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## Towards Professionalising ‘International S&T Cooperation Foresight’: Epistemological and Methodological Challenges and How to Overcome Them

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### Purpose

The purpose of the SEA-EU-NET foresight process is to open up and structure the discussion on the potential future cooperation(s) between the EU and Southeast Asia in the field of S&T. We assess potential “futures” of organising S&T relations between the EU and Southeast Asia in 2020 and discuss their current implications and geopolitical consequences.

### Combining Asian and European Research Dialogues

The SEA-EU-NET project started in 2008 with the mandate to facilitate the bi-regional EU-ASEAN science and technology dialogue and to expand scientific collaboration between Europe and Southeast Asia in a more strategic and coherent way. Among many other things, SEA-EU-NET participated in the official EC-ASEAN COST (Committee on Science and Technology) meetings in Manila and Bali and presented project outcomes and recommendations. Complementary to the official EC-ASEAN dialogue, the SEA-EU-NET project organised stakeholder conferences in 2008 in Paris/France, 2009 in Bogor/Indonesia and 2010 in Budapest/Hungary, which served as platforms to discuss opportunities and pitfalls for stronger S&T collaboration between the two regions. The next stakeholder conference is scheduled to take place in Hanoi/Vietnam in November 2011.

These meetings involved a large group of policy makers, scientists and science administrators. The close links between the official EC-ASEAN dialogue and the SEA-EU-NET project stakeholder dialogue has led to an enhanced level of S&T cooperation between the two regions.

### The SEA-EU-NET S&T International Cooperation Foresight

The SEA-EU-NET foresight exercise was launched during the Bogor/Indonesia 2<sup>nd</sup> SEA-EU-NET Stakeholder Conference in 2009 and has been designed to fit into and support these interlinked policy dialogues aimed at further increasing S&T cooperation levels. With this foresight exercise, the project aims at supporting the building of and commitment to shared visions of the future of S&T cooperation.

Given the current stage of science and technology cooperation between ASEAN and EU, the process was mostly expert-driven. Regarding a specific and very central stakeholder group, however, it was participatory: All scientists with recent cooperation experience (ASEAN-EU co-publications since 2005 have been used as a proxy for cooperation) have been invited to participate.

The format of “International Cooperation Foresight” (ICF) should be discussed separately from national technology foresight activities. Theoretical and methodological backgrounds have been provided by the work of the members of the former Policy Research in Engineering, Science and Technology Institute (PREST) and current Manchester Institute of Innovation Research as well as by the UNIDO Foresight Manual.



Our experience with the exercise has shown that ICF needs to take into account a large number of "soft" drivers of future scenarios and related forecasts, basically all of which can be influenced to some extent by one of the two major stakeholder groups (S&T and other policy makers; scientists). For instance, ICF needs to take into consideration the financial resources available for cooperation (a driver directly influenced by S&T policy making) and trust among the research communities of the cooperating countries/regions (a driver reflecting the scientists' attitudes).

Thus, for international S&T cooperation foresight involving high-level policy making and research communities, most parts of the external context are in fact contingent variables internal to the process. Parts of what might be

external variables in a technology foresight for an enterprise (e.g., the existence of certain policies or regulatory obstacles or the availability of natural resources) are internal variables for the ICF process (policies and regulations can be shaped by the policy-making stakeholders; decisions can be made to protect natural resources or make them available; etc.). This fact has to be taken into account when designing the foresight methodology.

These considerations also partly motivated our decision to look at a ten year perspective, i.e. the 2020 future of S&T Cooperation between ASEAN and the EU. While the horizon of the Europe 2020 strategy also played a role, we have looked for a time horizon that can be considered without having to take into account possible major system changes, which would again add complexity.

### Scenario Building, Delphi Surveys and Backcasting

This foresight exercise applied a combination of (singular success) scenario building, Delphi surveys and backcasting. Concretely, the stakeholder discussions regarding the 2020 future S&T cooperation were kicked off in a **success scenario oriented driver identification workshop**. High-level policy makers from Southeast Asia and Europe were asked to identify 'drivers' and 'shapers' of a future basic success scenario of bi-regional S&T cooperation based on drivers presented in the literature and to comment on and rate the relevance of the various drivers identified. We discriminated the regional focus of the answers: participants could rate the perceived relevance for either Southeast Asia or Europe. Given the interactive atmosphere in the workshop, this combining of scenario building with backcasting elements proved to be a successful strategy.

We continued the driver identification with the second major stakeholder group, namely the **scientists**, selecting those who had recent ASEAN-EU co-publication experience. With the help of an open e-mail consultation asking respondents for the factors that they believe might influence what future S&T cooperation between the two regions might look like, the individual responses of about 1,200 scientists were collected, analysed and synthesised into a set of around 40 drivers. The drivers then were validated in a two-stage Delphi survey, presented as directional variables (pointing towards increasing cooperation) and formulated as concrete recommendations in the original wording of the scientists (which we correctly believed would make it easier for their peers to follow their reasoning). We distinguished between answers given from a Southeast Asian perspective and a European perspective (irrespective of the current region of residence).

In the second Delphi round, approximately 560 scientists checked the average relevance ratings given in the first round, further commented on them and partially corrected their previous answers. This led to a series of concrete recommendations for instruments to

enhance S&T cooperation and was followed by thorough desk research to identify interdependencies among the most relevant drivers.

The results up to this point have been published and made available to the European Commission, the policy and scientific community as well as the wider public as a SEA-EU-NET report ([www.sea-eu.net/object/document/2469.html](http://www.sea-eu.net/object/document/2469.html)).

The next step was to feed the results back to the target groups, especially the policy makers in both regions. While there were no project resources for an additional workshop with European policy makers, we were able to arrange a half-day session during a major SEA-EU-NET event in Chiang Mai/Thailand in May 2011 that attracted around 20 policy makers from 8 of the 10 ASEAN member countries, which we consider a big success.

Rather than generating additional output, the goal of the workshop was to feed back the evidence produced by the SEA-EU-NET foresight and to further inspire a joint process of creating common visions of the future.

Two relevant preparatory steps realised by the foresight team were (1) a more refined 2020 success scenario of ASEAN-EU S&T cooperation that presented a desirable future in the form of a newspaper article narrative (looking back from 2020 towards 2011 outlining what has gone well in this decade) and (2) linking the SEA-EU-NET cooperation foresight with relevant regional foresight processes, namely the future 'paradigm shifts' identified in the 'Krabi Initiative' on the future of science and technology in ASEAN.

The link between both foresight processes was achieved by proposing the following two questions to the participants: How can future ASEAN-EU S&T cooperation support the Krabi Initiative paradigm shifts, and what would succession of S&T cooperation mean in this context? These overriding questions were discussed in five knowledge café panels (one for each of the five paradigm shifts in the Krabi initiative). The outcome of the discussions is currently being used by the SEA-EU-NET foresight team to refine the draft success scenario.

In a final step, the foresight report mentioned above will be amended and will form a central chapter in an upcoming

SEA-EU-NET book publication to be presented to the S&T cooperation policy making and scientific community,

inter alia at the next SEA-EU-NET Stakeholder Conference in November 2011 in Hanoi/Vietnam.

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## Successful Pilot Community Building and Open Dialogue among Stakeholders

One indicator to assess the success of the exercise is the number of stakeholder participants in the process. In terms of the members of the scientific community who we were able to engage in the process, it clearly was a success: 280 qualitative answers were collected during the open e-mail consultation. Around 1,200 scientists participated in the first Delphi survey round. This corresponds to approximately 12-14% of the invitees. About 560 scientists participated throughout the whole process and also finished the second Delphi survey round.

Regarding the participation of policy makers, we faced two limitations: our resources for conducting a face-to-face drivers workshop but also the limited pool of policy makers knowledgeable in EU-SEA S&T relations. We consider it a success that 16 participants (7 Southeast Asian and 9 European) policy and programme makers actively participated in the first driver assessment scenario workshop in November 2009 and around 20 Southeast Asian policy makers in the second success scenario workshop in May 2011.

Regarding the *impact on the policy of the European Commission*, as the client of the exercise, it is too early

for a final assessment. We have submitted the foresight report to our project officer in February 2011. Apart from the internal discussions that might be triggered by the report (but are not visible to us), we will look for open dialogue with the EC, for instance during the upcoming SEA-EU-NET events, the most prominent one being the next SEA-EU-NET Stakeholder Conference in Hanoi/Vietnam in November 2011 where EC representatives will also participate. The impact on policy cannot be evaluated yet.

First results of the foresight exercise, most notably the results of the scientist consultations, have been presented to a wide audience of policy and programme makers and researchers during the SEA-EU-NET stakeholder conference in Budapest/Hungary in November 2010. The foresight report has been shared with the around 1,200 participants from science in the process.

Methodological reflections based on this exercise have been published in the Russian Journal "Foresight" of the Moscow Higher School of Economics. Depending on future project resources, the process can be continued in the future. Recommendations coming out of this international S&T cooperation foresight study can be found below. The recommendations have been formulated very recently. It is too early to discuss possible realisations of the recommendations.

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## Dialogue between Policy Makers and Scientists

This foresight exercise has the mandate and has been designed accordingly to produce policy recommendations. They can be found in an abbreviated form below.

As this foresight exercise aimed at structuring and stimulating policy dialogue on future S&T cooperation between Southeast Asia and Europe, the recommendations feed into this dialogue. While it is too early to evaluate the outcome of the exercise, it will hardly be feasible to link the possible implementation in the future of measures growing out of these recommendations to the influence of the foresight process, even more so as the recommendations emanate (bottom-up) from the stakeholder communities engaged in the policy dialogue or the related scientific practice.

Another outcome might be a closer consultation practice between bi-regional S&T policy making and the scien-

tists actually engaged in cooperation. Among possible, unintended results might be a situation where S&T policy makers recognise, in the follow-up of these discussions, that the future of S&T collaboration lies in a bilateral rather than a bi-regional setting.

We believe that the foresight exercise has benefited the participants in that it has helped them in structuring their own and their peers' thinking about the future of S&T cooperation between Europe and Southeast Asia. This can prove relevant to policy makers when they design future policies and to scientists when they think about engaging in international cooperation. We will collect feedback on the exercise among the two major stakeholder groups, i.e. the policy makers and the scientists. With regard to the scientists, we have shared the foresight report with them recently (April 2011) and informed them about our steps for disseminating the results.

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## Recommendations: Enhancing Shared Responsibilities

The *key recommendations for policy makers* coming out of SEA-EU-NET's international S&T cooperation foresight study can be summarized as follows:

- Further discuss the report among the stakeholders involved in the process of policy development.
- Keep scientists engaged in the dialogue on and planning of S&T cooperation.
- Foster coherence between STI policy and other policy areas.

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- Consider internal diversity of both regions and their needs.

The following list gives a brief overview of the **recommendations** formulated by the consulted **stakeholder communities**:

- The most important motivations for scientists to cooperate are a) the goal of applying state-of-the-art science to a topic of mutual interest and relevance, b) the feeling of contributing to the development of a country and c) to solving global challenges, d) gaining access to a field, expertise and equipment, and finally, e) friendship and f) reputation.
- S&T cooperation should be sustained on a long-term basis.
- Find a balance between a) flexibly defined bottom-up approaches and the dedicated funding of S&T cooperation with a thematic focus and b) supporting cooperation in basic and applied research.
- Personal contacts are more relevant than institutional agreements. Therefore, supporting mobility and networking is crucial.
- Enhance equilibrated mobility in both directions, from Europe to Southeast Asia and vice versa.
- Existing human and network resources should be harnessed creatively. Established scientific conferences could convene in Southeast Asia; retired scientists could be offered part-time positions; senior scientists could engage in cooperation and exchange within sabbatical schemes.
- PhD student exchange should be supported to a higher degree.
- Southeast Asian diaspora academics in Europe as possible facilitators of S&T cooperation.
- Return and reintegration support schemes.
- Reward schemes for successful cooperation.
- Quality metrics for assessing the success of international S&T cooperation projects.
- Regional training networks, joint research centres and other joint research infrastructure.
- Bridging institutions offering administrative, research management and partnering support.
- Simplification of administrative burdens like visa issues, material exchange and field access clearance procedures.
- Open access to literature and sample databases.
- Regional availability of joint research results.

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