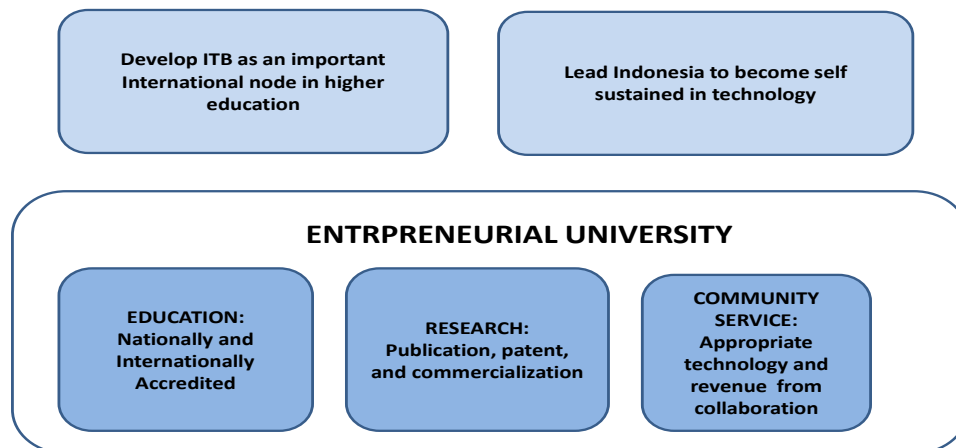
### 4.3.2 Strategic Plan 2016–2020

Based on the stated vision and mission, ITB has developed a Strategic Development Plan for 2016–2020. The two central objectives for ITB in 2020 are to:

- develop ITB as an important international node in higher education; and
- lead Indonesia to be independent in technology.

These two objectives will be achieved through excellence in teaching, research, and innovation, as demonstrated as demonstrated below.

Figure 4.4: Conceptualization of ITB 2020



Source: ITB 2015

Excellence in education will be achieved by ITB through:

- producing reliable and trustworthy graduates, who have integrity and a pioneering spirit to benefit the advancement of science, technology, economy, and prosperity of the people by offering excellence in education; and
- becoming the center for culture and an academic atmosphere that nurtures creativity and innovation in high integrity, conducive for developing collaborations between wide varieties of stakeholders.

Excellence in research will be achieved by ITB through:

- developing relevant research to solve community problems (innovation) related to Indonesian defense;
- developing research to identify, discover, develop, and add value to the Indonesian natural, social, and cultural assets; and
- improving research to support ITB's role in the advancement of science, technology, and arts in cooperation with other countries.

Excellence in community service, innovation, and entrepreneurship will be achieved by ITB through:

- encouraging services and collaboration with society as relevant to its academic competency;
- encouraging community services that are integrated with education and research;
- consistently capitalizing on creativity and innovativeness to produce innovation; and
- encourage entrepreneurial spirit to develop interaction between academics, government, community, and industries.

#### **4.4 Study Abroad Programs**

As one of the elite institutions in Indonesia, ITB consistently provides scholarships for its staff to pursue advanced degrees at local and overseas institutions. As this study limits itself to study abroad programs, it will focus on this aspect.

In ITB, nominations for staff applying for overseas study are initiated by the Group of Expertise (*Kelompok Keahlian or KK*)<sup>11</sup> according to the strategic plan. Consistency in selecting fields of study based on institutional strategy, the choice of host institutions, and destination country for staff varies between Kks. Some Kks are firmer in providing directions to staff, while others are more flexible, and some are even relatively uninformed. The central administration does not impose any preferences toward specific disciplines (Irawati 2018).

The insufficient directions from each respective KK and institution could split the expertise in the KK, rendering it ineffective. The number of staff with similar scientific expertise could result in a failure to reach the critical mass required to build strong research groups, expertise, and team spirit. In many cases, a group's expertise has never developed. It is important for each KK to focus its resources and efforts toward developing a few research interests where they can excel instead of chasing fragmented and diverse research interests.

The distribution of destination countries is presented in Table 4.3, while the distribution by academic disciplines is depicted in Table 4.4. Japan is the most favored destination country with the highest number of graduates from ITB, followed by the USA. The figure of graduates depicted in Table 4.3 is the number of all graduates registered with the ITB central administration since its establishment. The number of ITB staff that have graduated from the USA has declined significantly in recent years, and most USA graduates have either retired or passed away.

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<sup>11</sup> see Section 4.2.1

Table 4.3 Number of PhD graduates by destination countries

Destination country	Graduated	On going	Destination country	Graduated	On going
Japan	312	4	New Zealand	11	
United States of America	191	2	Austria	6	
France	170		Sweden	5	
Australia	129	5	Taiwan (RoC)	5	
United Kingdom	126	1	Denmark	4	
Germany	95	2	Italy	4	
Netherlands	90	2	Norway	4	
Canada	33		Egypt	2	
Belgium	22	1	Finland	2	
Thailand	18		India	1	
Korea Rep. of	14		Spain	1	
Singapore	14		Swiss	1	
Malaysia	12	1	Scotland		1

Source: ITB1 2018

Currently, the highest number of ongoing ITB staff studying abroad is in Australia, trailed by Japan. Consistent with Section 4.2.4, the Faculty of Mathematics and Natural Sciences has the highest number of staff that have graduated from an overseas institution.

Table 4.4 Number of PhD graduates by academic field

Academic disciplines	Graduated	On going
Mathematics and Natural Sciences	191	3
Civil and Environmental engineering	168	1
Industrial Engineering	138	1
Electrical and Informatics Engineering	136	1
Mechanical and Aeronautical Engineering	123	
Mining and Petroleum Engineering	98	2
Earth Sciences and Technology	94	
Architecture Planning and Policy development	92	4
Business and Management	74	2
Life Sciences and Technology	68	1
Arts and Design	45	2
Pharmacy	44	1

Source: ITB1 2018

While the number of graduates from countries such as the USA and France fluctuates depending on the availability of grants or loans from these countries, a steady flow of PhD graduates is returning from Japan and Australia. These two countries do not directly provide large scholarship grants or loans—instead, they have made scholarships available annually for those who meet the criteria.

Information presented in Table 4.5 has been obtained from the Bureau of Planning, MoRTHE. It should be noted that the number of staff studying abroad, according to MoRTHE data, is slightly less than the figures acquired from ITB. It shows that some staff studying abroad are not registered with MoRTHE.

Table 4.5 Ongoing PhD students by academic field and destination countries

Student name	Source of funding	Destination country	Target university	Fields	Departure
ITB A	Dikti-Fullbright	USA	Colorado State University	n/a	2014
ITB B	Dikti-Fullbright	USA	SUNY at Albany	n/a	2013
ITB C	Dikti-Fullbright	USA	n/a	n/a	2017
ITB D	BPPLN	Germany	University of Jena	n/a	2013
ITB E	BPPLN	Netherlands	University of Twente	n/a	2013
ITB F	BPPLN	UK	University of Sheffield	Engineering	2015
ITB G	BPPLN	UK	Imperial College London	Engineering	2014
ITB H	BPPLN	UK	University of Southampton	Engineering	2013
ITB I	BUDI	Australia	Australian National University	Math & Natural Scie	2016
ITB J	BUDI	Japan	Hokkaido University	Math & Natural Scie	2016
ITB K	BUDI	Netherlands	University of Groningen	Health	2017
ITB L	BUDI	Netherlands	Leiden University	Social	2016

Source: MoRTHE 2018

The majority of staff studying abroad are relatively young, as they do not have any significant family obligations. Most older staff prefer to study in ITB's graduate program due to family obligations. Relatively older staff who choose to study abroad are either seeking to continue their Master's program at their previous alma mater or undertaking a "sandwich" program.<sup>12</sup>

The main risk of studying abroad is the potential loss of opportunity to get involved in major initiatives in the public as well as the private sector. Academics are commonly consulted by both public and private sectors, particularly in the applied fields such as engineering and technology. When staff has successfully earned their PhD degree, however, better opportunities might be available for them.

Since its initiation, the PMDSU program has also successfully attracted quite a number of excellent undergraduate students to enter the local PhD program.

## 4.5 Impacts of Study Abroad

ITB is an old and well-established institution and ranks as the top university in Indonesia, and therefore, the impacts of studying abroad might be unique and not applicable to other, more junior institutions. The findings demonstrate that a complete, fully designed package strategy as described in Box 3.2 (Politeknik Manufaktur Bandung) might not be appropriate for established institutions such as ITB. Two cases worth special attention are presented separately in Box 4.1 and 4.2. The following points are the excerpts illustrating the findings from the visit to ITB:

<sup>12</sup> A sandwich program is a collaborative program by two or more universities. It is designed to be conducted partially at the home institution in Indonesia and partially at a partner overseas university.

- a) As one of the oldest universities in the country, the teaching tradition is considered well established, as it derives its legacy from the Dutch tradition. However, the research culture is relatively new, even for ITB, and still requires much nurturing.

Developing a research culture requires consistency and commitment. Networking with the returnees' previous research groups and supervisors could enrich the substance and strengthen the endeavor. Nevertheless, networking with researchers from domestic institutions is just as or even more critical. Academics and scientists with the same research interests should establish communities, chapters, or societies and regularly organize scientific gatherings, such as conferences or seminars. Some could even successfully publish a scientific journal.

- b) Developing a research culture closer to the home front, at the level of laboratory or department, requires different strategies. Professors need to build personal relationships with their research students. In most cases, relationships do not stop at academic supervision but also include the maintenance of student interests and spirit. To break the ice, supervision can be carried out outside the department office, i.e., the campus canteen, cafeteria, staff house, or even a garden. The academic atmosphere could develop more easily by adopting such strategies, introduced by returnees based on their experiences while studying abroad.
- c) The special case of Adi Indrayanto (see Box 4.1) depicts a champion who is consistent and persistent in pursuing his dream of developing a regulatory framework supportive of the growth of domestic technology industries. Most of his colleagues would rather focus more on pursuing scientific achievements in the laboratory.

#### **Box 4.1. National policy on technology development**

Adi Indrayanto earned his Master's degree from the University of Manitoba in Canada and his PhD degree from the University of Manchester in Neural Networks. Even before departing from Indonesia, he had already developed a very strong passion for technological policy. As a protégée of Professor Samaun Samadikun, the late Chairperson of the Indonesian Institute of Sciences (LIPI), he firmly believes that Indonesia will only develop its research-based industries if appropriate technological policies are in place. Unfortunately, ITB insisted that he pursue an advanced degree in electrical engineering instead of technological policy. He believes that solely focusing on the development of excellent technical expertise will not result in technological and industrial breakthroughs in developing countries.

During his study in the UK, he spent a large portion of his time participating in seminars and gatherings on developing technological policies. After returning to Indonesia, he became one of the strongest advocates for the development of a clear and consistent national technological policy. His paramount achievement is the government policy requiring a certain proportion of domestic components (*Tingkat Komponen Dalam Negeri* or TKDN) in technological products marketed in Indonesia. TKDN has been successfully implemented in the smartphone and automobile industries, in which producers have to establish production facilities in Indonesia to market their products.

TKDN is only a small step toward a more independent technological industrial policy, one that requires a certain proportion of the electronic equipment marketed in Indonesia to be manufactured in Indonesia. The ultimate goal is not limited to manufacturing but also includes local design.

Developing a government regulation that requires support from many different government agencies as well as associations of manufacturers is a significant achievement. It requires tremendous negotiation skills and endurance to acquire consensus from the different interests of many diverse sectors. Without the consistent and persistent pressure initiated by Adi, a national policy will never materialize.



He has made several failed attempts in experimenting with the development of start-up companies based on innovations produced by ITB laboratories. Based on his failures, he is currently developing joint final year projects involving the School of Business & Management and the Department of Electrical Engineering, aiming to produce marketable products in technology.

This case is an excellent example of a different aspect of contributions by a returnee to the national policy on technology.

Adi is fighting outside the ivory tower for a better regulatory environment for the technology industry. His endeavor is typical of an engineer's passion for collaboration with relevant industries to bring their inventions to the market. Research in engineering disciplines can only develop and excel when close collaboration with industry is nurtured and supported by appropriate government regulations. The phenomena of collaboration between government, academics, and industry is usually referred to as the "Triple Helix," after the DNA structure.

- d) The special case of Mikrajuddin Abdullah (see Box 4.2.) depicts a champion who works outside the mainstream based on his belief that research topics relevant to his countryman would contribute more to the nation. The success of his almost eccentric strategy in pursuing excellence has been proven by numerous publications in reputable international journals. As a scientist from the Department of Physics that typically focuses more on fundamental science, his strong passion for relevance is extraordinary.

#### **Box 4.2. Relevant quality research**

In 1998, Mikrajuddin Abdullah was granted an overseas scholarship from the Monbusho after his applications had been repeatedly (six times) rejected since 1992. He earned his PhD from the University of Hiroshima in 2002 in Chemical Engineering with 15 publications in reputable international journals. Although he was admitted to study Chemical Engineering, he was able to choose research topics relevant to his department in ITB, the Department of Physics.

His multiple previous failures in applying to overseas institutions provided him with opportunities to better understand the relevant problems facing his fellow countrymen. He strongly believes that returnees will be able to survive by themselves if they carefully select research topics more relevant to Indonesia instead of blindly following their supervisor's research topics.

In many cases, the supervisor's research is irrelevant to Indonesia but facilitated by state-of-the-art scientific equipment, generous funding, and conducted in an environment where government policies and regulations are supportive of research. When the scholarship recipients return to their home institutions, they find that the environment is much less than satisfactory to continue their research. Some of them can only conduct proper research and publish articles when provided with post-doctoral opportunities to return to their previous host institution.

Mikrajuddin has become very concerned about this situation. He insists that Indonesian researchers could do better if they choose topics more relevant to their social and natural environment at home. He requires his PhD students to choose relevant research topics from simple phenomena. Consequently, he has successfully published numerous articles, exceeding the standard requirement.

Currently, he has successfully supervised 10 PhDs, each of them with four published articles in reputable international journals—again much higher than the standard requirement. Eight more ongoing candidates are currently under his supervision. Most of his publications are not in collaboration with foreign researchers. In total, he has published a record 65 articles in accredited international journals, making him the most productive scholar in Indonesia.

The physical process observed from the simple phenomenon of extracting fluid by squeezing a towel provides one example of how he chooses a topic. Most of his research does not require sophisticated and expensive equipment. In some cases, he modifies simple kitchen equipment (e.g., a toaster) to support his research.

This is probably the best example of how a “champion” can build a successful research culture. It should be noted, however, that his strategy might not work well in other scientific disciplines. Different strategies might be needed for other specific fields.

Nevertheless, his strategy might not be easily replicated in different scientific disciplines. For some fields, such as Chemistry, the existence of laboratory equipment is essential. Practically all research activities in Chemistry require scientific equipment. On the other extreme, mathematics might require minimal or no equipment.

- e) Most Groups of Expertise (KK) do not strictly apply priorities when selecting the destination countries or institutions for scholarship recipients. Therefore, many recipients follow the supervisor’s suggestions in choosing research topics with little or no consideration of their relevance to the Indonesian context. In most cases, research conducted in the host institution is well supported in terms of infrastructure, funding, state-of-the-art equipment, and an environment conducive to research.

Spoiled with such conditions, many returnees are shocked when they find out that there is insufficient support for continuing their research work in their home institution. Some are only able to publish when given the opportunity to conduct post-doctoral research in their previous host institutions. An extreme example was observed when a returnee was supervised by a Nobel laureate and became involved in his research, which was facilitated with state-of-the-art laboratory equipment only available abroad. It indicates that local research culture has not been strongly developed inside many existing KK, and such situations are not sustainable in the long run.

- f) Small noncompetitive research grants for returnees could be provided before they can compete for larger competitive grants. Returnees should be given a one-year “grace period” to adjust themselves to the new situation in the home institution. It should be noted that, in addition to the pressure of competing to acquire grants and publish articles, a significant mandatory teaching load is also allocated for them. Since most returnees are already married, such arrangements would also give their family more time to settle down.
- g) Learning from the Mikrajuddin case, pre-departure training might be needed to provide recipient candidates with exposure to the issues and topics relevant to their surrounding community in Indonesia. The training could be designed as a scholarship to conduct short-term internships in several industries relevant to their fields. The main objective is to study and identify the main problems and obstacles faced by these industries, which are still unresolved.

Such training, however, requires rigorous preparation and meticulous efforts in designing the program. Networking with relevant industries has to be developed, commitments from them should be acquired, and consistency at the level of KK and institutions should be assured. KK should select their focus of research interests, develop long-term strategies to achieve it, and be consistent in implementing it, at least for the following years. A recommended pre-departure program was considered in the previous study on the development of strategies for universities, industry, and government partnerships (Moeliodihardjo et al. 2012).

- h) Returnees are studying in many different countries with a wide variety of education systems, as shown in Section 4.4 of this document. For a well-established institution such as ITB, diversity has enriched the education system through the adoption as well as adaptation of the positive aspects and avoidance of the negative aspects of the original system. Minor frictions or even conflicts at the beginning are understandable but can be easily resolved internally afterward. Different results might be observed in younger institutions, where the development of a strong academic culture is still in its infancy. In such cases, greater diversity might increase the risk of disintegration.

- i) The following points summarize information obtained from the interviews on the institutional impacts of studying abroad:
- The most substantial institutional impact introduced by the returnees was in relation to changes to the curriculum. This could comprise changes to the content and substance, structure, or even the whole system.
  - The doctoral program was previously conducted as a fully research-based program accompanied by a thesis defense at the final stage. However, it was later shifted toward a more blended system with the introduction of qualifications and mandatory as well as elective courses. It demonstrates the influence of education styles acquired from different countries and regions, i.e., traditional continental Europe, US, UK, and Japan.
  - The student-teacher relationship becomes more relaxed and egalitarian as it adopts the Western-style educational culture. Transparency of academic records and accountability of teachers reflect the cultural changes brought by the returnees.
  - Significant impacts can also be observed at the level of the central administration, particularly in terms of management systems and procedures, organization, and work ethics, including staff discipline.
  - Another very important aspect that has been significantly affected by returnees is the safety factor, such as procedures for dealing with hazardous substances in the laboratory and its surroundings.

#### 4.6 Schedule of Interviews

The author conducted in-depth interviews with Professor Edy Tri Baskoro, the designated counterpart at ITB. He was accompanied by Dr. Indra Noviandri, the Vice Dean of Faculty of Mathematics and Natural Sciences. In order to obtain information on institutional policies, the author conducted a session with the Vice Rector of Resources and Organization, Vice Rector for General Administration, Alumni, and Communication, as well as an officer from the Directorate of Personnel. In-depth interviews to acquire information on individual experiences were carried out with two academics, as recommended by the counterpart, i.e. Professor Mikrajuddin Abdullah and Dr. Adi Indrayanto.

The following is the schedule of the interviews conducted:

- May 22, 2018 Edy Tri Baskoro, Dean of Faculty of Mathematics and Natural Sciences  
 Indra Noviandri, Vice Dean of Faculty of Mathematics and Natural Sciences  
 Adi Indrayanto, Microelectronics Laboratory – School of Electrical Engineering and Informatics
- May 23, 2018 Irawati, Vice Rector for Resources and Organization  
 Miming Mihardja, Vice Rector for General Administration, Alumni, and Communication  
 Fathurrokhman, Sub Directorate of Personnel
- May 24, 2018 Mikrajuddin Abdullah, Chairperson of the Academic Senate - Faculty of Mathematics and Natural Sciences

## Chapter 5: Universitas Gadjah Mada – UGM

### 5.1 Historical Perspective<sup>13</sup>

The history of the establishment of Universitas Gadjah Mada is as colorful as the drama of the country's struggles following the proclamation of independence of the Republic of Indonesia. During the independence war of 1945–1949, Jakarta was occupied by Netherlands Indies Civil Administration (NICA) troops. The struggling new government had to move its central administrative offices to Yogyakarta. The spirit of nationalism was so strong that a group of academics initiated the establishment of a new national university on the March 3, 1946, called *Balai Perguruan Tinggi Gadjah Mada*, which initially consisted of the Faculty of Law and Faculty of Letters. The university took its name from *Gadjah Mada*, Prime Minister (1290–1364) of the ancient Empire of Madjapahit, which successfully united the archipelago under one administration. It is therefore seen as a symbol representing heroism, patriotism, and nationalism. The country's founding fathers sought to redress Dutch apathy by establishing a national university that freely admitted native Indonesians.

At the same time, several leading academics from THS Bandoeng initiated the establishment of *Sekolah Tinggi Teknik* in Yogyakarta. Students that were studying at THS Bandoeng at that time could then continue their studies at this new institution. On March 5, 1946 a Medical School was established, followed by a School of Veterinary Sciences on September 20, and a School of Pharmacy and School of Agriculture on September 27. Two years later a School of Dentistry and Academy of Political Sciences were established in 1948. Unfortunately, on December 19, 1948, Yogyakarta became the main target of NICA military aggression and all higher education institutions had to terminate operations.



Central administration building

When the results of the Round Table Conference were accepted at the Plenary Session on November 2, 1949 at the Knight's Hall in The Hague, the Republic of Indonesia as an independent country was also formally recognized by the international community. Gradually, schools offering higher education were reopened for students, from

Dentistry, Pharmacy, Agriculture, Medicine, Engineering, Political Sciences, to Law.

The spirit of nationalism was very strong, and a group of academics initiated the establishment of a new national university, called *Universiteit Negeri Gadjah Mada* in 1948. Later it formally changed its name to Universitas Gadjah Mada (UGM) on December 19, 1949, as a public university. The announcement on that date had a political motive: to demonstrate to the world that the young Republic could survive and continue with its normal life, including the successful operation of a national higher education institution.

On the date of its establishment, UGM consisted of the following 6 Faculties,

- Faculty of Engineering
- Faculty of Medicine, including Pharmacy, Dentistry, and Biology Education
- Faculty of Agriculture, including Forestry
- Faculty of Veterinary Sciences
- Faculty of Law, including Economics, Notary, Political Sciences, and Sociology
- Faculty of Letters

The initial, overwhelming challenge that UGM had to cope with was the lack of infrastructure, including a lecture hall and classrooms. The young Republic did not have any resources to build any infrastructure for UGM. Fortunately, the Sri Sultan Hamengku Buwono IX, then the reigning Sultan of

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<sup>13</sup> Wikipedia 2018

Yogyakarta, was quite generous in loaning a significant part of his palace for UGM to conduct its education programs. Later the Sultan also donated 183.36 hectares of his land to UGM.

The status of UGM was converted into an autonomous legal entity on December 14, 2013.

## 5.2 Current profile

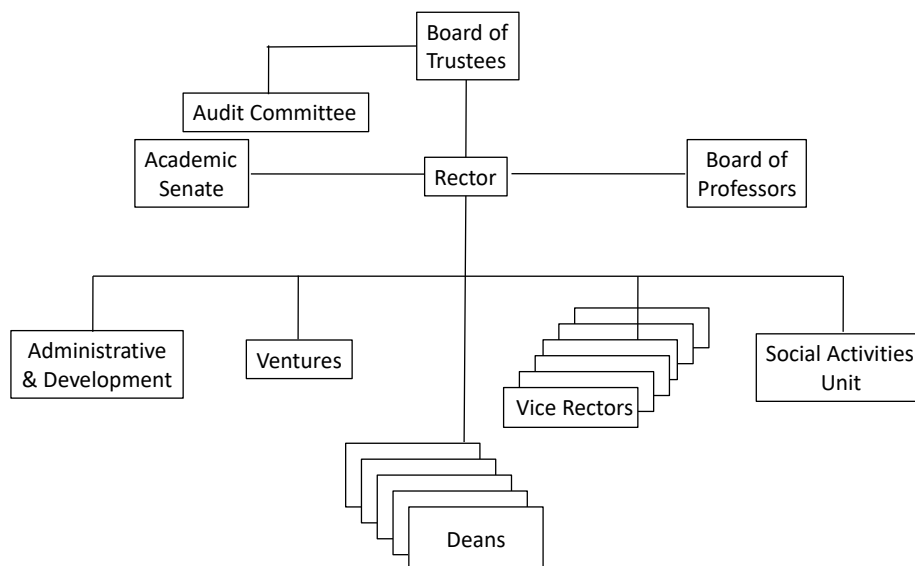
### 5.2.1 Governance

The highest prevailing regulation, the institutional statute, was decreed as the Government Regulation 65/2013, signed by the President of the Republic of Indonesia. The governing board of UGM is comprised of the 19-member Board of Trustees, whereby the Chair, Vice Chair, and Secretary are elected by the members of the Board.

The three ex-officio members in the Board are:

- Minister of Education, Culture, Research, and Technology;
- Sri Sultan Hamengku Buwono X; and
- the Rector.

Figure 5.1 Organization chart for UGM



Source: UGM 2018

Six external members are selected to represent the community with an additional six to represent the internal academic community. Two members are selected to represent alumni, and one each to represent students as well as support staff.

The Board of Trustees is responsible for carrying out, among other roles, formulating the general institutional policies, selecting the Rector, approval of the Strategic Plan and annual budget, and assessing the Rector's performance.

The Rector is assisted by the following 5 Vice Rectors,

Vice Rector of Education, Learning, and Student Affairs  
Vice Rector of Planning, Finance, and Information System  
Vice Rector of Research and Community Services  
Vice Rector of Human Resources and Asset  
Vice Rector of Partnership and Alumni

### **5.2.2 Campuses**

The current campus of UGM is located at Bulaksumur in the Special Region of Yogyakarta. The privilege of Special Region status was granted by the central government due to the central role of the then Sultan of Yogyakarta during Indonesia's struggle for independence after the 1945 Proclamation. Yogyakarta is the smallest province in the country, located in an area of 3,185.6 km<sup>2</sup>, with a population of 3.4 million.

The Bulaksumur campus is located on 183.36 hectares of land, which previously belonged to the Sultan of Yogyakarta and was donated to UGM by the late Sultan Hamengku Buwono IX. The campus is divided into 11 zones (UGM 2018).

UGM also conducts class lectures in certain fields, such as management and accounting, in locations far from campus. Since these graduate programs are mostly targeted toward employed students, the locations chosen are in big cities, such as Jakarta and Surabaya.

### **5.2.3 Academic Staff**

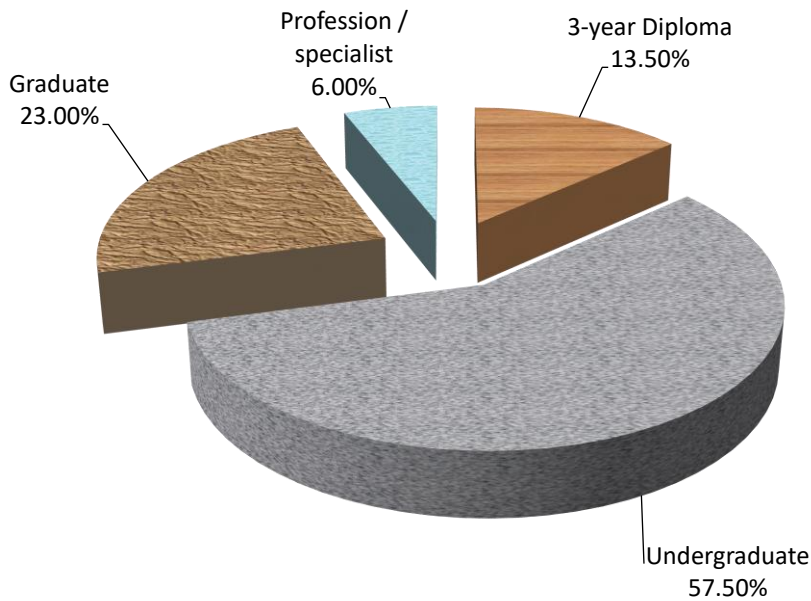
In 2017 the number of teaching staff in UGM was 3,608. This represents the largest number of teaching staff in any university in Indonesia, except the Open University. A significant proportion of faculty (36.7%) or 1,327 hold a PhD degree (PDPT 2022).

The number of staff presented in the national higher education database (*Pangkalan Data Pendidikan Tinggi* – PDPT) only represents permanent staff. Some programs, such as graduate program in business and management, might employ a significant number of non-permanent teaching staff from businesses and industries.

### **5.2.4 Student Enrolment**

UGM enrolls the largest number of students (in one campus) in the country. In 2018 the total student enrolment is 47,081, and they are enrolled in undergraduate, graduate, 3-year vocational diplomas, and professional/specialist programs, as illustrated in Figure 5.2.

Figure 5.2. Proportion of students enrolled



Source: UGM 2018

### 5.2.5 Academic programs

UGM offers a large number of vocational, undergraduate, and graduate programs, as presented in Table 5.1

Table 5.1. Programs offered at UGM

- Faculty of Biology
- Faculty of Economics and Business
  - Economics
  - Management
  - Accounting
- Faculty of Pharmacy
- Faculty of Philosophy
- Faculty of Geography
  - Geography and environment
  - Cartography and remote sensing
  - Regional development
- Faculty of Law
- Faculty of Cultural Sciences
  - Anthropology
  - Archeology
  - Between cultures
  - Languages and literatures
  - History
- Faculty of Social and Political Sciences
  - Politics and governance
  - International relations
- Management and public policy
- Communication
- Sociology
- Social development and welfare
- Faculty of Medicine, Public Health, and Nursing
  - Medical doctor
  - Nursing
  - Health nutrition
- Faculty of Dentistry
  - Dentistry
  - Dental nurse
- Faculty of Veterinary Sciences
- Faculty of Forestry
  - Forest management
  - Forest culture
  - Forest product technology
  - Conservation of forest resources
- Faculty of Mathematics and Natural Sciences
  - Physics
  - Chemistry
  - Mathematics

- Computer sciences and electronics
- Faculty of Agriculture
  - Agriculture cultivation
  - Microbiology agriculture
  - Soil sciences
  - Socioeconomic agriculture
  - Pests and plant diseases
  - Fisheries
- Faculty of Animal Husbandry
  - Animal Nutrition and feed sciences
  - Animal production
  - Livestock socioeconomic
  - Animal product technology
- Faculty of Psychology
- Faculty of Engineering
- Architecture
- Nuclear engineering and physics engineering
- Electrical engineering and information technology
- Chemical engineering
- Civil engineering and environment
- Geodesy engineering
- Geology engineering
- Mechanical engineering
- Faculty of Agricultural Technology
  - Food technology and food crops
  - Agricultural technology and biosystem
  - Agricultural industry technology
- Vocational School

### 5.2.6 Financing

UGM receives various international support, and major investment for research infrastructure and graduate education was provided under the World Bank projects, e.g. University Development II (IUC), and URGE (Center grant). In 1990 five Inter-University Centers (IUCs) were established in UGM, namely IUC for Economics, IUC for Social Sciences, IUC for Engineering, IUC for Biotechnology, and IUC for Life Sciences. The URGE project provided competitive grants for the continuing support of these centers.

Several undergraduate programs in UGM have successfully acquired competitive grants under various competitive schemes, e.g., Quality of Undergraduate Education (QUE), and other government funding schemes. Major investment for infrastructure was also received under the JBIC's UGM development project.

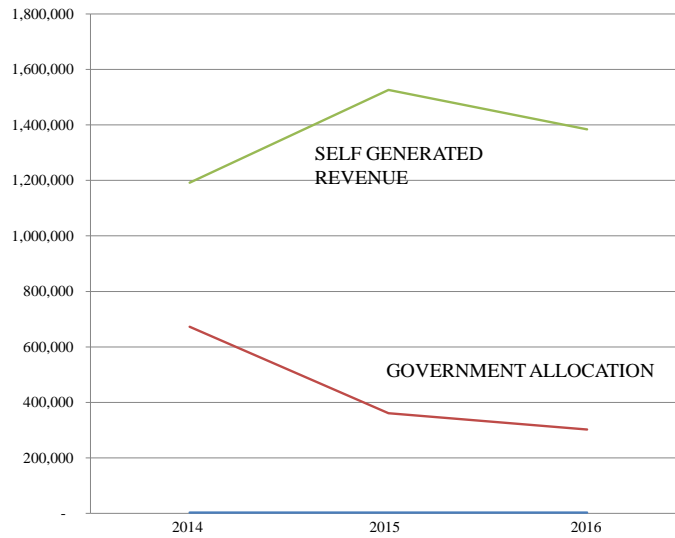
The sources of funding in UGM can be grouped into two categories, namely the government allocation and self-generated revenue. The self-generated revenue includes consultancy contracts, interest, profits from commercial ventures, and private grants.

The government allocation has been steadily decreasing—from IDR 672,254 million in 2014 to IDR 360,040 million in 2015 (-46.44%) and IDR 301,761 million in 2016 (-9.33%). At the same time, the self-generated revenue has increased from IDR 1,191,814 million in 2014 to IDR 1,526,208 (28.06%) in 2015 before declined by a small amount to IDR 1,383,888 (-9.33%) million in 2016, as illustrated in Figure 5.3.

The budget cut was then applied to all government sectors in 2015 as a policy of the newly appointed Minister of Finance.



Figure 5.3. Sources of funding for UGM from 2014–2016 in IDR million



Source: LKUGM 2016

## 5.3 Policies and Strategies

### 5.3.1 Main Policies

The main policies are reflected in the stated vision and mission of UGM. The vision of UGM is to be a pioneer world class national university, excellent and innovative, to serve the nation and humanity based on national cultural values and ideology, Pancasila. The mission of UGM is to provide education, conduct research, and maintain community services, as well as the preservation and development of knowledge that is excellent and beneficial for society.

### 5.3.2 Strategic Plan 2012–2017

The stated objective is to develop UGM toward becoming the best institution by conducting the following activities, as formulated in its Strategic Plan 2012–2017 (UGM 2012):

- conducting quality higher education by producing excellent and competent graduates;
- conducting research that become the national referral, environmentally friendly as well as responsive to the community problems and needs;
- conducting community services that encourage the community's independence and sustainable prosperity;
- implementing institutional management that is just, transparent, accountable, participative, and integrated across sectors for effective use of resources; and
- conducting strategic, effective, and sustainable collaborative activities with relevant partners.

In order to achieve these objectives, the following strategies were formulated:

- consolidation of academic communities for comprehensive scientific development relevant to the needs of the community, government, and industry;
- strengthen UGM's orientation toward solving national problems, and partiality to the marginalized groups of community;

- strengthen networks and collaboration among units and functions to optimize the use of resources by implementing information technology;
- develop networks to strengthen education, research, and community services' resources; and
- build up the capacity, responsiveness, and accountability of the management of education, research, and community services.

## 5.4 Study Abroad Programs

Almost 90% of PhD holders in UGM earned their degrees abroad. The number of PhD holders in UGM that have graduated from overseas institutions is 1,911 in 2017. A significant proportion of them (22.55%) acquired their PhDs from Japan, trailed by Australia 15.54%, USA 11.46%, UK 9.42%, Netherlands 8.58%, and Germany 5.81%, as illustrated in Table 5.2.

As with the case of ITB, USA graduates are mostly the senior staff who earned their degrees in the 1970s and 1980s.

Table 5.2: Number of PhD graduates by destination country

Destination country		Destination country	
Japan	431	Belgium	20
Australia	297	New Zealand	11
United States of America	219	Switzerland	8
United Kingdom	180	Brunei Darussalam	3
Netherlands	164	Denmark	3
Germany	111	Afghanistan	2
Malaysia	75	British Virgin Islands	2
Thailand	72	China	2
France	69	India	2
South Korea	36	Italy	2
Canada	33	Saudi Arabia	2
Philippines	33	Spain	2
Sweden	32	Hong Kong	1
Austria	28	Ireland	1
Singapore	23	Poland	1
Taiwan	23	Russian Federation	1
Norway	21	Turkey	1

Source: UGM 2018

Information presented in Table 5.3, acquired from the Bureau of Planning, MoRTHE, might be inconsistent with information acquired from UGM. Some students are not properly registered with MoRTHE, particularly those who did not receive a government scholarship.

Table 5.3 also shows that recipients selected Japan's universities to study engineering, mathematics, and sciences, and selected US or European universities for social sciences. Since health education in Indonesia is traditionally more oriented toward the Netherlands, it is logical that recipients selected European universities for their doctoral program.

Table 5.3: Ongoing study abroad by academic field and destination country

<b>Student name</b>	<b>Source of funding</b>	<b>Destination country</b>	<b>Target university</b>	<b>Fields</b>	<b>Departure</b>
<b>UGM A</b>	Dikti-Fullbright	USA	Rutgers, State Univ of NJ	n/a	2015
<b>UGM B</b>	Dikti-Fullbright	USA	Illinois Institute of Technology	Social	2014
<b>UGM C</b>	BPPLN	USA	University of Washington	Social	2013
<b>UGM D</b>	BPPLN	Australia	University of Queensland	Social	2014
<b>UGM E</b>	BPPLN	Australia	University of New South Wales	Social	2013
<b>UGM F</b>	BPPLN	Australia	Murdoch University	Humanities	2013
<b>UGM G</b>	BPPLN	Denmark	Aarhus University	Mathematics and Natural Sciences	2015
<b>UGM H</b>	BPPLN	Denmark	University of Copenhagen	Agriculture	2014
<b>UGM I</b>	BPPLN	Finland	University of Helsinki	Health	2014
<b>UGM J</b>	IGSP DAAD	Germany	RWTH Aachen	n/a	2014
<b>UGM K</b>	BPPLN	Japan	Hokkaido University	Mathematics and Natural Sciences	2015
<b>UGM L</b>	BPPLN	Japan	Nara Institute of Sci and Tech	Mathematics and Natural Sciences	2015
<b>UGM M</b>	BPPLN	Japan	Nara Institute Science & Technology	Mathematics and Natural Sciences	2014
<b>UGM N</b>	BPPLN	Japan	Tohoku University	Engineering	2014
<b>UGM O</b>	BPPLN	Netherlands	Utrecht University	Social	2014
<b>UGM P</b>	BPPLN	Netherlands	Radboud University Nijmegen	Social	2013
<b>UGM Q</b>	BPPLN	Netherlands	Leiden University	Social	2013
<b>UGM R</b>	BPPLN	New Zealand	MASSEY University	Social	2014
<b>UGM S</b>	BPPLN	Taiwan	NTUST – Taiwan	Engineering	2015
<b>UGM T</b>	BPPLN	Thailand	King Mongkut’s University of Technology Thonburi	Engineering	2014
<b>UGM U</b>	BPPLN	United Kingdom	University of Birmingham	Engineering	2015
<b>UGM V</b>	BPPLN	United Kingdom	University of Birmingham	Engineering	2014
<b>UGM W</b>	BPPLN	United Kingdom	University of HULL	Social	2014
<b>UGM X</b>	BPPLN	United Kingdom	University of Birmingham	Humanities	2013
<b>UGM Y</b>	BUDI	Australia	University of New South Wales	Social	2016

<b>UGM Z</b>	BUDI	Japan	Ehime University	Mathematics and Natural Sciences	2017
<b>UGM AA</b>	BUDI	Japan	Ehime University	Agriculture	2016
<b>UGM BB</b>	BUDI	Japan	Nagoya University	Social	2016
<b>UGM CC</b>	BUDI	Netherlands	Vrije University Amsterdam	Health	2017
<b>UGM DD</b>	BUDI	Netherlands	Wageningen University	Engineering	2016

Source: MoRTHE 2018

## 5.5 Impacts of Studying Abroad

The following points summarize the observations that can be drawn from the information obtained on UGM:

- a) A significant institutional impact of studying abroad is demonstrated by staff who graduated from Japan. A strong link between the graduates and their “*sensei*” (professor) is continuously well-maintained, even long after they have returned to their home institutions. The best example of this phenomenon is the case of Prof. Ika Dewi Ana, the Vice Rector of Research and Development, who has successfully developed numerous inventions, patents, and products as a result of research collaborations with her previous alma mater.

- b) A similar link can also be observed in staff who graduated from German institutions. Although weaker in personal relationships, the German “connection” has successfully attracted significant research funding and support for research equipment from German institutions. The case of Dr. Doni Prakasa Eka Putra, who graduated from RWTH Aachen, Germany, provides an illustrative example of this.

He has successfully attracted significant funding to the amount of IDR 13 billion (USD 900,000) from the German government to furnish a state-of-the-art geological laboratory at UGM, including research collaboration between the two institutions. As of 2018, the laboratory has been divided into four clusters: environment and water, sustainable geo-resources, geohazards and coastal risk, and energy and raw material efficiency. The laboratory is called the *Get-In CICERO* or the German Indonesian Geo-Campus in Indonesia for Competence in Education and Research for Organizations.

- c) Most graduates from English speaking countries, such as the UK, USA, and Australia, do not have such advantages. Their relationship with previous institutions is mostly “transactional,” whereby further communication with academic supervisor is mostly limited after the degree has been granted.

## Chapter 6: Conclusions and Recommendations

### 6.1 Conclusions

The following section summarizes the salient points of the findings and key recommendations of this study.

- a) A coherent and well-planned program of overseas scholarship is essential for scholarship of study abroad to be successful.
- b) A complete development package could be considered as an alternative approach, particularly in the case of establishing a new institution, where qualified human resources are not easily available. Significant lessons can be learned from the case of Politeknik Manufaktur Bandung (Polman) and Politeknik Elektronika Negeri Surabaya (PENS).
- c) In cases where a strong political consensus can be reached to focus on a particular scientific field, a large number of staff could be given overseas scholarships to reach a required critical mass. This critical mass is needed for them to be able to make a breakthrough in developing the field. In the process, longterm consistent policies are essential for such programs to be successful. Lessons can be learned from cases such as the development of the Indonesian macro economy in the 1970s and 1980s.
- d) At established institutions such as ITB and UGM, the diversity of countries enriched the academic atmosphere. But at young and newly established institutions, different schools of thought and cultures could be problematic and might create unnecessary friction.
- e) A strong bond between the alumni and the learning institution needs to be developed and maintained, particularly after the graduates return to their home institutions. The case of the link between the Japanese universities and their graduates could be taken as best practice.
- f) Although a quantitative study has not been conducted, it is observed that most graduates find it difficult to apply their skills and knowledge to solve the problems faced by their fellow Indonesians. The problem of relevance might need more attention in the future.

### 6.2 Recommendations

The following section presents two possible programs to accompany the existing staff scholarship for studying abroad. These programs were proposed in the “Final Report: Developing Strategies for University, Industry, and Government Partnership” prepared by the Education Sector Analytical and Capacity Development Partnership (Moeliodihardjo, et al. 2012).

#### **Program 1: Pre-departure Training**

Candidates for study abroad are granted a small grant that allows them to have a short-term exposure to local industries before they go abroad to undertake a PhD study. The grant includes domestic travel and out-of-town living costs. At the end of the program, the recipients should be better able to select a scientific discipline relevant to the problems faced by the local industries and develop a strong argument for how they are going to address these issues by studying abroad.

The size of the grant should not exceed IDR 40 million per person per year.

#### **Program 2: Re-entry Program**

The returnees from study abroad should be given a small grant allowing them to undertake one or two short stints of internship in local industries or for staff from industries to have a short-term R&D assignment in a university to develop specific expertise or undertake projects.

The size of the grant could be up to the order of IDR 40 million per person per year.

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