

November 2023

East Asia Education Insights

East Asia's Research Activity in Review part 2 (of 2)

Southeast Asia

Introduction

This report is part two of a **two-part series** examining research output across East Asia.

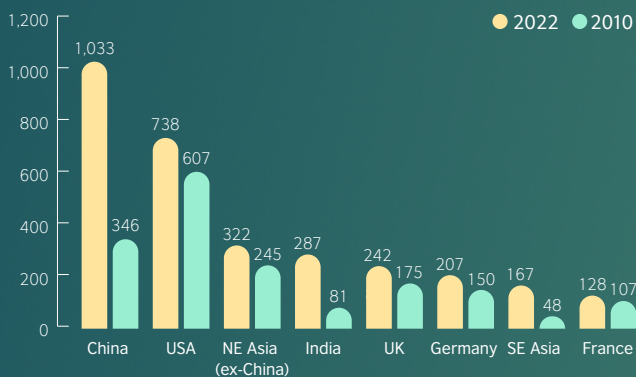
Part 1 focused on mainland China and the rest of northeast Asia (Hong Kong SAR, Japan, South Korea and Taiwan).

Part 2 looks at research trends in the ten countries of Southeast Asia.

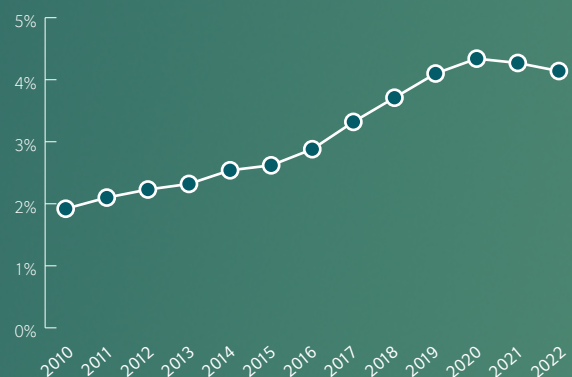
Global view - Southeast Asia

Southeast Asia's share of global research output has more than doubled since 2010

Scholarly output of world's largest research markets
Thousands of publications



Southeast Asia's research publications
as % of global output



The ten countries in Southeast Asia¹ remain relatively insignificant in global terms, combining to publish fewer scholarly publications than the UK. But the gap has closed significantly in the last decade.

From 2010 to 2022, average annual research output grew 11 per cent annually in Southeast Asia – faster than any of the world's largest research-producing countries except India (11.1%) over this period². At current growth rates, Southeast Asia's research output will overtake Germany, UK, and the four combined countries/territories in northeast Asia (not including China) by the end of the decade.

While developed northeast Asia (ex-China) has seen its share of global research output fall from 9.9% in 2010 to 8.0% in 2022 (see part one), Southeast Asia has more than doubled its share of worldwide publications over this period (from 1.9% in 2010 to 4.1% in 2022).

However, there also are causes for concern. Research output in the region's two most

important growth countries has stopped or gone into reverse in recent years.

Publications in Indonesia – the region's fastest growing producer of research since 2010 – dropped nearly 16% from 2021 to 2022. Similarly, publications in Vietnam – the other high-potential country in Southeast Asia – have essentially flatlined since 2020. As a result, the region's overall share of global research output peaked in 2020 around 4.3% and lost ground in both 2021 and 2022.

Nevertheless, the fundamental research outlook remains strong in Southeast Asia, underpinned by both high-potential countries in Indonesia and Vietnam as well as more mature research ecosystems in Singapore and Malaysia.

Source: SciVal

1. All mentions of Southeast Asia in this report refer to these ten countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

2. Regional research total is smaller than the sum of all countries due to removing joint publications that are counted in multiple countries' national totals.

Regional view - Southeast Asia

Research output varies widely across Southeast Asia, with a slowdown since 2020

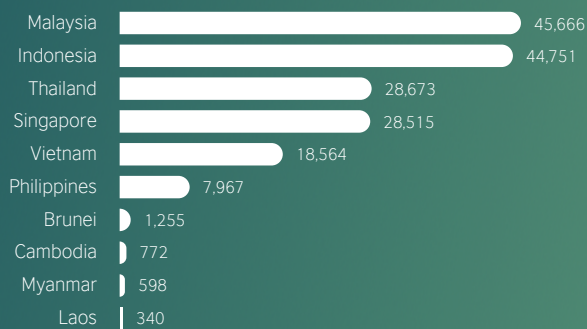
Southeast Asia is home to a diverse group of countries with wide variations in population sizes, income levels, and higher education systems. Research output also varies widely across the region, from tiny producers such as Laos, Myanmar, and Cambodia to countries such as Indonesia and Malaysia that publish upwards of 100 times more scholarly articles per year than their smaller neighbors in the region.

In terms of total research output, two countries in Southeast Asia stand out. Malaysia and Indonesia accounted for more than half of all research publications in the region in 2022. Those two – combined with Thailand, Singapore, and Vietnam – made up 94% of all of Southeast Asia’s research output in 2022. The four smallest research-producing countries published less than 2% of total regional output in the same year.

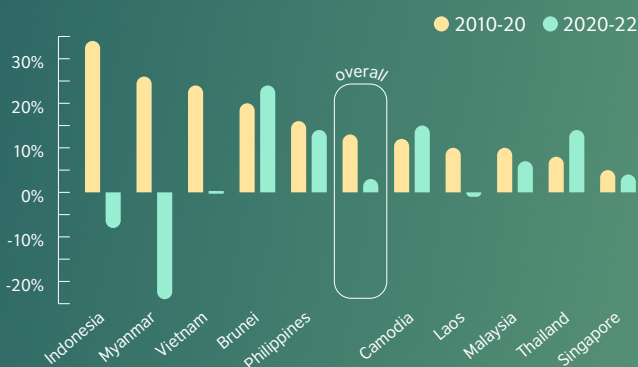
Meanwhile, in terms of growth, Vietnam and Indonesia are the two countries that stand out, appearing among both the top-five largest research producers in the region in 2022 as well as the top-five fastest growing since 2010. However, growth in scholarly publications in both of these high-potential countries has either halted (Vietnam) or gone into reverse (Indonesia) since 2020, calling into question the wider region’s long-term growth potential.

Overall, average annual growth in research output has slowed in seven out of the region’s ten countries in the first two years of the 2020s compared with the period from 2010 to 2020. While this slowdown was likely caused in part by the after math of the Covid-19 pandemic, the drop-off has been particularly steep in three countries – Myanmar, Indonesia, and Vietnam – which calls into question whether other factors may also have been at play.

Research publications in Southeast Asia, by country (2022)



Average annual growth rate in research output

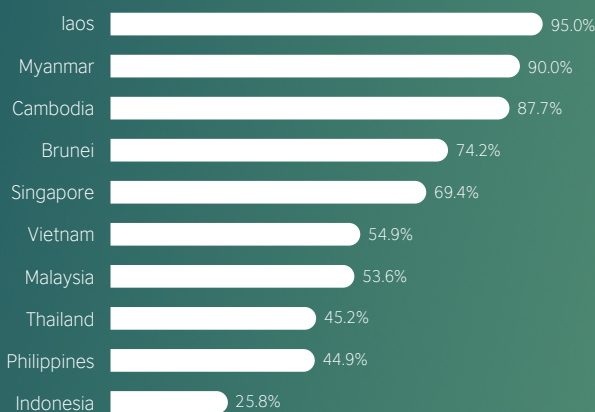
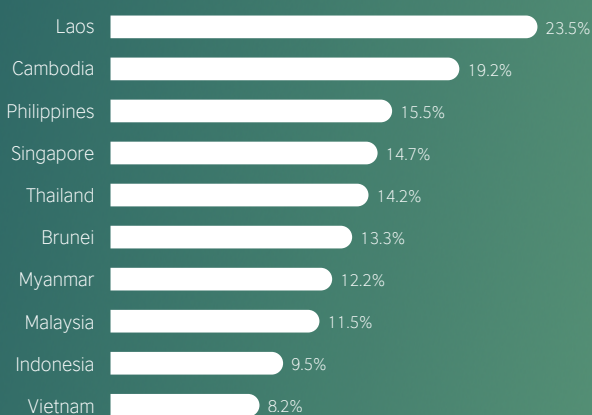


Source: SciVal

Regional quality - Southeast Asia

International collaboration rates remain high in most parts of Southeast Asia

International collaboration rate (2022)

UK share of all international research collaboration, 2019-23¹ (%)

Source: SciVal

1. Through September 30, 2023

As a region, Southeast Asia remains very receptive to international research collaboration. While the international collaboration rate varies widely across the region, seven out of the ten countries in Southeast Asia published more than half of their scholarly output with international co-authors in 2022.

In particular, three of the least developed economies in the region rely heavily on international co-authors. Laos, Myanmar, and Cambodia each published more than 87% of their research with international partners in 2022, likely through research grants and other external support. However, small but wealthy countries such as Brunei and Singapore also published roughly 70% of their research with international partners in 2022, indicating that availability to external research funding alone does not explain openness to international collaboration.

As a whole, the countries in Southeast Asia are more likely to collaborate internationally on research than the countries/territories in northeast Asia, and especially China (see part one). However, Indonesia remains a notable outlier, where the international collaboration rate is nearly 20 percentage points lower than any other country in Southeast Asia.

The UK remains a preferred research partner in most of Southeast Asia, ranking among the top-four most frequent international partners in seven out of the region's ten countries. In eight countries in Southeast Asia, more than 10 per cent of all international research collaboration is published with UK co-authors. However, the UK relatively underperforms in the two countries with the highest long-term growth potential: Indonesia and Vietnam.

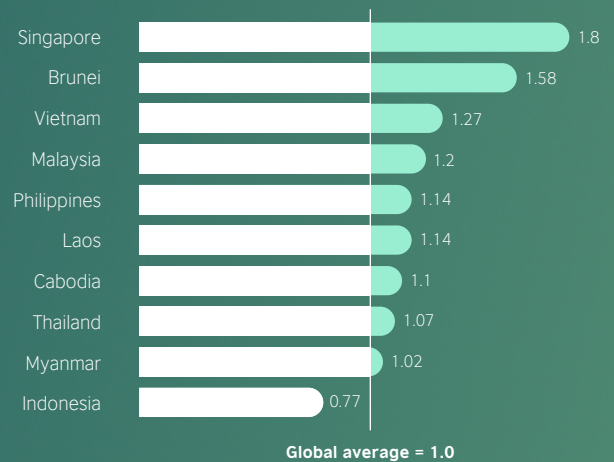
Top subjects - Southeast Asia

Research subjects vary widely but research impact broadly outperforms

Countries in Southeast Asia that publish more research are most likely to focus on engineering subjects



Field-weighted citation impact¹ (2022)



Research subjects in Southeast Asia vary as widely as the societies that produce them. To take one example, the proportion of total research that has focused on engineering-related subjects over the last five years (2018-23¹) ranges from as low as 6% in Laos to as high as 30% in Malaysia – a rate five times higher. This wide discrepancy means that it is difficult to make generalisations about the most common subjects of research in the region.

However, one common theme in Southeast Asia is that countries that produce more research generally focus a greater portion of their research on engineering-related topics. This is particularly true in Malaysia and Singapore – the two most sophisticated research environments in Southeast Asia – where the share of engineering-related subjects is higher than the figure in the developed countries/territories in northeast Asia. Conversely, countries that produce fewer publications –

and presumably rely on more donor financing to fund their research – are far less likely to conduct research related to engineering subjects.

The field-weighted citation impact of Southeast Asia's research – a measure of research quality – also varies widely. Yet in nine of the ten countries in the region, research output is cited more frequently than the global average (1.0). This is likely a function of relatively high rates of international collaboration, as publications with co-authors in multiple countries are generally cited at significantly higher levels than research produced in only one country. But it also speaks to the overall quality of Southeast Asia's research capabilities.

Source: SciVal

1. Field-weighted citation impact is a measure of research quality that compares the number of citations research publications receive against the expected number received by similar publications.

Key insights

Growth, collaboration, and research impact all remain strong in Southeast Asia

Areas for optimism



Growth

- Southeast Asia's share of global research output more than doubled from 1.9 per cent in 2010 to 4.1 per cent in 2022
- At current growth rates, research output in Southeast Asia will overtake the UK, Germany, and northeast Asia (ex-China) by the end of the decade



International collaboration

- Seven out of ten countries in Southeast Asia publish more than half of their scholarly research with foreign co-authors.
- In nine out of ten countries, the UK remains a top-five international research partner.



Research impact

- In nine out of the ten countries in Southeast Asia, research output is cited more often than the global average.
- Higher levels of citation is a mark of high-quality research output, even in developing economies.

Areas for improvement



Slowdowns in Indonesia and Vietnam

- In Vietnam, growth in the number of publications has stagnated since 2020.
- In Indonesia, research output declined -16 per cent from 2021 to 2022.
- As a result, Southeast Asia's share of global research has fallen since 2020.



UK collaboration could be stronger

- In seven out of the region's ten countries, the UK ranks fourth or lower among all international partners.
- UK collaboration is less frequent in countries with highest long-term growth potential: Indonesia and Vietnam



Domestic Research

- Research impact has trended negative in key research-producing countries in recent years.
- Domestically-produced research is cited at lower rates, suggesting indigenous capabilities may be lacking.

About the British Council in East Asia

We support peace and prosperity by building connections, understanding and trust between people in the UK and East Asia. We work with governments and our partners in the education, English language and cultural sectors, creating benefit for millions of people across Asia Pacific. We work directly with individuals to help them gain the skills, confidence and connections to transform their lives and shape a better world.

About our work building Education Partnerships

We enable teaching and research partnerships between Higher Education Institution in the UK and Asia Pacific to address shared global challenges through the exchange of learning and ideas. We deliver a number of programmes for Higher Education institutions, which can be found [here](#). We also deliver programmes on behalf of funding organisations, like the UK's new **International Science Partnerships Fund**, which we hope will be informed by this analysis.

About International Science Partnerships Fund

The International Science Partnerships Fund is designed to enable potential and foster prosperity. It puts research and innovation at the heart of our international relationships, supporting UK researchers and innovators to work with peers around the world on the major themes of our time: planet, health, tech, and talent. It's managed by the Department for Science, Innovation and Technology. Delivered by a consortium of the UK's leading research and innovation bodies.



*Questions
or
Comments?*

Please contact

Jazreel Goh
East Asia Insights Hub
jazreel.goh@britishcouncil.org