

Roadmap for EU - ASEAN S&T cooperation

1. The ASEAN Economic Community as a partner of the EU

ASEAN is the Association of Southeast Asian Nations composed of Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. With a population of 628.9 million it represents 8.7% of the world's population, higher than EU28. Compared to its population, ASEAN has a relatively low GDP of \$2.4 trillion (3.3% of the world GDP; GDP per capita is at \$3867), with however a significant growth of 4.7%¹.

The ASEAN Economic Community (AEC) considers research and innovation as a pillar under the Economic issues directorate. Its administrative structure has established the ASEAN Committee of Science Technology and Innovation (ASEAN COSTI) and has endorsed the new ASEAN Plan of Action on Science, Technology and Innovation (APASTI), Implementation plan 2016-2025. This document lays out the principles and strategic activities for regional research and innovation policy.

Priorities of APASTI are:

- Strengthening and supporting strategic collaboration between academia and the private sector for capacity building, technology transfer and commercialization.
- Enhancing talent mobility and people-to-people interaction especially for women and youth in STI.
- Establishing smart partnerships with dialogue partners to nurture STI enterprises to support micro, medium and small enterprises.
- Raising public awareness and strengthening STI enculturation to enhance ASEAN science and technology cooperation².

STI in the region is hampered by many obstacles and challenges, including low investment in R&D, with gross expenditures in R&D (GERD) typically in the range of 0.04% to 0.2% of GDP, with the exception of Singapore (around 2%) and to some extent Malaysia (1%). In Singapore, Malaysia and the Philippines, the business sector is the dominant performer of R&D activities; whereas elsewhere the government is the major funder of R&D. Typically the linkages between public sector research and the business sector are quite weak. Firms focus mainly on small innovation steps with low R&D content. Furthermore, there is lack of common resources (funds and facilities) to implement actions at regional ASEAN level. Overall, the diversity of the innovation landscape is much wider among ASEAN States than it is for EU MS, hence calling for flexible instruments to enable cooperation between the two regions.

¹ ASEAN Statistical Leaflet, Selected Key Indicators 2016. GDP values refer to US dollars current market prices.

² Borneo Bulletin 8th November 2015.

Scientific cooperation is part of the partnership between the two regions since the 16th ASEAN-EU Ministerial Meeting in Nuremberg, Germany in 2007³. Scientific cooperation has also featured at the latest 20th EU-ASEAN Ministerial Meeting in relation to issues such as water resources and environmental protection under the theme “Towards Strategic Partnership for Peace, Stability and Prosperity” (July 2014)⁴.

Furthermore, the 2015 Joint Communication to the European Parliament and the Council, “The EU and ASEAN: a partnership with a strategic purpose”⁵ places emphasis on the role of the EU in the region and specifically on S&T cooperation.

Collaborative regional S&T activities are addressed mainly through the ASEAN-EU Dialogue on Science and Technology that takes place at regular intervals at Senior Official level between the ASEAN Committee of Science and Technology (COST) and the EU represented by the European Commission. The latest meeting, the 8th ASEAN-EU Senior Officials Dialogue (Cebu, the Philippines, 18 October 2018), was held back to back with the 10th ASEAN Ministerial Meeting on Science and Technology⁶. Both parties reviewed progress in their cooperation and discussed future plans.

In addition, the Enhanced Regional EU-ASEAN Dialogue Instrument (E-Readi)⁷ is a development cooperation programme facilitating EU-ASEAN dialogues and reinforcing the already existing domains of cooperation. The activities supported by E-Readi concern the establishment and operation of the EU-ASEAN Policy Exchange Platform (PEP), which provides long-term and continuous support for region-to-region cooperation on an expert working level on the one hand, and exchange between working level and policy level on the other hand.

2. State of play of EU-ASEAN S&T cooperation

2.1. On-going FP7 and Horizon 2020 cooperation

ASEAN applicants were involved 977 times to **521** eligible proposals to collaborative actions of FP7, leading to 108 funded projects that involve 232 ASEAN participations. In addition, ASEAN entities participated 2 times in ERC grants. Under the mobility grants, ASEAN entities participated 11 times to signed Marie Curie actions and a total of 276 researchers of nationality from the ASEAN member countries participated in Marie Curie actions in the period 2007-2013.

³ Plan of Action to Implement the Nuremberg Declaration on an EU-ASEAN Enhanced Partnership: http://ec.europa.eu/research/iscp/pdf/policy/action_plan_07.pdf

⁴ 20th EU-ASEAN Ministerial Meeting, July 2014: http://eeas.europa.eu/statements/docs/2014/140723_03_en.pdf

⁵ Joint Communication to the European Parliament and the Council, May 2015:

http://eeas.europa.eu/.../2015/190515_joint_communication_eu_and_asean.pdf.

Also, <http://eeas.europa.eu/delegations/asean/>; and [http:// eeas.europa.eu/.../2015/190515_joint_communication_eu_and_asean.pdf](http://eeas.europa.eu/.../2015/190515_joint_communication_eu_and_asean.pdf)

⁶ <https://asean.org/storage/2018/10/Final-JMS-of-IAMMST.pdf>

⁷ More info at https://eeas.europa.eu/delegations/association-southeast-asian-nations-asean_en

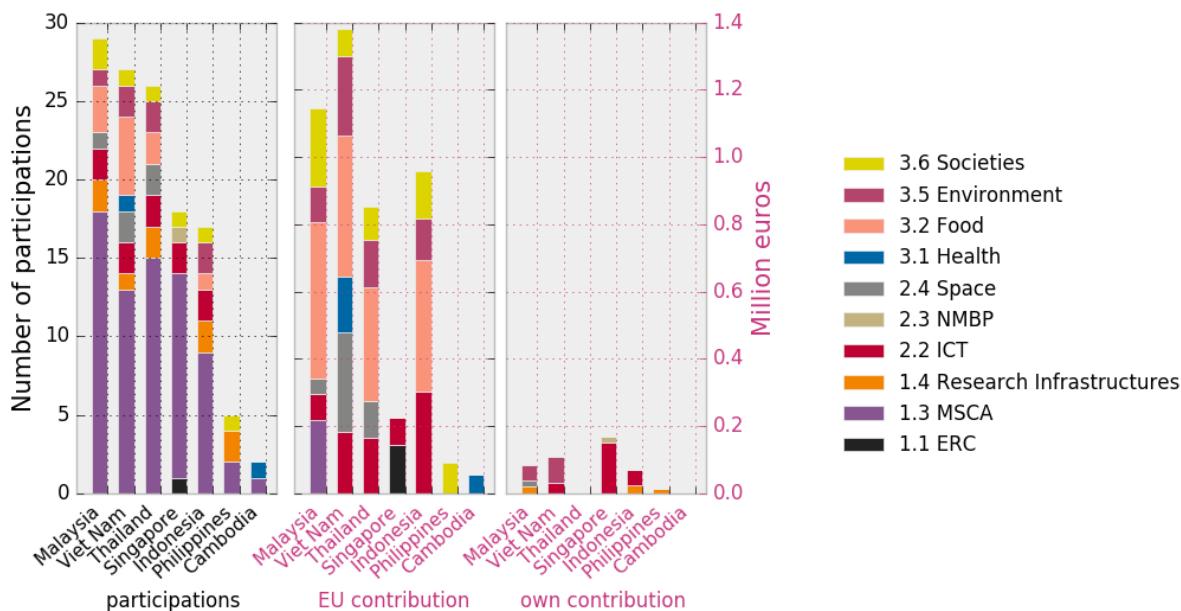
<https://www.facebook.com/EUinASEAN>

<https://twitter.com/EUinASEAN>

Under Horizon 2020, up to October 2018, ASEAN entities have participated 53 times in 27 signed grants of collaborative actions, receiving 4.5 million euros from EU. Regarding the Marie Skłodowska-Curie Actions (MSCA), ASEAN entities have participated 73 times (3 in Individual Fellowships, 61 in the RISE, 7 in the ITN and 2 in the COFUND programme), while 347 researchers of nationality from the ASEAN member countries have participated in MSCA actions. Moreover, ASEAN entities have participated 1 time to signed ERC grants and 9 nationals of ASEAN countries have acquired an ERC grant.

The signed collaborative projects under Horizon 2020 are mainly in the same areas as FP7, namely health, food, ICT, environment, and nanotechnologies, which indicates a sustained continuity. For example, four ASEAN research laboratories are involved in EGI-Engage – a research and innovation action - that with 39 other international partners develop a distributed computing and data infrastructure to support over 21,000 researchers (EC funding 8 € million); and in the area of climate action and sustainability, Indonesia is collaborating under the GREEN-WIN and TRANSRISK projects (total 10 € million project total costs) alongside fifteen European partners.

Figure 1: Participation of the ASEAN countries in Horizon 2020



Note: Participations of beneficiaries, third-parties and partner-organisations.
 Source: DG Research and Innovation - International Cooperation
 Data: CORDA (JRC, EIT and art.185 not included); extraction date: 15/10/2018

2.2. Current framework conditions for EU- ASEAN S&T cooperation

The overall cooperation agenda is sustained via both bottom-up research initiatives prompted by scientists of both regions, as well as via a focused policy exchange in the context of the regular EU-ASEAN Dialogue on Science and Technology since 2008. The latest 8th EU-ASEAN Dialogue (section 1) was organised back-to-back with the annual ASEAN COST and the ASEAN Ministerial Meeting on Science and Technology.

Cooperation is hampered by a number of factors, such as (a) erratic engagement between public policy actors due to lack of a policy cooperation platform; (b) lack of research funds at regional level on the ASEAN side; (c) lack of extensive networks between researchers in Europe and Southeast Asia; and (d) limited knowledge about European research programmes in Southeast Asia and vice versa. These obstacles have been partly tackled through the following initiatives:

The support of the Enhanced Regional EU-ASEAN Dialogue Instrument (E-Readi) to the ASEAN S&T area operates within the context of the ASEAN-EU Plan of Action (2018-2022) and the APASTI (2016-2025) and promotes further the ongoing dialogue between COSTI and the EU. E-Readi also supports the **EU-ASEAN Policy Exchange Platform (PEP)**, which aims at policy exchange, learning and alignment between the two regions, initially in the domains of talent mobility, research infrastructures and High Performing Computing (HPC).

An initiative to create a new programme to address the shortage of funds for collaboration at regional level was initiated at the 6th EU-ASEAN Dialogue (Vientiane, November 2015)⁸ and further discussed at the next EU-ASEAN Dialogues in 2017 and 2018, leading to the establishment of the **Europe-Southeast Asia Joint Funding Scheme (JFS)**⁹, a bi-regional scheme under which national funding agencies from SEA and Europe join forces to implement annual Joint Calls for Proposals in thematic areas of common interest. The funding for research and innovation projects which have to involve partners from both regions is provided by each participating funding agency to their own researchers according to their own national regulations. The management of the mechanism is supported by the European Commission (EC) under its Service Facility in Support of the Strategic Development of International Cooperation in Research and Innovation.

So far two joint calls have been implemented:

- The first Call in 2017 addresses the areas of environment/climate change. Ten projects with a total budget of approx. €2.7 million have been selected for funding from the 50 proposals which were handed in.
- The second Call in the fields of bio-economy and infectious diseases has received 34 proposals which are currently being evaluated.

The lack of sufficient networking and scientific mobility is to some extent addressed by **EURAXESS**. This is an EU initiative supporting researcher mobility and career development, while enhancing scientific collaboration between Europe and the world. EURAXESS ASEAN¹⁰ is operated by two regional representatives who are based in

⁸ <http://www.asean.org/chairmans-statement-of-the-16th-asean-ministerial-meeting-on-science-and-technology-ammst-16/>

⁹ <https://www.sea-eu-jfs.eu>

¹⁰ <https://euraxess.ec.europa.eu/worldwide/asean>; Contact E-mail: asean@euraxess.net

Bangkok, Thailand and Singapore respectively. Besides keeping the EURAXESS community informed about the latest information related to research events, funding, jobs and collaboration opportunities in Europe and ASEAN, they are providing platforms for dialogue and exchange to facilitate bi-regional research cooperation and mobility. All services are offered free of charge.

3. Priorities for the future in S&T cooperation

3.1. Areas of existing S&T cooperation

Cooperation with ASEAN is well established in several thematic areas that need to be further deepened and scaled up. The identification of topics for cooperation is based on common interest and mutual benefit and sustained by wide consultation.

- **Health:** There is a long tradition of cooperation on infectious diseases with the ASEAN countries and health research is a proven strength of the region. Nonetheless, major obstacles exist to overcome the existing and increasing global health challenges, including the need for a deeper understanding of diseases pathology and the socio-economic causes of the diseases and linked effectiveness of health intervention. Cooperation on preparedness is undertaken through the Global Research Collaboration for Infectious Disease Preparedness (GloPID-R)¹¹ in which Thailand participates. In addition, Singapore is part of the International Cancer Genome Consortium¹² and joined the Human Frontier Science Programme in 2014 (HFSP)¹³. The EU provides an annual contribution of around €4.8 million to HFSP. In addition, there is potential to conduct joint research at regional level on antimicrobial resistance that is currently being investigated with several ASEAN MS closely working with EU MS having research excellence in that domain.
- **Food:** For both South-East Asia and Europe, a clear benefit arises from providing high quality, affordable and sustainable food along the whole agri-food chain (production, harvesting, processing, and distribution). Key issues such as eradicating poverty, hunger and preventing conflict require handling those issues jointly. Besides, innovative food research remains a key factor of competitiveness, jobs, sustainable growth and social progress in both regions.

The EU and ASEAN countries have an interest in working together to meet the increasing seafood market demand; 90% of all world aquaculture production is based in Asia and Europe imports close to 70% of its seafood from South-East Asia. The Horizon 2020 project EURASTIP, launched at 2017, addresses the sustainability of aquaculture production in Southeast Asia, which is a major challenge for global seafood security and safety. The action contributes to common standards' setting and legislation, creation of business opportunities and consolidation of education and training networks spanning the EU and this region.

¹¹ www.glopid-r.org

¹² www.icgc.org

¹³ www.hfsp.org

- **Nanotechnology:** In most ASEAN countries (with the exception of Singapore, Malaysia, Thailand), cooperation with Europe is not developed in this research area. Hence addressing setting research initiatives could bring new avenues. At the beginning of H2020, cooperation through Nanoreg (regulatory testing of nanomaterials for nano-safety) that is of high-relevance for the region was set with Thailand. This country became in 2014 the first ASEAN member of Nanoreg, and there are prospects to involve others.
- **ICT:** Pilots have been launched for innovative service creation based on existing technologies, with a focus on the participation of relevant innovation stakeholders from developing countries, including end-user community representatives (ICT-39-2016-2017: International partnership building in low and middle income countries). In addition, there is interest to work on innovative services based on existing technologies, with focus on involving all stakeholders especially end-user community representatives, e.g. through innovation hubs and “Living Labs”. This has been translated in the ICT Work-Programme with a call for “partnerships with low and middle income countries” with ASEAN being one of the regions targeted and a total budget of €13 million. It calls for the co-design, adaptation, demonstration and validation (e.g. pilots) of ICT related research and innovation in relevant thematic areas addressed by Horizon 2020 including Content Technologies and Societal Challenges.

In addition, in relation to water/water management issues, ICT is a crucial instrument for finding scalable and sustainable solutions. Another example is the improvement of waste management, which offers opportunities not only in urban and industrial contexts but also with a view to reducing marine litter.

- **Mobility:** More than 347 researchers from ASEAN countries are currently participating in H2020 Marie Skłodowska-Curie Actions. This includes researchers following doctoral-level training under the ITN action, and postdoctoral researchers working in Europe through an individual MSCA fellowship. In addition, staff members from ASEAN countries’ organisations are taking part in RISE staff exchanges with organisations in EU Member States or Horizon 2020 Associated Countries underlining the wide span of used instruments for promoting mobility.

3.2. Potential new areas of future S&T cooperation

Areas that have been proposed at the latest Dialogue include:

- **Water:** The situation in South-East Asia in relation to climate change is so acute, that the experience of Europe with technology solutions, e.g. in water management systems could be of value especially on river basins for which science diplomacy could contribute. Given the great challenges for the sustainability of the Mekong river basin and their similarity for example with the Danube river system, collaboration on research infrastructures and the management of water resources represents a key opportunity. This has become timelier since the introduction of the DANUBIUS project in the European Roadmap for Research Infrastructures, elaborated by the European Strategy Forum on Research Infrastructures, and initiatives such as the Water JPI.

Links between the sustainability of river systems and food security as well as sustainable urbanisation issues in a context of climate change provide also ample scope for regional collaboration. For Europe, cooperation with other world regions facing the same global challenges brings value, especially in connection to food security, energy and pollution in cities and inter-twined trans-boundary conflicts.

- **Health:** There is a strong potential for collaboration in the area of antimicrobial resistance, as South-East Asia is affected by situations similar to Europe and requiring actions to which it can contribute. Some ASEAN countries have flagged out an interest in the Joint Programming Initiative on Antimicrobial resistance (AMR) being developed in Europe.
- **Mobility:** Synergies between the EU's Marie Skłodowska-Curie Programme, activities to emerge under the ASEAN Talent Mobility (ATM) schemes, and the activities of EURAXESS are being investigated to bring synergies to mutual learning. To set a common system for tracking and updating cross-border talent mobility data, such as an ASEAN single-window registry service for researchers and scientists incorporating a database of STI experts on certain ASEAN-wide issues could be of high value.
- **Maritime Transport:** This area may play a significant role in regional cooperation, and potential exists in the following subsectors:
 - Addressing transport safety, especially related to ferries (Indonesia, Vietnam and Thailand suffer some of the highest marine accident rates in the world as a result of faults in construction, operation and maintenance). Knowledge transfer from the EU can support better operational standards to improve safety.
 - Improving environmental standards for marine transport so that the knowledge and tools for clean ship operations developed within EU projects are further promoted in ASEAN (e.g. projects dealing with stability of damaged ships).

3.3. Improvements in framework conditions

The very limited availability of research funding at regional ASEAN level is a clear impediment for cooperation. Thus strengthening multilateral mechanisms like the JFS (see section 2.2) is essential to support projects of common interest.

Initiatives undertaken in the context of the Enhanced Regional EU-ASEAN Dialogue Instrument and the EU-ASEAN Policy Exchange Platform will hopefully achieve improving the sharing and mutual access to research infrastructures in the two regions, addressing mobility barriers and increasing cooperation via the establishment of joint-schemes.

Furthermore, National Contact Points can play an important role in promoting, disseminating and facilitating cooperation opportunities between the EU and ASEAN countries.

Annex 1: Upcoming Horizon 2020 Work Programme 2018-20 topics highly relevant for cooperation with ASEAN countries

CALL IDENTIFIER	PROGRAMME AREAS	ACTION TYPE	DEADLINE
Health, demographic change and wellbeing			
SC1-HCO-01-2018-2019-2020	Actions in support of the International Consortium for Personalised Medicine	CSA	16-Apr-19
SC1-BHC-32-2019	Towards a next generation influenza vaccine to protect citizens worldwide – an EU-India collaboration	RIA	16-Apr-19
SC1-DTH-01-2019	Big data and Artificial Intelligence for monitoring health status and quality of life after the cancer treatment	RIA	24-Apr-19
Smart, green and integrated transport			
MG-2-9-2019	InCo Flagship on Integrated multimodal, low-emission freight transport systems and logistics	Two-stage RIA	16-Jan-19 (1st stage) 12-Sep-19 (2nd stage)
LC-GV-05-2019	InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and emerging economies”	IA	25-Apr-19
MG-BG-02-2019	Ship emission control scenarios, marine environmental impact and mitigation	RIA	25-Apr-19
Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy			
SFS-12-2019	A vaccine against African swine fever	IA	23-Jan-19
SFS-05-2018-2019-2020	New and emerging risks to plant health	Two-stage RIA	23-Jan-19 (1st stage) 04-Sep-19 (2nd stage)
LC-RUR-11-2019-2020	Sustainable wood value chains	IA	23-Jan-19

Climate action, environment, resource efficiency and raw materials			
CE-BG-06-2019	Sustainable solutions for bio-based plastics on land and sea	IA	23-Jan-19
LC-CLA-05-2019	Human dynamics of climate change	Two-stage RIA	19-Feb-19 (1st stage) 04-Sep-19 (2nd stage)
LC-CLA-02-2019	Negative emissions and land-use based mitigation assessment	Two-stage RIA	19-Feb-19 (1st stage) 04-Sep-19 (2nd stage)