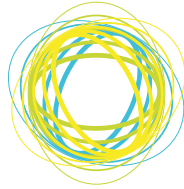




REPORT

Jarkko Mutanen

**FINNISH SCIENCE, TECHNOLOGY
AND INNOVATION COOPERATION
WITH SOUTHEAST ASIA
– OPPORTUNITIES AND
CHALLENGES**



FinCEAL+



UNIVERSITY OF
EASTERN FINLAND

This report is an output of the “Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the LAC Region” (FinCEAL) initiative, funded by the Ministry of Education and Culture and coordinated by the Finnish University Partnership for International Development (UniPID). The report is the product of the authors, and the responsibility for the accuracy of the data, findings, interpretations and conclusions included in this report rests with the author.

Year of publication 2018

Publisher University of Eastern Finland / School of Forest Sciences
P.O. Box 111, FI-80101 Joensuu, Finland

Author Jarkko Mutanen (UnPID – Finnish University for International Development)

Design Mediakettu Jari Peurajärvi

ISBN 978-952-61-2998-3 (PDF)

EXECUTIVE SUMMARY

This report explores the state of Finnish higher education, research and innovation cooperation and the related policy context with Southeast Asian countries. Taking into account the EU-ASEAN Science, Technology and Innovation (STI) cooperation context, it first defines recent developments in Finland in policies related to the Southeast Asian region including foreign and development, innovation and trade, and internationalization of higher education and research policies. It also goes through some key national policy publications for the region and shows recent developments in the EU-ASEAN context.

The report aims to:

- 1) Identify the opportunities and challenges related to STI and research cooperation with Southeast Asian countries as described by government representatives, research and innovation funders, and the Finnish scientific community**
- 2) Define the important themes of collaboration for Finnish academia with the region**
- 3) Give recommendations for strengthening Finnish STI and research cooperation with Southeast Asian countries.**

Major challenges in STI and research cooperation in the region include lack of research funding from Finland and co-funding from Southeast Asian countries, and a lack of budget and dedicated personnel to support Finnish STI and research cooperation. Some countries in Southeast Asia are also perceived as not having universities that are scientifically advanced enough for some Finnish partners; however, Singapore, whose best universities are among the top 20 in the world, requires its Finnish partners to be the best in their fields. In addition, strong promotion of Finnish STI and research know-how and the systematic dissemination of information on institutions and research cooperation possibilities are needed to lower the barriers for undertaking cooperation with partners in the region.

Taking into account the EU-ASEAN STI cooperation, the opportunities (and further challenges) related to Finnish STI cooperation with Southeast Asian countries are mirrored as above, as described by government representatives, research and innovation funders as well as Finnish academia, and the main themes of collaboration by Finnish researchers to the region are mapped. This report recommends the following actions:

- 1) Genuine bilateral and bi-regional funding opportunities and a national vision to support Finland-Southeast Asia STI and research cooperation should be established**
- 2) Finnish embassies in Southeast Asia should increase their support for STI and research cooperation and knowledge of cooperation activities**
- 3) Team Finland member institutions, key STI actors and Finnish research funders should actively participate in the EU-ASEAN STI policy discussions for improved Finnish impact in the region**
- 4) The STI and research-related agreements and memorandums of understanding (MoUs) in the region should be fully utilized**

ACKNOWLEDGEMENTS

I would like to thank all interviewees and online questionnaire respondents for the very interesting discussions and feedback provided.

I would also like to express my gratitude to Ms. Melissa Plath and Ms. Johanna Kivimäki from the UniPID Coordination unit for their valuable comments and support during the writing of this report, and Assistant Professor Minna Aslama-Horowitz from John's University for important suggestions and comments. Special thanks also go to Professor Timo Tokola from the School of Forest Sciences, University of Eastern Finland for valuable comments and suggestions and Ms. Kajsa Ekroos and Ms. Eva Kagiri for suggestions and support during the writing process of this report. An extra special "thank you" goes to Mr. Osku Haapasaari for his administrative support and valuable comments.

This report was created during the FinCEAL Plus Continuation project funded by the Ministry of Education and Culture of Finland.

AUTHOR

Dr. **JARKKO MUTANEN** (Ph.D.) works as Advisor at the University of Eastern Finland/Finnish University Partnership for International Development (UniPID). Since 2015 he has been in charge of coordinating the Asia component of FinCEAL and he has 16 years of professional experience in international cooperation in science, technology and innovation in academic and business collaborations.

CONTENTS

Executive summary	3
Acknowledgements	4
List of figures and tables	6
Acronyms and abbreviations	6
1. Introduction and background	8
2. Recent development in policies for the Southeast Asian region	10
2.1 Foreign policy and development policy	10
2.2 Innovation and trade policy	12
2.3 Policy for internationalization of higher education and research	12
3. Policy implementation and institutions	14
3.1 Ministries and embassies	14
3.2 Business Finland (merger of Tekes and Finpro)	14
3.3 Finnish National Agency for Education	15
3.4 Academy of Finland	15
4. EU-ASEAN STI cooperation and Finland	17
4.1 General scientific cooperation	17
4.2 EU-Asia Investment Facility and Development Cooperation Instrument	19
5. Findings and analysis	20
5.1 STI and research cooperation	20
5.2 Opportunities for STI cooperation	23
5.2.1 Cooperation themes and other opportunities	23
5.2.2 Education export: Improved synergies with higher education, business and research	24
5.3 Challenges for STI cooperation	25
5.3.1 Lack of financial and human resources	25
5.3.2 Perceived imbalance in scientific level and lack of competence	26
5.3.3 Dissemination of Information and cooperation possibilities	26
5.3.4 Cultural differences	27
5.3.5 General concerns	27
5.4 SWOT and GAP analyses of research, higher education and innovation cooperation between Finland and Southeast Asia	27
6. Conclusions and recommendations – GAPS and Policy implementation strategy	32
References	35
Appendices	38

LIST OF FIGURES AND TABLES

- Figure 1. The Ministry of Education and Culture's vision for promoting Internationalization in Finnish higher education and research.
- Figure 2. Southeast Asian countries mentioned in the FinCEAL Plus online questionnaire as Finland's partners in research and capacity-building cooperation.
- Figure 3. Main cooperation activities that academic respondents to the questionnaire have with partners from Southeast Asian countries.
- Figure 4. Word cloud. Themes and fields the online questionnaire respondents consider of special interest in cooperation with Southeast Asian countries.
- Box 1. The European Commission's EU-ASEAN S&T Roadmap 2017 lists concrete STI collaboration steps and priority themes between the EU and ASEAN.
- Table 1. SWOT analysis of the research, higher education and innovation cooperation between Finland and Southeast Asia.
- Table 2. GAP analysis of research, higher education and innovation cooperation between Finland and Southeast Asia.

ACRONYMS AND ABBREVIATIONS

AaltoEE	Aalto University Executive Education
AEC	ASEAN Economic Community
AIF	EU-ASIA Investment Facility
AIT	Asia Institute of Technology
APAC	Asia-Pacific
APASTI	ASEAN Plan of Action on Science, Technology and Innovation
ASEAN	Association of Southeast Asian Nations
ASEM	Asia-Europe Meeting
BF	Business Finland (merger of Tekes and Finpro from January 2018)
DCI	Development Cooperation Instrument
EC	European Commission
EDUFI	Finnish National Agency for Education
EU	European Union
EURAXESS	Researchers in Motion, a unique pan-European initiative delivering information and support services to professional researchers
FinCEAL	Developing Finnish Science, Technology and Innovation Cooperation with Europe, Africa, Asia and the LAC Region (project)
GIA	Slush Global Impact Accelerator
H2020	Horizon2020, European Framework Programme for Research and Innovation
HEI	Higher Education Institution
HEI-ICI	Higher Education Institutions Institutional Cooperation Instrument

ICT	Information and Communication Technology
IPP (1-2)	Innovation Partnership Programme (1-2)
JFS	Joint Funding Scheme
LAC	Latin America and the Caribbean
MoU	Memorandum of Understanding
MSc	Master of Science
PhD	Doctor of Philosophy
R&D	Research and Development
R&D&I	Research, Development and Innovation
R&I	Research and Innovation
RIS	Regional Innovation System
S&T	Science and Technology
SDGs	Sustainable Development Goals
SEA	Southeast Asia
SFIC	Strategic Forum for International S&T Cooperation at the European Commission
SOM	Senior Officials Meeting
STI	Science, Technology and Innovation
SWOT	Strengths, Weaknesses, Opportunities, and Threats (Analysis)
TFK	Team Finland Knowledge (Network)
UniPID	Finnish University Partnership for International Development

1. INTRODUCTION AND BACKGROUND

Science, technology and innovation have become important features in policy-making in Southeast Asia, and the region is being recognized as a knowledge hub, with science and technology signifying its important role in innovation and economic advancements. The focus on STI in Southeast Asia is seen as very important for tackling future major societal challenges, for example those connected to climate and demographic changes and the consequences of environmental degradation (Degelsegger, 2014).

Southeast Asian countries have developed very rapidly in terms of research, education, technology development and innovation, and are now seen by the Finnish authorities as economies with great potential when it comes to business. At the same time, the growing interest and need for cooperation at all levels of education is widely recognized among Finnish STI actors.

Recently there have been many changes in funding for STI, higher education institutions (HEI) and research in Finland. It has been difficult for HEIs in Finland to establish significant long-term STI and research collaborations, as the main focus in Southeast Asia has been on trade and business, which also includes education exports. In addition, general funding for research and innovation on a national level has been cut, and there has not been dedicated research funding for Southeast Asia.

There are some general reports related to higher education and science cooperation with Asian countries, such as "Suuntana Aasia – Tavoitteelliseen opetus-, tiede- ja kulttuuriyhteistyöhön Aasian maiden kanssa" (Opetusministeriön työryhmämuistioita ja selvityksiä, 2007) and "Suomi, Aasia ja kansainvälinen yhteistyö" (Opetusministeriön julkaisu, 2006) published by the Ministry of Education and Culture of Finland. The first of the above publications from the Ministry of Education, Science and Culture also lists some Southeast Asian focus countries including Indonesia, Singapore, Thailand and Vietnam, emphasizes the growing importance of Asia and suggests some measures for Finland to better emphasize the Asia region on a global scale. For Indonesia, the publication lists forestry, energy and the bioeconomy as focus themes for Finland, and proposes that research cooperation and student exchange should also be emphasized and increased between the countries. The report mentions Singapore and its high technology research, teacher education and education funding related STI themes. However, in the report the Southeast Asian countries are overshadowed by other Finnish education and research cooperation focus countries in Asia such as China and India, and no specific concrete steps for academic or research cooperation with Southeast Asia are suggested (Opetusministeriön työryhmämuistioita ja selvityksiä, 2007).

The Ministry for Foreign Affairs of Finland has published "Finland's Action Plan for Southeast Asia" (Ministry for Foreign Affairs, 2015), a transition strategy for Vietnam "Cooperation between Finland and Vietnam 2016–2020" (Ministry for Foreign Affairs,

2016a), and a country strategy for Myanmar: "Country Strategy for Development Cooperation with Myanmar 2016–2019" (Ministry for Foreign Affairs, 2016b). The publications list some goals for general STI cooperation such as developing HEI research and innovation cooperation in Southeast Asia and also goals on developing this cooperation at the EU level.

Due to constant changes in the STI policy scene and the lack of coverage of the research policy aspects in the above "Policy content" publications, the goal of this report is to offer an overview specifically on research cooperation focusing on aspects not covered by the above documents. As the main focus of this report is not on general higher education cooperation and business, those will only be discussed related to the main topics of the report. In addition, the main focus of this report is on analysing the interviews with Team Finland actors and surveys of Finnish STI stakeholders and academia.

This report was created during the "Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the LAC Region" – FinCEAL Continuation project. FinCEAL aims to provide strategic support to maintain and enhance the cooperation between research and science policy communities in the regions, including in Southeast Asia. The current initiative is the continuation of the FinCEAL (2013–2014) and FinCEAL Plus (2015–2016) initiatives and is financed by the Finnish Ministry of Education and Culture (UniPID, 2017).

The data for the policy brief was gathered through interviews run in June-August 2018 with pre-defined questions with the representatives of Finnish ministries, Finnish embassies in the region and funding agencies in Finland. An online survey to gather input from the research community was open in June-August 2018 and 31 responses were obtained from Finnish higher education institutions and research organizations from the fields of the social, natural, and health sciences, law, engineering and business and innovation.

2. RECENT DEVELOPMENT IN POLICIES FOR THE SOUTHEAST ASIAN REGION

2.1 FOREIGN POLICY AND DEVELOPMENT POLICY

In the Ministry for Foreign Affairs' "Finland's Action Plan for Southeast Asia", specific future actions, related to the STI cooperation and education, are defined (related to the whole region) (Ministry for Foreign Affairs, 2015):

- Development cooperation support for sustainable economic, social and economic development by supporting the goals of Finland and the countries in the region and by optimally targeting Finnish resources;
- Strengthening cooperation between the authorities, business, universities and research institutes, as well as civil society and Southeast Asian countries;
- Development of higher education and research and innovation cooperation with Southeast Asian countries at a national and EU level

and specially with Singapore

- Developing research and innovation cooperation especially in cleantech, renewable energy and energy efficiency.

The Action Plan also lists other country-specific thematic priorities for STI cooperation, including: ICT, cybersecurity, cleantech, energy, city planning, education, education export, healthcare, forestry, maritime technologies, arctic natural resources, life science, water and waste processing.

In addition, the Ministry for Foreign Affairs' Southeast Asia specific strategies suggest general aims for development (Myanmar) and transition cooperation ("a successful transition from bilateral, grant-based development cooperation to trade and economic cooperation in Vietnam") (Ministry for Foreign Affairs, 2016a) and discuss some regional development themes. These programmes and strategies have not been updated since publication.

Development cooperation with Vietnam in STI began in 2009 when the Innovation Partnership Programme (IPP) started. Finland-Vietnam innovation cooperation, being the first development partnership to support the national development system in Vietnam, has opened doors for deeper cooperation between the countries. The first phase of IPP (2009–2014) introduced the innovation concept and policies and the second phase, IPP2 (2014–2018) focused on developing a national innovation ecosystem through capacity-building and initiating new innovation networks between Finland and Vietnam (Ministry for Foreign Affairs, 2016a).

The Finnish transition strategy for Vietnam (Country Strategy Evaluation, 2016) lists actions directly related to STI and research cooperation (Ministry for Foreign Affairs, 2016a):

- Support for the development of the National Innovation System in Vietnam through IPP until 2018.
- Supporting the BEAM programme¹ in Vietnam, including the utilization of the Memorandum of Understanding between the Ministry of Science and Technology of Vietnam and Tekes related to financing the IPP projects, and also supporting other possible BEAM cooperation in Vietnam.
- “Promoting cooperation between Finnish and Vietnamese researchers, universities and research institutions through networking and thematic events.”

Other thematic transition strategies listed in the Vietnam country strategy (Ministry for Foreign Affairs, 2016a) include water, energy, cleantech, and healthcare, mostly focusing on business opportunities, education strategy focusing, in addition to business, on student recruitment, and forestry strategy focusing on the business and forestry education sector.

In 2012, Finland re-initiated its development cooperation with Myanmar. Myanmar, as currently one of the fastest-growing economies in the world, offers a wide variety of opportunities for cooperation in many areas including currently ongoing STI and research cooperation projects, e.g. HEI-ICI instrument funded capacity-building projects and EU-funded ERASMUS+ projects² as examples of Finnish research cooperation in the region (Ministry for Foreign Affairs, 2016b).

In addition to the Action Plans and strategies in the region, the Finnish embassies have more focused, country-specific annual and mid-term plans, but unfortunately the plans do not include a focus on STI and research cooperation.

Finland (with representatives from the Ministry for Foreign Affairs, Ministry for Economic Affairs and Employment, Ministry of Education, Science and Culture and the Prime Minister’s Office) and Singapore are participating in the Small Advanced Economies Initiative, which is a collaboration between Denmark, Finland, Ireland, Israel, New Zealand, Singapore and Switzerland. The focus of the initiative is in the topics related to research on science and innovation, economics, and international representation in small nations. (Small Advanced Economies Initiative, 2018). The initiative is mostly a discussion group, and the Southeast Asia context is mainly associated with strengthening the cooperation and related discussions with Singapore.

1 Business with Impact (BEAM) – a joint programme by the Ministry for Foreign Affairs of Finland and Business Finland (former Tekes) that aims to assist Finnish enterprises in addressing global development challenges by transferring them into business.

2 Erasmus+ (2014–2020), also called Erasmus Plus, is a framework programme for education, training, youth and sport. The new Erasmus+ programme combines all the EU’s schemes for education, training, youth and sport, including the Lifelong Learning Programme, and in Finland is hosted by the Finnish National Agency for Education (European Commission, 2014).

2.2 INNOVATION AND TRADE POLICY

Southeast Asia's share of world trade and its growth is significant (Ahonen, 2017). ASEAN's role as a supporter of the multilateral system and free trade both globally and regionally is seen as very important. Finland is actively aiming at strengthening relations between EU and ASEAN countries and this is taking place through supporting EU-ASEAN cooperation and associated free trade agreements that also serve Finnish interests within the countries in the region (Ministry for Foreign Affairs, 2015).

Commercial interest is the main motor for the Ministry for Economic Affairs and Employment's involvement in Southeast Asia, and Vietnam is one of the main focus countries. Cooperation activities with the Southeast Asia region at the Ministry for Economic Affairs and Employment ("the Ministry") are relatively few and scattered within the Ministry. The ministry has a Memorandum of Understanding (MoU) with Vietnam (2008) related to science and technology, although there has been no concrete collaboration beyond this MoU. In August 2018, a MoU on digitalization was signed with Thailand. According to the interviewees, there is little awareness within the ministry about research cooperation or initiatives taking place with the Southeast Asian region in other sectors. The themes the Ministry for Economic Affairs and Employment is interested in within the region include cleantech, sustainable development, inclusive growth, digitalization, health, education export, and so on.

2.3 POLICY FOR INTERNATIONALIZATION OF HIGHER EDUCATION AND RESEARCH

The Ministry of Education and Culture has defined its internationalization strategy for higher education and research, published in 2017, ("Better together for a better world") (Ministry of Education and Culture, 2017), which identifies seven strategic points to promote the internationalization of Finnish higher education and research. (Figure 1). One of the seven strategic goals is education export, and Southeast Asian countries were chosen as the priority focus areas for education export activities alongside China, Latin America and the Gulf region.

Based on Finpro's past Future Learning Finland cluster, since 2017 the Finnish National Agency for Education has coordinated the "Education Finland" national education export growth programme targeting vocational institutions, private companies, and higher education units (Education Finland, 2018). The main focus countries in Southeast Asia for the growth program are Vietnam, Thailand, Singapore, Indonesia and Myanmar and there have been several "success stories" for education export in these countries. Education Finland is funded jointly by the Ministry of Employment and Economic Affairs and the Ministry of Education and Culture.

Related to the internationalization strategy and its goals for strengthening research and business cooperation with Southeast Asia, the Ministry of Education and Culture and the Ministry for Foreign Affairs jointly appointed a Counsellor in Education and Science (Team Finland Knowledge Network Expert) to Singapore, with others assigned to Washington, Beijing, and Buenos Aires.



Figure 1. The Ministry of Education and Culture's vision for promoting Internationalization in Finnish higher education and research (Ministry of Education and Culture, 2017).

The Innovation Council of Finland's³ Vision and Roadmap for 2030 is an important roadmap related to international STI cooperation including that with Southeast Asia. It is "committed to a vision where Finland is the most attractive and competent environment for experiment and innovation in 2030" (Research and Innovation Council, 2017). The vision and roadmap define a direction for Finnish research, development and innovation policies with short- and long-term measures. The Council also emphasizes the importance of Finnish research, development and innovation to seek solutions to solve global problems and respond to international demand (Research and Innovation Council, 2017).

³ The Research and Innovation Council is an advisory body chaired by the Prime Minister. The Council discusses key issues relating to the development of research and innovation policy that supports well-being, growth and competitiveness. "The purpose of the Research and Innovation Council is to support the government in the development and coordination of long-term research and innovation policy, to monitor changes in the national and international operating environment, and to put forward initiatives related to the research and innovation policy" (Research and Innovation Council, 2017).

3. POLICY IMPLEMENTATION AND INSTITUTIONS

3.1 MINISTRIES AND EMBASSIES

The objective of Finnish foreign policy is to “promote international stability, peace, democracy, human rights, the rule of law and equality, and sustainable development goals” (Ministry for Foreign Affairs, 2018). In recent years, trade-based cooperation in the region has been strongly emphasized. Thus, the Ministry for Foreign Affairs’ activities, including the Finnish embassies in the region, have mostly focused on promoting trade relations with the Southeast Asian region and supporting Finnish companies’ market entry together with Business Finland representatives in the region.

Finland has embassies in Indonesia (accredited to East Timor), Malaysia (accredited to Brunei [Brunei Darussalam] and the Philippines), Myanmar, Singapore (with the Counsellors of Trade and Innovation Affairs, and Education and Science at the Embassy), Thailand (accredited to Laos and Cambodia), and Vietnam (Ministry for Foreign Affairs, 2015).

3.2 BUSINESS FINLAND (MERGER OF TEKES AND FINPRO)

According to the interviewees, Business Finland's (BF) focus when talking about both STI and business in Vietnam (as an example of one of their focus countries in Southeast Asia), has been on supporting developing innovation systems and start-up ecosystems, entrepreneurship training, and policy maker trainings. Concrete examples of these activities include IPP-Vietnam and Aalto Executive education⁴ as business educators and the BF-BEAM programme as supporter and linking business and STI actors to Slush (-Singapore) and its Global Impact Accelerator Programme⁵ for developing countries. To mention some current BF STI-related business focus themes: education and education export have been very important focus themes in several SEA countries; cleantech and renewable energy have been the focus in Thailand; and health technologies in Singapore. In addition, energy and ICT (smart grids) and biodiversity, bio economy, the circular economy, forestry and agriculture-related themes are the most important themes in Indonesia.

Business Finland has growth programmes targeting some Southeast Asian countries such as the Myanmar Growth Market Programme and Vietnam with several Business Finland growth programmes, but the focus of these programmes has been mainly business and Southeast Asian market oriented, although they also include projects that support R&D (and STI) in the region.

4 Aalto University Executive Education (Aalto EE) offers executive education and leadership development services in 12 countries. Aalto EE has an office in *Helsinki* that coordinates operations in *Europe* and an office in *Singapore* for *Asia Pacific*. In addition to Singapore, Aalto EE offers education programs in Vietnam and Indonesia (Aalto University, 2018).

5 Slush Global Impact Accelerator (GIA) is a program created in collaboration with the Ministry for Foreign Affairs of Finland and other multiple partners globally. It supports impact startups and showcase business opportunities in emergin markets related to the Agenda 2030 and solving complex challenges (Slush, 2018).

Business Finland has a representative in Malaysia taking care of Southeast Asia, India and Australia, and another taking care of Indonesia and East Asian countries. In addition, there is a country representative of Business Finland taking care of Myanmar and as a “Business Finland resource” in Thailand as well as Business Finland (former Finpro) representatives in Ho Chi Minh City in Vietnam.

The Finnish innovation funding agency, Tekes, and the Ministry of Science and Technology of Vietnam signed a Memorandum of Understanding (MoU) in 2016 for funding Finnish-Vietnamese innovation projects. The Business with Impact – BEAM programme is the main Ministry for Foreign Affairs/Business Finland funding source supporting Finnish companies and innovation activities participating in these joint calls for proposals. Vietnam and Myanmar have been the main focus countries in the region for BEAM projects.

3.3 FINNISH NATIONAL AGENCY FOR EDUCATION

The Finnish National Agency for Education (EDUFI) has supported cooperation in higher education between Finland and Southeast Asia within the framework of the “Higher Education Institutions Institutional Cooperation Instrument” HEI-ICI programme.⁶ Unfortunately these funds have decreased due to recent cuts in development policy. EDUFI also has a Fellowship programme that is open to young doctoral level students and researchers from all countries and from all academic fields. Even though the programme is open to candidates of all foreign nationalities, when decisions on scholarships are made, the emphasis in Asia has been mostly on China and India. In addition, the ERASMUS+ framework programme in Finland is hosted by EDUFI (European Commission, 2014).

3.4 ACADEMY OF FINLAND

The Academy of Finland’s international policy describes six areas where the Academy promotes the Finnish research system (Academy of Finland 2017). These include: “Promoting the internationality of research to further strengthen the quality, impact and renewal of science and research in collaboration with research organisations and other actors, and developing Academy of Finland’s funding opportunities to provide more effective support for increasingly diversified internationality.” “In terms of bilateral funding cooperation, priority will be given to countries that the Academy together with other national actors and research organizations has defined as partners for active collaboration. Bilateral calls for research projects will be implemented primarily within the framework of Academy Programmes” (from Quality, Impact and Renewal in International Cooperation: Academy of Finland international policy for 2017–2021) (Academy of Finland, 2017). For Southeast Asia, the Academy of Finland has not participated in any EU-level multilateral region related projects nor has there been any bilateral funding from the Academy of Finland towards the region, as their focus in Asia has mainly been on China and India.

⁶ HEI-ICI supports cooperation projects between higher education institutions in Finland and the developing world that are designed to enhance higher education provision in these countries. The projects offer support to higher education institutions as they develop their educational and administrative capacity (Finnish National Agency for Education, 2018).

In addition to the Academy of Finland's funding instruments for general researcher-driven research in different fields, the Academy's programme in development research (Develop 2018–2022)⁷ provides funding for multidisciplinary, problem-based research that targets global development issues, helps boost development in developing countries and makes good use of Finnish knowledge and expertise in the field. This global call can also be utilized for development research in Southeast Asia e.g. in Myanmar, Laos, Cambodia and East Timor (Academy of Finland, 2018).

⁷ The Academy's programme in development research is a programme jointly prepared by the Academy of Finland and the Ministry for Foreign Affairs of Finland. The programme's themes are based on Finland's development policy objectives and the UN sustainable development programme.

4. EU-ASEAN STI COOPERATION AND FINLAND

4.1 GENERAL SCIENTIFIC COOPERATION

Since the 16th ASEAN-EU Ministerial Meeting in 2007, scientific cooperation has been part of EU-Southeast Asia (ASEAN) cooperation. Scientific cooperation was also the topic at the 20th EU-ASEAN Ministerial meeting related to themes such as water resources and environmental protection and themed as “Towards Strategic Partnership for Peace, Stability and Prosperity” in 2014 and at the 21st EU-ASEAN Ministerial Meeting in Thailand in 2016 (European Commission, 2016).

ASEAN-EU science and technology activities are taking place in the ASEAN-EU Dialogue on Science and Technology which takes place at the Senior Official (SOM) level between the ASEAN Committee of Science and Technology (COST) and the EU (European Commission, 2016). ASEAN COST, hosted by the ASEAN secretariat, released its new ASEAN Plan of Action on Science, Technology and Innovation (APASTI), and the ASEAN ICT Master plan (2015–2020) (Association of the Southeast Asian Nations, 2015) defines the strategic principles and activities for regional research innovation policy.

Priorities of ASEAN Plan of Action on Science, Technology and Innovation 2016–2025 (APASTI):

- Strengthening and supporting strategic collaboration between academia and the private sector for capacity building, technology transfer and commercialization.
- Establishing smart partnerships with dialogue partners to foster STI enterprises to support micro, medium and small enterprises.
- Enhancing talent mobility and people-to-people interaction especially for women and youth in STI.
- Raising public awareness and strengthening STI enculturation to enhance ASEAN science and technology cooperation.” (European Commission, 2016)

Box 1. The European Commission's EU-ASEAN S&T Roadmap 2017 lists concrete STI collaboration steps and priority themes between the EU and ASEAN (European Commission, 2016).

EC EU-ASEAN S&T ROADMAP 2017: CONCRETE STI COLLABORATION STEPS BETWEEN EU AND ASEAN:

- Promote specific dissemination events, e.g. in the fields of environment, aquaculture and space research.
- Extend the dialogue to the area of mobility of researchers and a wide range of supporting tools such as EURAXESS⁸ (Researchers in Motion is a unique pan-European initiative).
- Detailed analyses of the state of EU-Southeast Asia S&T relations, especially supporting the scheme for multilateral co-funding, the Joint Funding Scheme (JFS) that recently launched its 2nd funding round.

Note: Finland is not currently participating in the S&T Joint Funding Programme although there have been preliminary national discussions on possibilities in this funding instrument.

EC EU-ASEAN S&T ROADMAP 2017: THE EU-ASEAN PRIORITY THEMES FOR THE EXISTING S&T COOPERATION:

- Health (Infectious Diseases)
- Food
- Nanotechnology
- ICT
- Researcher mobility

Potential new S&T cooperation areas include:

- Water
- Health (Antimicrobial Resistance)
- Maritime transport

Note: Many of the above S&T cooperation themes have similarities with the cooperation interest themes that the researchers of Finnish HEI's and research institutions, government policy makers and research funding agencies have listed as key focuses in online questionnaires and interviews related to this report.

Finland has participated in the ASEAN-EU high-level meetings and influenced STI policy-making at the European level through the EU Strategic Forum for International Science and Technology Cooperation (SFIC). Another tool in supporting EU-level research and innovation cooperation is the (Policy) Service Facility, which aims to support the Commission in reinforcing bilateral, multilateral and bi-regional policy dialogues with Third Countries and regions (including Southeast Asia) (International Bureau, 2018). The Facility is implemented by a consortium, in which Finland does not participate.

Another important forum is the Asia-Europe Meeting (ASEM), which is an intergovernmental forum established in 1996 for dialogue and cooperation between Asia and Europe. Currently ASEM consists of 30 European and 21 Asian countries, the European Union and the ASEAN Secretariat. "ASEM addresses political, social, economic, cultural,

8 <https://euraxess.ec.europa.eu/>

and educational issues of common interest, in a spirit of mutual respect and equal partnership.” (ASEM Infoboard, 2018). ASEM member countries have organized high-level seminars related to STI in Southeast Asia and for example related to the Sustainable Development Goals (SDGs). Finland has quite actively participated and co-organized STI and SDG-related ASEM-seminars by sending speakers and experts to these events and FinCEAL has financially supported academic experts from Finland to participate in these meetings.

The FinCEAL Initiative has supported EU-Southeast Asia STI policy through the SEA-EU-NET 1 & 2 projects (2008–2017) which involved 21 institutions from the two regions. The projects were set up to expand scientific collaboration between Europe and Southeast Asia in a more strategic and coherent manner (Degelsegger, 2014). Since 2015, FinCEAL has actively participated in STI events organized by SEA-EU-NET 2 by funding Finnish experts and researchers to participate in the ASEAN-EU STI Days in 2015 and 2016, and promoting Finnish STI cooperation in the region with other Finnish actors such as the ASEAN-EU STI Days in 2016 in Vietnam in collaboration with Tekes BEAM, the Finnish Water Forum and Finland-Vietnam IPP.

4.2 EU-ASIA INVESTMENT FACILITY AND DEVELOPMENT COOPERATION INSTRUMENT

“The Asia Investment Facility (AIF) was created in 2010 in line with the objectives of the EU Development Cooperation Instrument (DCI) and the Regional Strategy for the Asia Region.” (European Commission, 2018a-b).

This facility can be used when the regular market cannot offer affordable financing, which might cause a negative effect on high-priority investment projects with the “potential to promote inclusive and sustainable socio-economic development”(European Commission, 2018a-b).

AIF is a tool to pool resources and improve the coordination of actions with principles of ownership, partnership and shared responsibilities. In Southeast Asia, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam have been eligible for support from AIF. Following the objectives of the Regional Indicative Programme 2014-2020 for Asia, AIF promotes green economy with a priority focus on climate change and green investments (European Commission 2018a-b).

AIF provides finance to projects for better energy infrastructure, environmental protection, climate change impact, improved social services and infrastructures (climate change) and better transport infrastructure through investment grants, technical assistance and risk-sharing instruments. AIF sets up partnerships using grant resources from the EU to leverage and pool financing from multilateral and bilateral European Finance Institutions as well as Regional Development Banks (such as the Asia Development Bank (ADB)), together with contributions from partner countries and institutions in Asia (European Commission, 2018a-b).

5. FINDINGS AND ANALYSIS

This section introduces the findings from the interviews and online questionnaire.

5.1 STI AND RESEARCH COOPERATION

The research and capacity-building cooperation partner countries of Finnish HEIs and research institutes are shown on the map in Figure 2. The most common countries for cooperation mentioned by the academic respondents were Indonesia, Vietnam, Malaysia, Thailand and Singapore. The STI and partner countries the academic respondents mention are those with which Finland has the highest amount of export activities in the region.⁹ The amount of Finnish exports to Southeast Asia indicates also, to some extent, the STI activity level, as Finland mostly exports electrical devices, IT devices, mechanical devices and high-tech machines etc. to Southeast Asia. The region has very high competition over STI and research cooperation partners (involving “big global players in the scene”). Thus it would make sense to focus STI and research cooperation on those countries to which “technological products” are exported. For a small country like Finland, there is a need to define regional priorities, and to establish this, both Finnish business and academic actors should work together to maximize impact.



Figure 2. Southeast Asian countries mentioned in the FinCEAL Plus online questionnaire as Finland's partners in research and capacity-building cooperation. The colour indicates the number of times mentioned by respondents. Not shown: Singapore was mentioned eight times.

⁹ Exports vary depending on the country (2013 status): They are relatively large to Singapore (€293 million), Malaysia (€244 million), and Thailand (€193 million). Exports to Indonesia (€139 million) and Vietnam (€89 million) are also important when the share of other countries is rather small (Ahonen, 2017).

Interviewees and questionnaire respondents were also asked to define “How do you understand the science, technology and innovation cooperation between Finland and Southeast Asian countries?”:

How the academia (questionnaire respondents) understood the STI cooperation between Finland and Southeast Asia

- Mainly bilateral collaboration
- Many respondents described it as a “*Mainly science and research cooperation*” and “*Very important for future developments,*” “*Focused on technological fields, but social sciences and humanities should not be forgotten,*” and to a great extent, “*Capacity-building*”.
- Currently very focused on Vietnam and Singapore
- Offers possibilities for academia and companies, and governments to work together:
 - “*A great potential for all kinds of cooperation in the region, especially if sufficient funding is provided, between academia and companies in Finland and Southeast Asia.*”
 - “*Linking public research, business innovation and entrepreneurship for solutions that promote sustainable development.*”
- Maybe quite surprisingly many respondents did not have any knowledge about the STI cooperation.

How the Team Finland interviewees understood the STI cooperation

- Education, education export and research-related cooperation:
 - “*The STI cooperation has traditionally been university level collaboration on research programmes and e.g. expert exchanges. On innovation the start-up accelerators have formed a wider network for collaboration with other accelerators and policy makers.*”
 - Researcher-driven cooperation
- Business and export-driven cooperation:
 - Mainly promotion of export and internationalization
 - In some SEA countries Finland should utilize a “*Trade-for-Aid*” type of approach: If Finland is funding the activities then Finnish “*best in the world*” know-how should be used.
- A mix of the above; Cooperation between HEIs, start-up cooperation, institutional cooperation, private sector cooperation, intergovernmental cooperation:
 - Singapore as a hub of STI in Southeast Asia.
 - Vietnam IPP, HEI-ICI-projects, BEAM-funded projects in the private sector. Before the BEAM-initiative, Finnpartnership¹⁰ supported technology and innovation projects in the private sector.

10 Finnpartnership offers funding, advisory services, and network contacts which can be used to assess business opportunities in developing countries. Finnpartnership is part of Finnfund's activities and Finnfund is an administrator of the Business Partnership programme funded by the Ministry for Foreign Affairs (Finnpartnership, 2018).

- Development and capacity building related cooperation:
 - HEI-ICI projects in the region, capacity building, ICT infrastructure and networks, general infrastructure development projects
 - *“Past long term Asia Institute of Technology Thailand (AIT) - Finland development cooperation in telecommunications is known well in Thailand and is a good example of how Finnish STI (cooperation) is known in Southeast Asia.”*
- Following different STI cooperation possibilities at EU-Framework level and joint delegation visits between Finland and Southeast Asia related to STI.

Figure 3 shows that for the Finnish academic questionnaire respondents, the main cooperation activities with partners in the region mostly consist of joint research projects, research visits and joint publications, and to a lesser degree capacity-building and organizing joint events. Student exchange plays a less important role. In addition, some respondents stated that they do not have any cooperation with Southeast Asian countries yet.

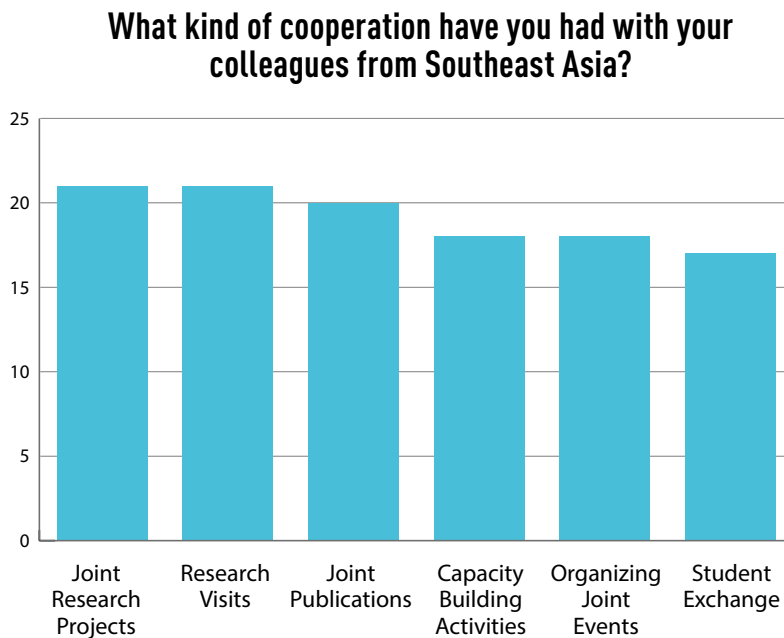


Figure 3. The main cooperation activities that academic respondents of the questionnaire have with partners from Southeast Asian countries.

5.2 OPPORTUNITIES FOR STI COOPERATION

5.2.1 Cooperation themes and other opportunities

Respondents to the online questionnaire also listed a number of fields and themes they consider to be of special interest when cooperating with colleagues in Southeast Asian countries. The response themes shown in a word cloud in Figure 4 give some examples of the fields of cooperation. The size of the word correlates with the number of times it

was mentioned by the respondents.

The answers list food and food

safety and security, health,

ICT, and water or water

management as the most

frequently mentioned,

with forestry, agricul-

ture, education (and

education export),

and renewable ener-

gy also ranked quite

high. Many highlight-

ed themes listed by the

researchers match well

with the STI focus themes

of Finland mentioned in

the Southeast Asian Action

Plan and country strategies¹¹

and the European Commission's

EU-ASEAN S&T Roadmap 2017 for STI

cooperation priorities.¹²

Finland has a long history of development cooperation with certain Southeast Asian countries such as Vietnam since the 1970s, and thus (as some interviewees mentioned) has a good "reputation" in the region.

Finland is known for its innovations in a few countries in the region such as in the IPP with Vietnam. Since the 1960s and 70s (UniPID, 2018) Finnish researchers have been building STI networks and partnerships with the region and since the 2010s several capacity-building projects funded by e.g. HEI-ICI funding have further paved the way for STI cooperation. As the Southeast Asian region is currently developing fast (Ahonen, 2017), there is a growing market and demand for utilizing Finnish STI know-how and innovations. These above points can all be seen as great opportunities in STI cooperation between Finland and the region. Related to these, some interviewees and discussions at a recently organized



Figure 4. Word cloud. Themes and fields the online questionnaire respondents consider of special interest in cooperation with Southeast Asian countries.

11 Education – education export, water, health, ICT, forestry, water, agriculture, renewable energy etc.

12 Health, food, ICT, water, nanotechnology, researcher mobility, maritime transport

ASEAN-Finland research seminar (UniPID, 2018) pointed out that in Finnish STI and business, focusing on frugal innovations in Southeast Asia could be a wise move:

“Southeast Asia is large market and fast developing environment. Technological (and frugal innovation) solutions are sometimes utilized very quickly in daily tasks and it would be a wise move for Finnish STI experts to focus on frugal innovations.”

New cooperation initiatives require new funding sources and one alternative for Finnish funding would be funding from international sources such as international foundations, the World Bank, Asia Development Bank, Food and Agriculture Organization of the United Nations, the United Nations co-fund or possibilities for other Southeast Asian co-funding mechanisms (e.g. with Singapore) that could offer new opportunities for joint research funding between Finland and Southeast Asian countries with multi-stakeholder cooperation schemes (UniPID, 2018).

5.2.2 Education export: Improved synergies with higher education, business and research

The responses by Team Finland interviewees were all very positive about education export. Similarly, quite a few questionnaire respondents (researchers, experts) had a positive view of education export in Southeast Asia and also most seemed to have prior knowledge on the topic. The researchers suggested that education export and business activities in the region should support each other:

- *“There are needs for education export activities which also offer better circumstances for research collaboration.”*
- *“Research collaboration has vast opportunities with good networks (for education export).”*
- *“There are not enough discussions between business people and research people. Research could support the launching of products because the reputation of the Finnish educational system is high and providing research evidence on the products could help the business. In addition, the business people could provide researchers with valuable information on future research questions and challenges.”*
- *“I think both should be connected, because in research collaboration activity often includes student visits... which normally require agreements! So if both activities are combined, we can use one umbrella of agreement.”*

Some researcher respondents also suggested solutions to improve synergies between education export and research:

- *“There is tough competition in SEA in university education from foreign universities. I think developing a good reputation for the Finnish education, well-targeted efforts could be successful. An option would be to collaborate with a university in SEA and relate education to research cooperation. Also double degree MSc and PhD programmes could be worth considering.”*
- *“Education export is focusing on teaching methodologies and systems. Research collaboration is needed to introduce new practices/methods and technological solutions in new conditions. Research collaboration is supporting all technical export activities.”*

5.3 CHALLENGES FOR STI COOPERATION

The interviewees and questionnaire respondents (researchers) mentioned a variety of factors as barriers in cooperation with partners from Southeast Asian countries. The answers are grouped into the following categories: 1) Lack of financial and human resources, 2) Perceived imbalance in scientific level and lack of competence, 3) Dissemination of information and cooperation possibilities, 4) Cultural differences, and 5) General concerns.

All the interviewees agreed that building cooperation with Southeast Asian partners on a short-, and especially long-term, basis is very important. It takes a while to make cooperation activities run smoothly, so long-term commitment and especially funds for enabling this are needed. The existing cooperation support structures do not make it possible to establish long-term partnerships: Lack of funds and lack of dedicated personnel to support STI and research cooperation in the region were mentioned as barriers by the Team Finland interviewees, especially those working at the Finnish embassies in the region. Some embassy representatives stated that they would be, in addition to the business focus, interested in supporting STI and research cooperation in the region, but again they did not have any additional (financial and human) resources for this. Finnish universities should be active in promoting their best quality research and mapping suitable research cooperation possibilities in this region, which has a wide variety of collaboration possibilities and themes. When planning to establish partnerships in the region, heterogeneity and cultural differences between the countries in the region, and obtaining information about these obstacles beforehand, should be also be taken into an account. One important partner on regional information-sharing is the Team Finland Knowledge Network representative at the Embassy of Finland in Singapore, who can establish active cooperation within the Team Finland network and with its supporting initiatives such as FinCEAL. There have not been sustainable and efficient STI cooperation and research-related policy discussions or communications between institutions and sectors for the region, so space and fora for these should be established first.

Below we show challenges and barriers mentioned by the interviewees and questionnaire respondents for STI and research cooperation with Southeast Asian partners.

5.3.1 Lack of financial and human resources

The biggest barrier for cooperation identified by government and funding organization interviewees and the academic community was a lack of financial resources (funding) and human resources. There have been no bilateral funding opportunities with Southeast Asia from the Academy of Finland and also thus there has been no co-funding from Southeast Asian countries. Tekes' BEAM project has also been focusing mostly on supporting business initiatives in the region, for example in Vietnam and Myanmar. Finland has not joined the EU-ASEAN Joint Funding Scheme, even though there have been discussions about this since the beginning of the funding instrument in 2016. In addition, there have been some Southeast Asia specific Horizon 2020 Research and Innovation Programme calls, but those have been focusing on specific, narrow fields, e.g. cybersecurity, health, and green and integrated transport (European Commission, 2016). Lack

of budget and dedicated personnel at the Finnish universities due to university budget cuts has also affected focused research cooperation towards the region. It should also be noted that several academic respondents mentioned that FinCEAL grants have provided support for establishing partnerships when other funding has not been available and FinCEAL was seen as an asset to overcoming these barriers.

To improve the current situation, we suggest that more national and EU level SEA focused STI and research funding opportunities should be created.

5.3.2 Perceived imbalance in scientific level and lack of competence

Some countries in Southeast Asia are not perceived as being scientifically advanced enough for Finnish partners, which has led to STI and research cooperation being primarily focused on key countries in the region (see Figure 2). According to one interviewee, a similar situation exists in reverse for universities based in Singapore. With the best universities among the top 20 in the world, STI and research cooperation partners from Finland wishing to work with them must be very good in their (research) fields to be able to establish long-term collaborations. Finding a reliable partner with a shared research focus is critical for building long-term research collaboration with a partner from the region. There are also challenges with establishing STI partnerships with actors from developing countries in the region (e.g. Myanmar), as their STI sector and university sector legislation is not yet complete, potentially slowing cooperation. Partners from these countries also tend to have less experience in taking advantage of funding opportunities (particularly those such as EU Horizon 2020), but this can also be seen as an opportunity for Finnish STI actors e.g. in HEI-ICI funded capacity-building projects to reach the “next level” in project cooperation.

5.3.3 Dissemination of information and cooperation possibilities

According to the academic respondents, the education and especially research (and STI know-how level) of Finland is not well-known in Southeast Asia and vice versa. As Finland is located far away from the region, Finnish partners do not have a strong tradition of academic cooperation with Southeast Asia, and even though Asia as a whole generally has quite a lot of academic cooperation with Finland, unfortunately a greater cooperation focus with e.g. China overshadows Southeast Asian cooperation opportunities. There is also a great need for the dissemination of information on institutions and research cooperation opportunities in the region. In addition, the academic respondents have requested more seminars about Southeast Asia STI and research collaboration to be organized, in order to learn about opportunities and enable networking. Efforts like those of the FinCEAL Initiative, which organized several country- and theme-specific seminars in both Finland and Southeast Asia, help researchers to connect and increase shared knowledge.

To improve the current situation, we suggest that more seminars and matchmaking events on STI and research cooperation possibilities should be organized in both Finland and Southeast Asian countries. Genuinely strong ASEAN-wide Team Finland Knowledge Network (TFK) support and its seamless cooperation with oth-

er key actors (including the FinCEAL Initiative) in supporting STI cooperation in the region is needed. The TFK Counsellor for Education and Science at the Embassy of Finland in Singapore has a key role in this.

5.3.4 Cultural differences

Both Team Finland representatives and questionnaire respondents mentioned cultural differences as a challenge. Interviewees stated that in many cases Finnish project partners would like to have immediate and short-term benefits of cooperation, but for the Southeast Asian counterpart, longer-term and very close “partner commitment” is required. In Southeast Asia, building trust over a long period of time is required but Finnish partners are not familiar with this. In Southeast Asia, a top-down decision-making process is very important (vs. the Finnish “bottom-up” approach) and many interviewees and online survey respondents said that Finnish partners lack experience of Southeast Asian ways of working on a cultural level. In addition, those who have worked in several Southeast Asian countries have noticed that SEA countries are very different from each other and the “cultural procedures” are very different in each country.

5.3.5 General concerns

Many interviewees and questionnaire respondents have personal experience of corruption affecting research and STI cooperation in some Southeast Asian countries. (It should be noted that many Southeast Asian countries do not have any corruption, so this quite a country-dependent phenomenon.) Many respondents mentioned governmental and institutional bureaucracy (related to paperwork, and visa, work, and research sample transfer permit application procedures) as a major concern in their research work and some have had problems with the language barrier in some remote Southeast Asian destinations. Team Finland interviewees also mentioned that there is a lot of competition over research and innovation partners in Southeast Asia and Finland is competing with the bigger countries such as Japan, China and the USA and some Asians have very well-established networks to cooperate with through their “ethnic communities” (e.g. Chinese communities in large Southeast Asian cities) in the region.

5.4 SWOT AND GAP ANALYSES ON THE RESEARCH, HIGHER EDUCATION AND INNOVATION COOPERATION BETWEEN FINLAND AND SOUTHEAST ASIA

Tables 1 and 2 show the SWOT and GAP tables used in analysing the key points given by interviewees and questionnaire respondents (researchers) on the research, higher education and innovation cooperation between Finland and Southeast Asia. “Weaknesses” were used as a starting point for GAP analysis to turn some of the most important points into “Strengths” in Section 6, Conclusions and recommendations.

Table 1. SWOT analysis of research, higher education and innovation cooperation between Finland and Southeast Asia.

STRENGTHS	WEAKNESSES/GAPS
<ul style="list-style-type: none"> ● Existing cooperation, contacts and MoUs between Finnish actors and Southeast Asian counterparts ● Finland has a very positive reputation in the region and Finland is known for e.g. education and certain STI fields such as forestry and ICT ● The FinCEAL Initiative has strengthened the researcher cooperation and mobility with Southeast Asian countries ● Finland is a “neutral country” and does not pose any “threat” for cooperation (compared to e.g. USA and China) ● Clear interest in collaboration from both sides ● Education export when supporting the research cooperation 	<ul style="list-style-type: none"> ● Lack of resources: funding, human resources and time ● Pure business focus takes attention from supporting STI and research cooperation (they should instead work hand-in-hand) ● Weak Finnish involvement in the EU-Southeast Asia STI policy dialogues ● Lack of utilizing existing MoUs with certain potentially important countries in the region¹³ ● Limited Finnish presence and visibility in the region ● No knowledge, visibility and understanding of cooperation opportunities, needs, policies; a lack of a national vision for Southeast Asia in Finland ● Low prioritization of Southeast Asia cooperation in Finnish organizations ● Bureaucracy related to joint projects slows down collaboration efforts

13 As an example, FinCEAL+ Indonesia-Finland Research Seminar: Opportunities and Challenges, held at the Embassy of Indonesia in Helsinki in April 2017 also discussed the MoU between the Ministry for Research, Technology and Higher Education of the Republic of Indonesia and the Ministry for Education and Culture of Finland and the fact that its content related to STI and research cooperation have not been fully utilized.

OPPORTUNITIES

- Development cooperation traditions with certain Southeast Asian countries such as Vietnam
- Finland is known for its innovations in some countries in the region (Innovation Partnership Programme [IPP] with Vietnam as an example)
- The Southeast Asian region is developing fast
- Finland sees the region as easy to carry out cooperation with
- Existing STI networks and partnerships and experts in Finland for the region
- Several capacity-building projects have paved the way for STI cooperation
- Education export – improved synergies with higher education and research
- Recent systematic knowledge creation and dissemination about opportunities in the region
- Increased funding from international sources: Several international foundations, World Bank, Asia Development Bank, Food and Agriculture Organization of United Nations, United Nations co-fund, etc.
- Possibilities for other Southeast Asian co-funding mechanisms (e.g. with Singapore)
- Bilateral cooperation enables multi-stakeholder cooperation schemes

THREATS

- Competition over cooperation partners with bigger players in the region: Finland is a small player in the vast sea of opportunities
- Lack of funding
- Corruption, human rights, political instability in some Southeast Asian countries
- Geographical distance
- Some countries do not think globally, focused rather on national goals

Table 2. GAP analysis of research, higher education and innovation cooperation between Finland and Southeast Asia.

Strategic Objective	Current Standing	Deficiency	Action Plan
<ul style="list-style-type: none"> Embassies of Finland in Southeast Asia are actively supporting STI cooperation in the region and have knowledge of the cooperation activities in their countries. 	<ul style="list-style-type: none"> Some embassies of Finland are aware of some STI activities that universities and research centres are doing in their countries. Most of STI activities are unknown by the embassies. 	<ul style="list-style-type: none"> Embassies mainly focus on business cooperation in the region. STI actors (including universities and research institutes in Finland) do not inform the embassies about their research activities in the region. Embassies do not have additional funds or resources to support STI cooperation. 	<ul style="list-style-type: none"> Further promotion of Finnish STI and research quality and achievements towards the region is needed so demand for cooperation with Finnish STI experts can be established. More resources for Finnish embassies for focusing on supporting STI cooperation in the region. Encourage Finnish universities to inform Finnish embassies in Southeast Asia on their activities in the region. Strong TFK-network support and its seamless cooperation with other key actors (e.g. FinCEAL) in supporting STI cooperation in the region.
<ul style="list-style-type: none"> Team Finland member institutions and key STI actors are actively participating in the EU-ASEAN STI policy discussions. 	<ul style="list-style-type: none"> No national vision towards Southeast Asian countries in STI cooperation The activities of other EU countries in Southeast Asia are not well known. 	<ul style="list-style-type: none"> Limited resources Finnish funding agencies (Academy of Finland, Business Finland, and EDUFI) do not have an interest in jointly supporting research and STI cooperation in Southeast Asia. 	<ul style="list-style-type: none"> More resources for Team Finland to support EU-ASEAN STI policy discussions. A national vision to also include Southeast Asian countries.

Strategic Objective	Current Standing	Deficiency	Action Plan
<ul style="list-style-type: none"> ● Bilateral and bi-regional Funding for Finland-Southeast Asia STI cooperation will be establish. 	<ul style="list-style-type: none"> ● Very limited and theme specific national and EU-level research and STI cooperation funding available for Finnish researchers in the Southeast Asia context. ● In addition to the FinCEAL Initiative, no other Southeast Asia specific funding instruments for research visits, organizing related events, etc available. 	<ul style="list-style-type: none"> ● No Southeast Asia specific STI and research cooperation funding available ● Finland has not joined the EU-ASEAN Joint Funding Scheme (Calls I-II). ● No active discussions between funding agencies. 	<ul style="list-style-type: none"> ● More flexible national funding instruments in Finland are required. ● More cooperation and discussions between Finnish funding agencies. ● Consider joining the Joint Funding Scheme. ● Continue the partnership support instrument building in the FinCEAL Initiative to encourage partnership building at all stages of the process.
<ul style="list-style-type: none"> ● EU, ASEAN and governmental level discussions and agreements to lower the barriers for STI cooperation. 	<ul style="list-style-type: none"> ● Time for getting work permit, licences and work visas etc is too long. 	<ul style="list-style-type: none"> ● It takes even several months to a half year to obtain work permits or visas to do cooperation with Southeast Asian countries. 	<ul style="list-style-type: none"> ● Seek further solutions in governmental discussions to improve the situation including further (EU-ASEAN-level support).
<ul style="list-style-type: none"> ● Improved utilization of Memorandums of Understanding (MoUs) related to STI cooperation in the region. 	<ul style="list-style-type: none"> ● MoUs are important for Asians and be key “tools” for improving research and STI cooperation. 	<ul style="list-style-type: none"> ● STI MoUs are not utilized (e.g. with Indonesia as an example). 	<ul style="list-style-type: none"> ● The agencies and institutions in which the MoUs are placed should focus on fully exploiting the MoUs in the region.

6. CONCLUSIONS AND RECOMMENDATIONS

– GAPS AND POLICY IMPLEMENTATION STRATEGY

1. ESTABLISH GENUINE BILATERAL AND BI-REGIONAL FUNDING OPPORTUNITIES AND A NATIONAL VISION TO SUPPORT FINLAND SOUTHEAST ASIA STI AND RESEARCH COOPERATION

GAPS:

- Currently there are no genuine bi-regional funding opportunities for Finland-Southeast Asia STI cooperation. As there is no funding available, over time it will reduce the credibility of Finland as being a leading nation in STI and being interested in STI and research cooperation with countries in the region. (Other Nordic and EU countries that have these research cooperation funding instruments available will be then chosen as partners instead of Finnish actors.)
- There is no national vision between Finnish policy and funding actors to support STI and research cooperation.

RECOMMENDATIONS:

- More flexible national funding instruments in Finland are needed for bilateral cooperation with Southeast Asia.
- More cooperation and discussions about funding possibilities between Finnish funding agencies (Academy of Finland and Business Finland).
- A strong national vision between Team Finland and all other key actors towards the region should also be created for STI and research cooperation.
- Grants to support partnership building in STI cooperation, such as those the FinCEAL Initiative has offered, should be available.

2. EMBASSIES OF FINLAND IN SOUTHEAST ASIA SHOULD INCREASE THEIR SUPPORT FOR STI AND RESEARCH COOPERATION AND KNOWLEDGE OF COOPERATION ACTIVITIES

GAPS:

- Finnish embassies mainly focus on supporting business activities in the region.
- Some embassies are not aware of the STI and research cooperation activities in their countries.

- Government actors lack human and financial resources to focus on research and STI cooperation.
- Many Finnish higher education institution actors do not inform the embassies about their research activities in the region.

RECOMMENDATIONS:

- More promotion of Finnish STI and research quality and achievements towards the region to increase the demand for engaging in cooperation with Finnish experts. This is already being done with education export, so the same can be done with STI and research, making it a “concept to be exported”.
- Provide more human and financial resources for Finnish embassies in Southeast Asian countries for focusing on supporting STI and research cooperation in the region.
- Activate the higher education institutions and their regional actors in Finland to inform the embassies of Finland more on their activities in the region.
- A genuinely strong ASEAN-wide Team Finland Knowledge Network (TFK) support and its seamless cooperation with other key actors (including the FinCEAL Initiative) in supporting STI cooperation in the region should be established. The TFK advisor at the Embassy of Finland in Singapore has a key role in this.

3. TEAM FINLAND MEMBER INSTITUTIONS, KEY STI ACTORS AND FINNISH RESEARCH FUNDERS ACTIVELY PARTICIPATE IN EU-ASEAN STI POLICY DISCUSSIONS FOR IMPROVED FINNISH IMPACT IN THE REGION

GAPS:

- The EU Strategic Forum for International Science and Technology Cooperation (SFIC) has representatives from Finland, but Southeast Asia has had less focus compared to main focus countries such as China.
- Current Academy of Finland and Business Finland international strategies and funding do not support bi-regional and EU-ASEAN research and STI cooperation.
- The activities of other EU countries in the region in STI and research cooperation are not well known.

RECOMMENDATIONS:

- Increase activities for Team Finland to support EU-ASEAN STI policy discussions.
- Finland should join the EU-ASEAN Joint Funding Scheme research funding programme.

4. STI AND RESEARCH RELATED AGREEMENTS AND MOUs IN THE REGION SHOULD BE FULLY UTILIZED

GAPS:

- MoUs are important in Asian “cooperation culture” but research and STI-related MoUs are not utilized to benefit STI and research cooperation.

RECOMMENDATIONS:

- The agencies and institutions in which the MoUs are placed, with the help of TFK network advisor in Singapore, should focus on fully utilizing the STI and research cooperation-related agreements and MoUs in the region for improved STI cooperation possibilities (MoU with Indonesia in education and STI cooperation as an example).

To conclude, we recommend that to improve the national support for STI and research cooperation, Finland should focus on some region-specific, demand-driven research/STI collaboration fields; establish region-specific funding instruments; and agree on a national vision for Southeast Asia between Finnish ministries and funding organizations. To support this, the TFK network advisor in Singapore is a good start, but in addition, all embassies of Finland in the region should also be harnessed to actively support STI and research cooperation in the region and to have knowledge of cooperation activities and possibilities in their countries. For optimal results, Finnish business and academic actors should also consider working together, and Finnish policy actors should participate more actively in the ASEAN-EU STI and research policy-related activities to maximize the impact in the region.

REFERENCES

1. Aalto University. (2018). Aalto University Executive Education. Available from: <https://www.aaltoee.com/> Accessed 27.9.2018
2. Academy of Finland. (2017). Quality, impact and renewal in international cooperation: Academy of Finland international policy for 2017–2021. Available from: <http://www.aka.fi/globalassets/40akatemia/academy-of-finland-international-policy-23-feb-2017-valmis.pdf> Accessed 27.9.2018
3. Academy of Finland. (2018). Academy Programme for Development Research 2018–2022, Memorandum, 2018. Available from: <https://www.aka.fi/globalassets/32akatemiaohjelmat/kehitystutkimus/academy-programme-for-development-research.pdf> Accessed 27.9.2018
4. Ahonen A, (Ed.). (2017). Maaileman Markkinat 2017-2018 (Ulkoministeriö, 2017). Available from: https://um.fi/documents/35732/48132/maailman_markkinat_2017_2018 Accessed 27.9.2018
5. ASEM Infoboard. (2018). Fostering Dialogue and Cooperation Between Asia and Europe, Available from: <https://www.aseminfoboard.org/about/overview> Accessed 27.9.2018
6. Association of Southeast Asian Nations. (2016). ASEAN Plan of Action on Science, Technology and Innovation (APASTI). Available from: http://www.mih.gov.kh/File/UploadedFiles/7_6_2016_3_50_0.pdf Accessed 27.9.2018
7. Association of the Southeast Asian Nations. (2015). The ASEAN ICT Masterplan 2020, Available from: <https://www.sbs.ox.ac.uk/cybersecurity-capacity/system/files/ASEAN%20ICT%20masterplan%202020.pdf> Accessed 27.9.2018
8. Degelsegger A., Gruber F., Remøe S.O., Trienes R (Eds.). (2014). Spotlight on: Stimulating Innovation in Southeast Asia. Available from: <https://sea-eu.net/object/news/159> Accessed 27.9.2018
9. Degelsegger A., Blasy C. (Eds.). (2011) Spotlight on: Science and Technology Cooperation Between Southeast Asia and Europe: Analyses and Recommendations from the SEA-EU-Net Project, 2011. Available from: <https://sea-eu.net/object/document/4> Accessed 27.9.2018
10. Education Finland. (2018). Finland – The Home of World-Class Education. Available from: <https://www.educationfinland.fi/> Accessed 27.9.2018
11. European Commission. (2014). Erasmus+ Introduction. Available from: http://europa.eu/rapid/press-release_IP-13-1110_en.htm Accessed 27.9.2018
12. European Commission. (2016). Roadmap for EU-ASEAN S&T cooperation 2017. Available from: https://ec.europa.eu/research/iscp/pdf/policy/asean_roadmap_2017.pdf Accessed 27.9.2018
13. European Commission. (2018a). EU Asia Investment Facility-AIF. Available from: https://ec.europa.eu/europeaid/regions/asia/asian-investment-facility-aif_en Accessed 27.9.2018

14. European Commission. (2018b). EU Development Cooperation Instrument – DCI. Available from: https://ec.europa.eu/europeaid/funding/funding-instruments-programming/funding-instruments/development-cooperation-instrument-dci_en Accessed 27.9.2018
15. Finnish National Agency for Education. (2018). HEI ICI – International Development Cooperation Programme for Higher Education. Available from: http://www.cimo.fi/programmes/hei_ici Accessed 27.9.2018
16. Finnpartnership. (2018). What is Finnpartnership? Available from: <https://finnpartnership.fi/en/what-is-finnpartnership/> Accessed 27.9.2018
17. International Bureau. (2018). Strategic Forum for International S&T Cooperation. Available from: <https://www.internationales-buero.de/en/sfic.php> Accessed 27.9.2018.
18. Ministry for Foreign Affairs. (2015). Finland’s Action Plan for Southeast Asia. Available from: https://um.fi/documents/35732/48132/finland_s_action_plan_for_south-east_asia Accessed 27.9.2018
19. Ministry for Foreign Affairs. (2016a). Cooperation between Finland and Vietnam 2016–2020. Available from: https://um.fi/documents/35732/48132/cooperation_between_finland_and_vietnam_2016_2020 Accessed 27.9.2018
20. Ministry for Foreign Affairs. (2016b). Country Strategy for Development Cooperation Myanmar 2016–2019. Available from: https://um.fi/documents/35732/48132/country_strategy_for_development_cooperation_with_myanmar_2016_2019 Accessed 27.9.2018
21. Ministry for Foreign Affairs. (2018). Strategic Priorities of the Foreign Service 2018–2022. Available from: <https://um.fi/documents/35732/0/Strategic+priorities+of+the+Foreign+Service.pdf/3f1bbef0-62af-232d-4b96-c047fbf73a9b> Accessed 27.9.2018
22. Ministry of Education and Culture. (2017). Better Together for a Better World. Strategy to Promote Internationalisation in Finnish Higher Education and Research 2017–2025. Available from: <https://minedu.fi/en/international-strategy-for-higher-education-and-research> Accessed 27.9.2018
23. Opetusministeriön työryhmämuistioita ja selvityksiä. 2007:31. Suuntana Aasia: Taavoitteelliseen opetus-, tiede- ja kulttuuriyhteistyöhön Aasian maiden kanssa. Available from: <http://julkaisut.valtioneuvosto.fi/handle/10024/79401> Accessed 27.9.2018
24. Opetusministeriön julkaisuja. 2006:9. Suomi, Aasia ja kansainvälinen yhteistyö: Opetusministeriön Aasia-toimintaohjelma. Available from: <http://julkaisut.valtioneuvosto.fi/handle/10024/80040> Accessed 27.9.2018
25. Research and Innovation Council. (2017). Vision and Road Map of the Research and Innovation Council Finland. Available from: https://valtioneuvosto.fi/documents/10184/4102579/Vision_and_roadmap_RIC.pdf/195ec1c2-6ff8-4027-9d16-d561d-ba33450/Vision_and_roadmap_RIC.pdf.pdf Accessed 27.9.2018
26. Slush. (2018). What is Slush Global Impact Accelerator? Available from: <https://www.slush.org/gia/> Accessed 27.9.2018
27. Small Advanced Economies Initiative. (2018). Available from: <http://www.smalladvancedeconomies.org/> Accessed 27.9.2018

28. UniPID. (2017). About FinCEAL continuation initiative. Available from: http://www.unipid.fi/en/page/157/developing_finnish_science_technology_and_innovation_cooperation_between_europe_africa_asia_and_the_lac_region/ Accessed 27.9.2018
29. UniPID. (2018). ASEAN-Finland Research Seminar Report. Available from: http://www.unipid.fi/en/news/439/aseanfinland_research_seminar_organized_at_the_ministry_of_education_science_and_culture_of_finland_in_helsinki_on_25_september_was_a_success/ Accessed 1.11.2018

APPENDICES

APPENDIX 1. LIST OF INTERVIEWEES

ORGANIZATION	INTERVIEWEE	POSITION
Ministry of Education, Science and Culture, Department for Higher Education and Science Policy	Tiina Vihma-Purovaara	Senior Ministerial Adviser
Ministry for Economic Affairs and Employment	Mari Hakkarainen	Senior Ministerial Adviser
Ministry for Foreign Affairs	Tapani Kivelä	Deputy Head of Mission, Embassy of Finland in Indonesia
	Teemu Laakkonen	Deputy Head of Mission, Embassy of Finland in Malaysia
	Silja Rajander	Deputy Head of Mission, Embassy of Finland in Myanmar
	Katarina Tapio	Former Deputy Head of Mission, Embassy of Finland in Thailand
	Riku Mäkelä	Counsellor, Innovation and Trade Affairs, Embassy of Finland in Singapore
	Marko Saarinen	Counsellor, Head of Development Cooperation, Embassy of Finland in Vietnam
	Marianne Huusko	Ambassador for Education Export
	Susanna Tammela-Eltvik	Education Advisor, Embassy of Finland in Thailand
	Marita Meranto	Desk Officer, Cambodia, Laos, Thailand, Mekong region, Unit for Eastern Asia and Oceania
	Silja Leinonen	Desk Officer, Innovation and Digital Development, Department for Development Policy

ORGANIZATION	INTERVIEWEE	POSITION
Academy of Finland	Ulla Ellmén	Senior Science Adviser
	Johanna Hakala	Manager, International Affairs
Business Finland (former Tekes)	Juha Miikkulainen	Head of Region India-APAC, Embassy of Finland in Malaysia
	Teppo Turkki	Counsellor for Science, Technology and Innovation, Embassy of Finland in Japan
	Kai Tuorila	Trade Representative, Business Finland in Myanmar (Thailand)
Finnish National Agency for Education	Maija Airas	Counsellor of Education, Head of Section, Higher Education Cooperation
	Sofia Lähdeniemi	Senior Programme Adviser
	Annika Sunbäck-Lindroos	Programme Manager
	Lauri Tuomi (email)	Programme Director (Education Finland growth program)
All interviews were conducted during June–August 2018.		

APPENDIX 2. INTERVIEWEE QUESTIONS

1. How do you understand STI cooperation between Finland and Southeast Asia?
2. What kind of cooperation does your institution have with Southeast Asian STI actors and what is the current cooperation status?
3. Has your institution focused on specific actors/institutions or/and themes in Southeast Asia?
4. What are your institution's instruments that support higher education STI cooperation between Finland and Southeast Asia?
5. If any above, how can these activities be evaluated in terms of the results and achievement of the internationalization of Finnish Higher Education Institutions (HEIs)?
6. How would you describe Finnish STI cooperation (if any, and related research cooperation) with Southeast Asian countries in comparison to other similar regions of the world?
7. What are the a) main opportunities and b) challenges for Finland in its cooperation with Southeast Asian countries?
8. What are the main lessons, in your opinion, your institution has learned from your cooperation with Southeast Asian organizations and how do you see your cooperation developing in the future?
9. (If any) In what aspects does Southeast Asian-Finnish higher education cooperation support Finland's STI cooperation with Southeast Asia, if it does?
10. Is there a relationship between Finnish education export activities and higher education cooperation with Southeast Asia?
11. What are in your opinion the most successful cases in terms of supporting Finland STI cooperation with Southeast Asian countries?
12. Any other comments or questions?

Jarkko Mutanen

**FINNISH SCIENCE, TECHNOLOGY
AND INNOVATION COOPERATION
WITH SOUTHEAST ASIA
– OPPORTUNITIES AND
CHALLENGES**

EXECUTIVE SUMMARY

This brief explores the current policy context and state of Finnish higher education, research and innovation cooperation with Southeast Asian countries. It aims to:

- 1) Identify the opportunities and challenges related to science, technology and innovation (STI) and research cooperation with Southeast Asian countries as described by government representatives, research and innovation funders, as well as the Finnish scientific community**
- 2) Define the important themes of collaboration for Finnish academia with the region**
- 3) Give recommendations for strengthening Finnish STI and research cooperation with Southeast Asian countries.**

Science, technology and innovation have become important features in policy-making in Southeast Asia, and the region is being recognized as a knowledge hub, with science and technology signifying its important role in innovation and economic advancements. The focus on STI in Southeast Asia is seen as very important for tackling future major societal challenges, for example those connected to climate and demographic changes and the consequences of environmental degradation.

Recently there have been a lot of changes in funding for STI, higher education institutions (HEI) and research in Finland. It has been difficult for HEIs in Finland to establish any significant long term STI and research collaborations, as the main focus in Southeast Asia has been in trade and business, which also includes education export. In addition, general funding for research and innovation on a national level have been cut, and there has been neither initial nor national focused research funding for Southeast Asia.

Some major challenges in STI and research cooperation in the region include lack of research funding from Finland and co-funding from Southeast Asian countries, and lack of budget and dedicated personnel to support Finnish STI and research cooperation. Some countries in Southeast Asia are also perceived as not having universities that are scientifically advanced enough for some Finnish partners; however, Singapore, whose best universities are among the top 20 in the world, requires its Finnish partners to be the best in their fields. In addition, a strong promotion of Finnish STI and research know-how and systematic dissemination of information on institutions and research cooperation possibilities are needed to lower the barriers for undertaking cooperation with partners in the region.

Taking into account the EU-ASEAN STI cooperation, the opportunities (and further challenges) related to Finnish STI cooperation with Southeast Asian countries are mirrored as above, as described by government representatives, research and innovation funders as well as Finnish academia, and map the main themes of collaboration by Finnish researchers to the region. This policy brief recommends the following actions:

- 1) Establish genuine bilateral and bi-regional funding opportunities and a national vision to support Finland-Southeast Asia STI and research cooperation**
- 2) Finnish embassies in Southeast Asia should increase their support for STI and research cooperation and knowledge of cooperation activities**
- 3) Team Finland member institutions, key STI actors and Finnish research funders should actively participate in the EU-ASEAN STI policy discussions for improved Finnish impact in the region**
- 4) The STI and research related agreements and memorandums of understanding (MoUs) in the region should be fully utilized.**

BACKGROUND

There are several policies affecting STI and research cooperation between Finland and Southeast Asian countries. In *foreign policy* and *development policy*, the activities of the Ministry for Foreign Affairs, including the Finnish embassies in the region, have mostly focused on promoting trade relations with the Southeast Asian region and supporting Finnish companies' market entry together with Business Finland representatives in the region. Southeast Asian countries have developed very rapidly in terms of research, education, technology development and innovation and are now seen as very potential economies by Finnish authorities when it comes to business. At the same time, the growing interest and need for cooperation at all levels of education is widely recognized among Finnish STI actors. The Ministry for Foreign Affairs Southeast Asia Action Plan defines future actions related to STI cooperation and education, such as strengthening the cooperation between authorities, businesses, universities and research institutes as well as civil society with Southeast Asian countries and developing higher education, research and innovation cooperation at a national and EU level with Southeast Asia countries. Unfortunately these goals have not yet been realized in practice for STI and research cooperation. In addition, general aims for development (Myanmar) and transition cooperation (a successful transition from bilateral, grant-based development cooperation to trade and economic cooperation in Vietnam) are defined in the Vietnam- and Myanmar-specific country strategies.

In the Ministry of Education and Culture's *international strategy for higher education and research 2017–2025* ("Better Together for a Better World"), education export is defined as one of seven strategic goals. The Southeast Asia countries were chosen as the priority focus areas for education export activities alongside China, Latin America and the Gulf region. Related to the strategy, a Team Finland Knowledge Network education and science advisor was placed at the Embassy of Finland in Singapore to further support HEIs and education, and STI and research cooperation with the region.

In *innovation and trade policy*, commercial interests are the main motor behind the involvement of the Ministry for Economic Affairs and Employment in Southeast Asia. Vietnam is one of their main focus countries, but other cooperation activities with the region are relatively few and scattered within the Ministry.

Scientific cooperation has been part of the partnership between the EU and the Association of Southeast Asian Nations (ASEAN) since the 16th ASEAN-EU Ministerial Meeting in Nuremberg, Germany, in 2007. Science and Technology (S&T) activities are developed through the ASEAN-EU Dialogue on Science and Technology, which takes place at regular intervals at the senior official (SOM) level between the ASEAN Committee of Science and Technology (COST) and the EU. In addition to participating in ASEAN-EU high level meetings, Finland has influenced STI policy making at the European level through the EU Strategic Forum for International Science and Technology Cooperation (SFIC). Another tool in supporting EU level research and innovation cooperation is the (Policy) Service Facility, that aims to support the Commission in reinforcing bilateral, multilateral and bi-regional policy dialogues with Third Countries and regions (including Southeast Asia) as well as identifying and addressing barriers to, and opportunities for, increased cooperation. Unfortunately Finland has not participated in the Facility. Related to this, the EU and ASEAN also operate the Joint Funding Scheme (JFS), a scheme for multilateral co-funding, but Finland does not participate in the programme.

APPROACH

The data for the policy brief was gathered through interviews with pre-defined questions between June and August 2018 with representatives from the Ministry of Education, Science and Culture; Ministry for Foreign Affairs; representatives from all Finnish embassies in the region¹; Business Finland; the Academy of Finland and the Finnish National Agency for Education. In addition, Finnish and EU policy documents related to STI and research cooperation with Southeast Asia were analysed.² An online survey that gathered input from the research community was open between June to August 2018, through which 31 responses were obtained from 14 HEIs and research organizations in Finland from the fields of social, natural, and health sciences, law, engineering and business and innovation. Key findings from the report are gathered in a SWOT table in Table 1, with the “Weaknesses” section used to describe “policy gaps” identified via a GAP analysis, and the results concluded in “Conclusions and recommendations”. This policy brief is based on a longer report that will be published in 2018, and also on focused messages from the FinCEAL Plus Indonesia-Finland Research Seminar: Opportunities and Challenges (at the Embassy of Indonesia in Helsinki on 4th April 2017) and the ASEAN-Finland Research Seminar (at the Ministry of Education and Culture in Helsinki on 25th September 2018).

Due to constant changes in the STI policy scene, the goal of this policy brief is to offer an overview specifically on research cooperation focusing on aspects not covered by the general regional policy documents.

Table 1. SWOT analysis of the research, higher education and innovation cooperation between Finland and Southeast Asia. (“Weaknesses” are used as a starting point for GAP analysis to turn them into “strengths” shown in “Conclusions and Recommendations”).

-
- 1 Finland has embassies in Indonesia (accredited to East Timor), Malaysia (accredited to Brunei [Brunei Darussalam] and Philippines), Myanmar, Singapore (with the Counsellor of Trade and Innovation Affairs and the Team Finland Knowledge Network Advisor at the Embassy), Thailand (accredited to Laos and Cambodia), and Vietnam. There is a Business Finland regional head (India and Asia-Pacific) at the Embassy of Finland in Malaysia and a Business Finland Counsellor of Science, Technology, and Innovation at the Embassy of Finland in Japan (one focus country being Indonesia) and an office in Indonesia.
 - 2 Some projects that support Finland-Southeast Asia collaboration include FinCEAL (Finnish Science, Technology and Innovation Cooperation with Europe, Africa, Asia and Latin America and Caribbean) (2013–2018) financed by the Ministry of Education and Culture to strengthen STI cooperation with the regions. The Academy of Finland has a programme on development research and the Finnish National Agency for Education (EDUFI) has the Higher Education Institution Cooperation Instrument (HEI-ICI). The Ministry for Foreign Affairs has co-financed the Business Finland’s Business with Impact (BEAM) instrument since 2015 that supports the access of Finnish companies to emerging markets. There is also the Vietnam-Finland Innovation Partnership Program (IPP, 2009–2018) contributing to the introduction of an innovation concept and policies, and focusing on the development of a Vietnamese innovation ecosystem by capacity and network building.
 - 3 As an example, FinCEAL+ Indonesia-Finland Research Seminar: Opportunities and Challenges, held at the Embassy of Indonesia in Helsinki in April 2017, also discussed the MoU between the Ministry for Research, Technology and Higher Education of the Republic of Indonesia and the Ministry for Education and Culture of Finland, and the fact its contents related to STI and research cooperation have not been fully utilized. Some key policy documents analysed are shown in the References.

STRENGTHS	WEAKNESSES/GAPS
<ul style="list-style-type: none"> ● Existing cooperation, contacts and MoUs between Finnish actors and their Southeast Asian counterparts ● Finland has a very positive reputation in the region, and is known for e.g. education and for certain STI fields such as forestry and ICT ● The FinCEAL Initiative has strengthened researcher cooperation and mobility with Southeast Asian countries ● Finland is a “neutral country” and does not pose any “threat” for cooperation (compared to e.g. USA and China) ● Clear interest for collaboration from both sides ● Education export when supporting research cooperation 	<ul style="list-style-type: none"> ● Lack of resources: funding, human resources and time ● Pure business focus takes a lot of attention away from the support of STI and research cooperation (they should instead work hand-in-hand) ● Weak Finnish involvement in the EU-Southeast Asia STI policy dialogues ● Lack of utilizing existing MoUs with certain potentially important countries in the region.⁴ ● Limited Finnish presence and visibility in the region ● No knowledge, visibility and understanding of cooperation opportunities, needs, or policies, and a lack of national vision for Southeast Asia in Finland ● Low prioritization of Southeast Asia cooperation in Finnish organizations ● Bureaucracy related to joint projects slows down collaboration efforts
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ● History of development cooperation with certain Southeast Asian Countries such as Vietnam ● Finland is known for its innovations in some countries in the region (Innovation Partnership Program [IPP] with Vietnam as an example) ● The Southeast Asian region is developing fast ● Finland sees the region as easy to cooperate with ● Existing STI networks and partnerships and experts in Finland to the region ● Several capacity building projects pave the road for STI cooperation ● Education export: improved synergies with higher education and research ● Recent systematic knowledge creation and dissemination about opportunities in the region ● Increased funding from international sources: Several international foundations, World Bank, Asia Development Bank, Food and Agriculture Organization of the United Nations, United Nations co-fund etc. ● Possibilities for other Southeast Asian co-funding mechanisms (e.g. with Singapore) ● Bilateral cooperation enables multi-stakeholder cooperation schemes 	<ul style="list-style-type: none"> ● Competition over cooperation partners with bigger players in the region: Finland is a small player in the vast sea of opportunities ● Lack of funding ● Corruption, poor human rights situation, political instability in some Southeast Asian countries ● Geographical distance ● Some countries do not think globally, but focus rather on national goals

RESULTS

STI AND RESEARCH COOPERATION

The research and capacity building cooperation partner countries of Finnish HEIs and research institutes are shown on the map in Figure 1. **The most common countries for cooperation mentioned by the academic respondents were Indonesia, Vietnam, Malaysia, Thailand and Singapore.** The STI and partner countries the academic respondents mention are the same as those with which Finland has the highest amount of export activities in the region⁴. The amount of Finnish export to Southeast Asia indicates also, to some extent, the STI activity level as Finland is mostly exporting electrical devices, IT devices, mechanical devices and high tech machines etc. to the countries of Southeast Asia. The region has very high competition over STI and research cooperation partners (involving those “big global players in the scene”). Thus it would make sense to focus STI and research cooperation on those countries to which “technological products” are exported. For a small country like Finland, there is a need to define regional priorities, and to establish this both Finnish business and academic actors should work together to maximize impact.

Figure 1. Southeast Asian countries mentioned on the FinCEAL Plus online questionnaire as Finland's partners on research and capacity building cooperation. The colour indicates the number of times mentioned by respondents. Not shown: Singapore was mentioned 8 times.



Respondents to the online questionnaire also listed a number of fields and themes they consider to be of special interest when cooperating with colleagues in Southeast Asian countries. The response themes are shown in a word cloud in Figure 2 and give some examples of the fields of cooperation. The size of the word correlates with the number of times it was mentioned by the respondents. The answers list food and food safety and security, health, ICT, and water or water management as the most frequently mentioned, with forestry, agriculture, education (and education export), and renewable energy also ranked quite high. Many highlighted themes listed by the researchers match well with the STI focus themes of Finland mentioned in the Southeast Asian Action Plan and country strategies⁵ and the European Commission's EU-ASEAN S&T Roadmap 2017 for STI cooperation priorities⁶.

4 Export varies depending on the country (2013 status): It is relatively large to Singapore (€293 million), Malaysia (€244 million), and Thailand (€193 million). The export to Indonesia (€139 million) and Vietnam (€89 million) is also important when the share of remaining countries is rather small.

5 Education – education export, water, health, ICT, forestry, water, agriculture, renewable energy etc.

6 Health, food, ICT, water, nanotechnology, researcher mobility, maritime transport

CHALLENGES:

All interviewees⁷ agreed that building cooperation with Southeast Asian partners on a short, and especially long term, basis is very important. It takes a while to make cooperation activities run smoothly, so long term commitment and especially funds for enabling this are needed. The existing cooperation support structures do not make it possible to establish long term partnerships: Lack of funds and lack of dedicated personnel to support STI and research cooperation in the region were mentioned as barriers by the “Team Finland interviewees” and especially those working at the Finnish embassies in the region. Some embassy representatives stated that they would be, in

addition to business focus, interested in supporting STI and research cooperation in the region, but again they do not have any additional (financial and human) resources for this. Finnish universities should be active in promoting their best quality research and mapping suitable research cooperation possibilities in this region, which has a wide variety of collaboration possibilities and themes. When one is planning to establish partnerships in the region, heterogeneity and cultural differences between the countries in the region, and obtaining information about these obstacles beforehand should be also taken into an account. One important partner on regional information sharing will be the Team Finland Knowledge Network representative at the Embassy of Finland in Singapore, who will establish active cooperation within the Team Finland network and with its supporting initiatives such as FinCEAL. Unfortunately there have not been sustainable and efficient STI cooperation and research related policy discussions or communications between institutions and sectors for the region, so space and fora for these should first be established. **Below we highlight some challenges and barriers listed to STI and research cooperation with Southeast Asian partners:**

1. LACK OF FINANCIAL AND HUMAN RESOURCES

The biggest barrier to cooperation identified by government and funding organization interviewees and the academic community was the lack of financial resources (funding) and human resources. There have not been any bilateral funding opportunities with Southeast Asia from the Academy of Finland, and thus there has also been no co-funding from Southeast Asian countries. Tekes’ BEAM project has also been focusing mostly on supporting business initiatives in the region, for example in Vietnam and Myanmar. Finland has not joined the EU-ASEAN Joint Funding Scheme, even though there have been some discussions about this since the beginning of the funding instrument in 2016. In addition, there are some Southeast Asia-specific Horizon 2020 Research and Innovation Programme calls, but those have focused on specific, narrow fields e.g. within the fields of cybersecurity, health, and green and integrated transport (2018). Lack of budget and dedicated personnel at Finnish universities due to university budget cuts has also



Figure 2. Word cloud. Themes and fields the online questionnaire respondents consider of special interest in cooperation with Southeast Asian countries.

7 From ministries, Finnish embassies, Business Finland, the Academy of Finland and the Finnish National Agency for Education

affected focused research cooperation towards the region. It should also be noted that several academic respondents mentioned that FinCEAL grants have provided support for establishing partnerships when other funding has not been available and FinCEAL was seen as an asset to overcome these barriers.

- **SOLUTIONS FOR CHALLENGE 1 TO LOWER THESE BARRIERS:** More national and EU level, Southeast Asia focused STI and research funding opportunities are required.

2. PERCEIVED IMBALANCE IN SCIENTIFIC LEVEL AND LACK OF COMPETENCE

Some countries in Southeast Asia are not perceived as being scientifically advanced enough for Finnish partners, which has led to STI and research cooperation being primarily focused in key countries in the region (see Figure 1). According to an interviewee, a similar situation exists in reverse for universities based in Singapore, which has some of the best universities in the world. STI and research cooperation partners from Finland wishing to work with them must be very good in their (research) fields to be able to establish long term collaborations. Finding a reliable partner, with a shared research focus, is critical for building long term research collaboration with a partner from the region. There are also challenges in establishing STI partnerships with actors from developing countries in the region (e.g. Myanmar) as their STI sector and university sector legislation is not yet complete, potentially slowing down cooperation. Partners from these countries also tend to have less experience in taking advantage of funding opportunities (particularly those such as Horizon 2020), but this can also be seen as an opportunity for Finnish STI actors e.g. in HEI-ICI funded capacity building projects to reach the “next level” in project cooperation.

3. DISSEMINATION OF INFORMATION AND COOPERATION POSSIBILITIES

According to the academic respondents, Finnish education, and especially Finnish research (and STI know-how level) are not particularly well known in Southeast Asia and vice versa. As Finland is located a long distance away from the region, Finnish partners do not have a strong tradition of academic cooperation with Southeast Asia, and even though Asia as a whole generally has quite a lot of academic cooperation with Finland, unfortunately a greater cooperation focus with countries such as China overshadows Southeast Asian cooperation opportunities. There is also a great need for dissemination of information on institutions and research cooperation opportunities in the region. In addition, the academic respondents have requested the organization of more seminars on Southeast Asian STI and research collaboration to learn about opportunities and enable networking. Efforts like those of the FinCEAL Initiative, which organized several country and theme specific seminars in both Finland and Southeast Asia, help researchers to connect and increase shared knowledge.

- **SOLUTIONS FOR CHALLENGES 2 AND 3 TO LOWER THESE BARRIERS:** Seminars and matchmaking events on STI and research cooperation possibilities should be organized both in Finland and in Southeast Asia. A genuinely strong ASEAN-wide Team Finland Knowledge Network (TFK) support and its seamless cooperation with other key actors (including the FinCEAL Initiative) in supporting the STI cooperation in the region is needed. The TFK advisor at the Embassy of Finland in Singapore has a key role in this.

CONCLUSIONS AND RECOMMENDATIONS

– GAPS AND POLICY IMPLEMENTATION STRATEGY

1. ESTABLISH GENUINE BILATERAL AND BI-REGIONAL FUNDING OPPORTUNITIES AND A NATIONAL VISION TO SUPPORT FINLAND-SOUTHEAST ASIA STI AND RESEARCH COOPERATION

● GAPS

- Currently there are no genuine bi-regional funding opportunities for Finland–Southeast Asia STI cooperation. As there is no funding available, over time it will reduce the credibility of Finland as being a leading nation in STI, interested in STI and research cooperation with the countries in the region. (Other Nordic and EU countries that have these research cooperation funding instruments available will be then chosen as partners instead of Finnish actors.)
- There is no shared national vision between Finnish policy and funding actors to support STI and research cooperation.

● RECOMMENDATIONS

- More flexible national funding instruments in Finland are needed for bilateral cooperation with Southeast Asia.
- More cooperation and discussions about funding possibilities between Finnish funding agencies (Academy of Finland and Business Finland).
- A strong national vision between Team Finland and all other key actors towards the region should also be created for STI and research cooperation.
- Grants to support partnership building in STI cooperation should be available, such as those the FinCEAL Initiative has offered.

2. FINNISH EMBASSIES IN SOUTHEAST ASIA SHOULD INCREASE THEIR SUPPORT FOR STI AND RESEARCH COOPERATION AND KNOWLEDGE OF COOPERATION ACTIVITIES

● GAPS

- Finnish embassies are focusing mainly on supporting business activities in the region.
- Some embassies are not aware of the STI and research cooperation activities in their countries.
- Government actors lack the human and financial resources to focus on research and STI cooperation.
- Many Finnish HEI actors do not inform the embassies about their research activities in the region.

● RECOMMENDATIONS

- There should be more promotion of Finnish STI and research quality and achievements towards the region to increase the demand for cooperation with Finnish experts with the region. This is already being done with education export, so the same can be done with STI and research, making it into a “concept to be exported”.
- More human and financial resources should be provided for the Finnish embassies in Southeast Asian countries to focus also on supporting STI and research cooperation in the region.
- Activate HEIs and their regional actors in Finland to give Finnish embassies more information on their activities in the region.
- A genuinely strong ASEAN-wide Team Finland Knowledge Network (TFK), and its seamless cooperation with other key actors (including the FinCEAL Initiative) in supporting the STI cooperation in the region should be established. The TFK advisor at the Embassy of Finland in Singapore has a key role in this.

3. TEAM FINLAND MEMBER INSTITUTIONS, KEY STI ACTORS AND FINNISH RESEARCH FUNDERS ACTIVELY PARTICIPATE IN THE EU-ASEAN STI POLICY DISCUSSIONS FOR IMPROVED FINNISH IMPACT IN THE REGION

● GAPS

- The EU Strategic Forum for International Science and Technology Cooperation (SFIC) has representatives from Finland and there is an EU level research and innovation cooperation support tool, Policy Service Facility for Third Countries, but for Finland, Southeast Asia has had much less focus compared to main focus countries in Asia such as China.
- Current Academy of Finland and Business Finland international strategies and funding do not support bi-regional and EU-ASEAN research and STI cooperation.
- The activities of other EU countries in the region in STI and research cooperation are not well known.

● RECOMMENDATIONS

- Activities for Team Finland to support EU-ASEAN STI policy discussions should be increased.
- Finland should join the EU-ASEAN Joint Funding Scheme research funding programme.

4. THE STI AND RESEARCH RELATED AGREEMENTS AND MEMORANDUMS OF UNDERSTANDING (MOUS) IN THE REGION SHOULD BE FULLY UTILIZED

● GAPS

- MoUs are important in Asian “cooperation culture” but research and STI related MoUs are not utilized to benefit STI and research cooperation.

● RECOMMENDATIONS

- The TFK Network advisor in Singapore should focus on fully utilizing the STI and research cooperation related agreements and MoUs in the region for improved STI cooperation possibilities (the MoU with Indonesia in education and STI cooperation is an example).

To conclude, we recommend that to improve national support for STI and research cooperation, Finland should focus on some region-specific, demand-driven research/STI collaboration fields; establish region-specific funding instruments, and agree on a national vision for Southeast Asia between Finnish ministries and funding organizations. To support this, the TFK Network advisor in Singapore is a good start, but in addition, all Finnish embassies in the region should also be harnessed to actively support STI and research cooperation in the region and to be aware of the cooperation activities and possibilities in their countries. For optimal results, Finnish business and academic actors should also consider working together, and Finnish policy actors should participate more actively in ASEAN-EU STI and research policy related activities to maximize their impact in the region.

REFERENCES

1. Mutanen J. (2018). Finnish Science, Technology and Innovation Cooperation with Southeast Asia – Opportunities and Challenges. FinCEAL Plus. Finnish University Partnership for International Development (UniPID). University of Eastern Finland. (To be published in 2018)
2. Ministry for Foreign Affairs. (2015) Suomen Kaakkois-Aasian toimintaohjelma. Available from: https://um.fi/julkaisut-aiheittain/-/asset_publisher/pNPEiXNbcwol/content/suomen-kaakkois-aasia-toimintaohjelma?curAsset=0&stId=47307 Accessed 27.9.2018.
3. Ministry for Foreign Affairs. (2016). Cooperation between Finland and Vietnam 2016-2020. Available from: https://um.fi/documents/35732/48132/cooperation_between_finland_and_vietnam_2016_2020 Accessed 27.9.2018.
4. Ministry for Foreign Affairs. (2016). Country Strategy for Development Cooperation Myanmar 2016-2019. Available from: https://um.fi/documents/35732/48132/country_strategy_for_development_cooperation_with_myanmar_2016_2019 Accessed 27.9.2018
5. European Commission: Roadmap for EU-ASEAN S&T cooperation 2017 (2016) Available from: https://ec.europa.eu/research/iscp/pdf/policy/asean_roadmap_2017.pdf Accessed 27.9.2018.
6. Ministry of Education and Culture. (2017). Better together for a better world. Strategy to promote Internationalisation in Finnish higher education and research 2017–2025. Available from: <https://minedu.fi/en/international-strategy-for-higher-education-and-research>. Accessed 27.9.2018

This policy brief is an output of the **Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the Latin America and Caribbean (LAC) region (FinCEAL)** initiative, funded by the Ministry of Education and Culture. The brief is a product of the author, and the responsibility for the accuracy of the data, findings, interpretations and conclusions rests with the author.

FURTHER INFORMATION

Jarkko Mutanen, Advisor, Finnish University Partnership for International Development (UniPID)

E-mail: Jarkko.Mutanen@uef.fi / Jarkko.Mutanen@gmail.com

