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# Framework conditions for innovation in Southeast Asia

## Executive summary

This report reflects the increasing importance given to innovation in policies to promote international cooperation in science, technology and innovation. In the context of the growing cooperation between Southeast Asia and Europe, supported by the SEA-EU-NET 2 project, a greater focus has been given to innovation compared to the more traditional focus on science and technology for which there are well-established policies and instruments. International cooperation in innovation raises a set of more difficult issues, not least due to the potential commercial interests involved and the direct link that often exists with objectives for economic growth and development. This report contains:

- a brief overview of the general framework conditions for innovation
- a treatment of three dedicated institutional framework conditions for cooperation in innovation: material transfer agreements (MTA), intellectual property rights (IPR), and public procurement for innovation (PPI).

The region of Southeast Asia has highly diverse macro-economic framework conditions. Although patterns of economic growth are promising, they are also uneven. Still, with the region's increasing integration into the global economy through international value and supply chains, growth is likely to continue to be positive, and promises to ensure continued supportive conditions for innovation. Other issues are more challenging for the region; for example, gross expenditure on R&D as a share of GDP (GERD) is very low for most countries. The exceptions are Singapore, and to a lesser extent, Malaysia and Thailand. The levels and quality of human capital are also highly diverse, with many of the countries in the region experiencing challenging situations.

With the mixed and often poor macro-economic framework conditions, institutional conditions play a correspondingly important role. Across the region there is a general need for stronger commitment to investing in research, innovation and capacity building on an institutional level, as well as a greater awareness of training needs, governance of research and innovation

institutions and cross-national cooperation. The three particular areas of framework conditions treated in this report confirm this picture. More precisely, cooperation in, for example, biological research and related bio-technological research and innovation, benefits highly from international arrangements at a multilateral level. The case of material transfer agreements illustrates clearly that framework conditions for innovation are, given the cooperative and more formal nature of today's innovation processes, heavily dependent on conducive arrangements at a trans-national level that create less risk, and a transparent playing field for researchers and innovators. The same is the case for IPR, where lack of awareness, resources and institutional capacities for IPR governance are key issues. Trans-national cooperation is important, and initiatives such as the ASEAN IPR Helpdesk, supported by the EU, represent important and relevant support for, for example European small and medium-sized enterprises. PPI is less mature as an institutional tool to promote innovation, but some countries in Europe and Southeast Asia are including it in their policy portfolios. Exploiting the demand in an economy for innovation and growth is all the more important in countries where demand conditions in general are poor. PPI is also increasingly being introduced to better address global challenges, and is thus also a potential strategic tool for green innovation, as in the case of Malaysia.

This report's key message is that relying on general framework conditions for innovation is not enough. The innovation process is cooperative or collaborative, with interactions between many partners in different sectors, such as research institutions, and the users and producers of knowledge. Dedicated institutional framework conditions, many of which are multilateral in nature, therefore need to receive more attention. Awareness building, learning, and capacity development related to such cooperative institutional frameworks are examples of efforts to be made across countries to ensure transparent and effective framework conditions for innovation.

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# 1 Introduction

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The main focus of the SEA-EU-NET project's first phase was to carry out a number of activities to support and underpin international cooperation between Southeast Asia and Europe in research. This focus is maintained in the second phase of the project (SEA-EU-NET 2), as further work was deemed necessary to reinforce and strengthen the basis for research cooperation between the two regions. However, as issues such as competitiveness, economic growth and technology transfer moved higher on the political agenda after the financial crisis of 2008-2009, innovation was more thoroughly included in political agendas in many countries and regions globally. For example, for its overarching policy agenda the EU developed Europe 2020 the "Innovation Union", creating a broad basis for knowledge-based growth and job creation. Innovation became better integrated in the new framework programme for research, Horizon 2020.

Similar trends in innovation policy are being seen globally, and have been for some time. Emerging economies like China have consistently placed science and technology (S&T) at the heart of a broad policy mix for economic development. Innovation and knowledge-based economic policies are ever more seen as key to economic development, job creation, and poverty reduction. As globalisation intensifies, it is becoming an imperative for policy makers to develop a means for their economies to become better integrated in the global economic division of labour, with its value and supply chains and innovation networks. This has also been the case for countries in Southeast Asia, most notably Singapore, but also countries like Malaysia, Thailand and the Philippines. ASEAN, the Association of Southeast Asian Nations, is building its cooperative policies to a greater

extent on knowledge-based growth and innovation. This is visible, for example, in the current policy to establish a more unified single market in the region by 2015 – the ASEAN Economic Community (AEC).

Against this background the SEA-EU-NET 2 project included innovation as a dedicated priority, and thus international cooperation in science, technology and innovation implies a broader agenda for policy development and cooperative measures. The project includes two main foci in this respect. First, a collaborative study of innovation policy and associated instruments in six countries in Southeast Asia was conducted, published in 2014 (DEGELSEGGER ET AL. 2014). A second focus has been to review key framework conditions for innovation in the region with a view to creating a more transparent picture of the situation, which may be useful for potential partners and innovators in Europe, as well as stimulating learning and information exchange on the topic between the two regions in question.

This report constitutes the main output from the second priority. It includes a general overview of framework conditions for innovation, some key developments in the Southeast Asian region (*chapter 2*), and three chapters (3-5) on three selected framework conditions that were deemed to be of crucial importance for innovation, collaboration and transnational learning on this issue (material transfer agreements, intellectual property rights and public procurement for innovation). These specific chapters are based on workshops that were conducted on each theme, and they are written by the named authors as summaries of the respective workshops without reference to specific statements or input by the invited experts who took part in the workshops.

## 2 Framework conditions for innovation in Southeast Asia: an overview

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### 2.1 Framework conditions and innovation systems

Innovation does not take place in a vacuum. On the contrary it is widely acknowledged that innovation, and innovative capacity is determined by a number of factors, internal as well as external to the firm. Innovation, seen as the process through which firms, existing or start-ups, develop, acquire and apply knowledge with the aim to generate new products, processes and other solutions to derive value from a market, can best be understood through the innovation systems perspective (OECD 1999, 2001). The systemic nature of innovation means that a firm's innovation activities are determined by a complex set of interactions with their environment, most typically their suppliers and customers, but also other influences such as a given country's research and development system. Governments attempt to support the innovation process through dedicated policy instruments in particular, and firms find themselves in a complex web

of regulations, laws, and other constraints. Innovation is also determined by a firm's position in supply or value chains, while these are also becoming more globalised and linked to global innovation networks.

Figure 1 illustrates one way to look at innovation systems. In this case, framework conditions are limited to a set of generic or mostly macro-level issues, in particular the financial environment in the economy, taxation systems, cultural propensities to innovation and entrepreneurship and the level of mobility of human resources as an indicator of the degree of ease in shifting resources between firms and sectors.

This perspective defines a set of specific conditions for innovation not as framework conditions, but rather as dedicated components of the innovation system itself. For example, this concerns demand factors, both intermediate and final demand, standards and norms, the banking and venture capital system, as well as systems and regulations related to intellectual property rights (IPR).

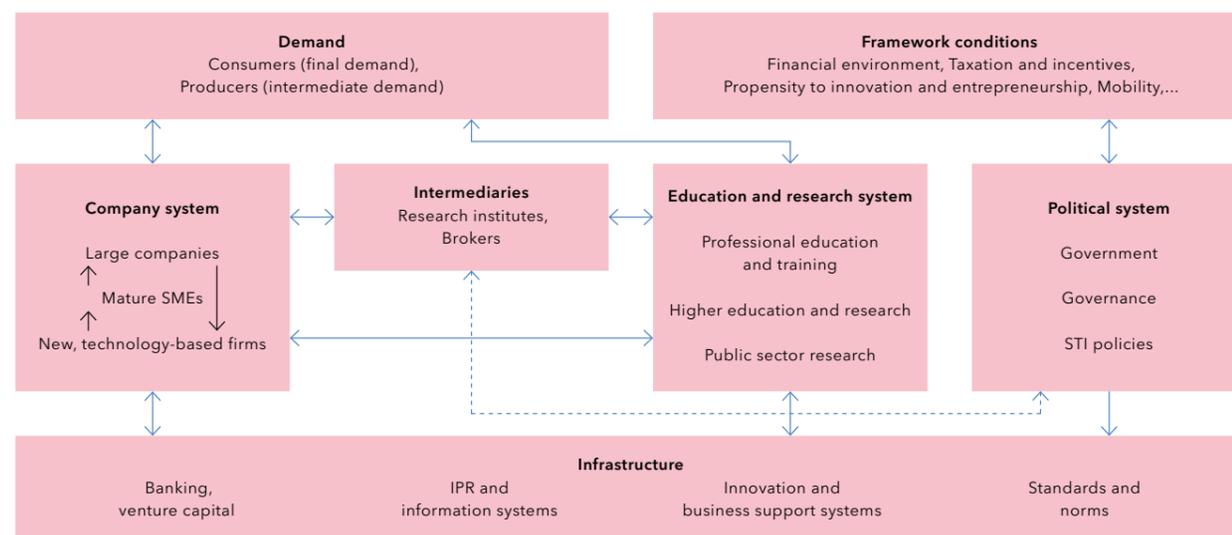


Figure 1: National innovation systems. Source: Kuhlmann, S., Arnold, E. (2001)

Many studies of innovation and innovation systems use a wider definition of framework conditions. Without going into too much detail, studies typically define framework conditions as those economic, regulatory or other conditions that are not part of the core set of research and innovation policies. This means that general macro-economic indicators are relevant, as are the level of education, demand-side factors, IPR and related regulations, as well as socio-cultural factors. Structural features of the economic system in which innovation takes place are crucial, as these define how firms compete, cooperate and grow. The relevance of the various framework conditions also varies across countries and economies. There is thus no such thing as generally optimal framework conditions, although certain characteristics are often seen as conducive to innovation, such as the quality of the educational system and human resources, infrastructure, macro-economic conditions, and financial incentives through the taxation system.

For the purpose of this report, framework conditions are understood as the characteristics of the wider economic and institutional system of a country or region that have potentially significant impacts on innovation performance. Implicitly, this means that a country's innovative capacity is not only dependent on its research and development system, but also on the wider economic and institutional environment with all its interplay and interactions that enable knowledge to be transformed into commercial value in markets and hence to economic development.

### 2.2 The significance of framework conditions

Innovation is typically stimulated through supply-side R&D policies. This includes public support for R&D programmes and private sector R&D, investment in basic research in universities, and institutional support to research institutions. The key aim is to ensure sufficient development and transfer of knowledge to innovators. In line with the innovation system perspective, this development and transfer process is highly interactive and complex, but the core of innovation policy still rests with the support of R&D.

In line with the above, innovation, and innovation performance, cannot be realistically understood and supported only through the core R&D policies. It is true that framework conditions are not passively or generically "there", but are shaped by government and public policy, with or without innovation in mind. For example, the degree of competition in an economy or sector, widely accepted as key to innovation, is shaped through governmental competition policy. Diffusion and uptake of new production technologies are significantly shaped by regulatory means, creating incentives or punishments, for example through environmental emission standards. Thus, framework conditions should be seen as key to any

government's overall policy portfolio: dynamic regulation of CO<sub>2</sub> emissions from cars, tightening the regulation over time, creates a powerful incentive for car producers to innovate clean cars.

Framework conditions can be seen as an expression of the degree of efficiency by which knowledge is transformed into commercial value, be it a product, industrial process or organisational form. Innovations are taken up by the economic system, and investments in R&D generate returns through this process. In other words, returns on private or public investments in the core innovation system will be higher the better the economic and institutional environment is shaped. Governance is therefore critical to achieving appropriate framework conditions for innovation, as shaping and correcting framework conditions is a complex process and demands learning and adaptation in the political system (OECD 2005). Innovation capacity is closely linked to institutional capacity.

The framework conditions of a country or a region such as ASEAN or Southeast Asia in sum make up the basis for the overall competitiveness of the respective country or region. Several indicators related to framework conditions are typically included in such a view on competitiveness, among them institutions, macro-economy, infrastructure, health and education (WORLD ECONOMIC FORUM 2014, OECD 2008). Such macro-level indicators, however, will often under-communicate the diversity of regions and crucial differences in the way innovation and economic systems work in practice. Further, they will often neglect the interconnectedness of economies and how firms, sectors and clusters are linked by cross-national or global value chains or global innovation networks. Many sectors and research systems are greatly influenced by very specific regulatory frameworks. This is also why this report includes a more targeted view of selected framework conditions in Southeast Asia: IPR, material transfer agreements (MTA), and public procurement for innovation.

### 2.3 Key issues of framework conditions in Southeast Asia

The macro-economic conditions in Southeast Asia are improving, and for many of the countries in the region are indeed quite strong. Figure 2 illustrates this, showing steady and healthy growth, although not as much as in China and South Asia (mainly India). This steady growth is to a great extent due to the increasing integration in the world economy of many of the Southeast Asian countries, in particular through integration in many key global value chains, ensuring high export levels to China and increasing manufacturing capabilities (OECD 2013, DEGELSEGGER ET AL. 2014). It goes without saying that intra-regional variation is great, with several of the Southeast Asian countries experiencing weak growth, while countries like Malaysia and the Philippines have high growth rates.

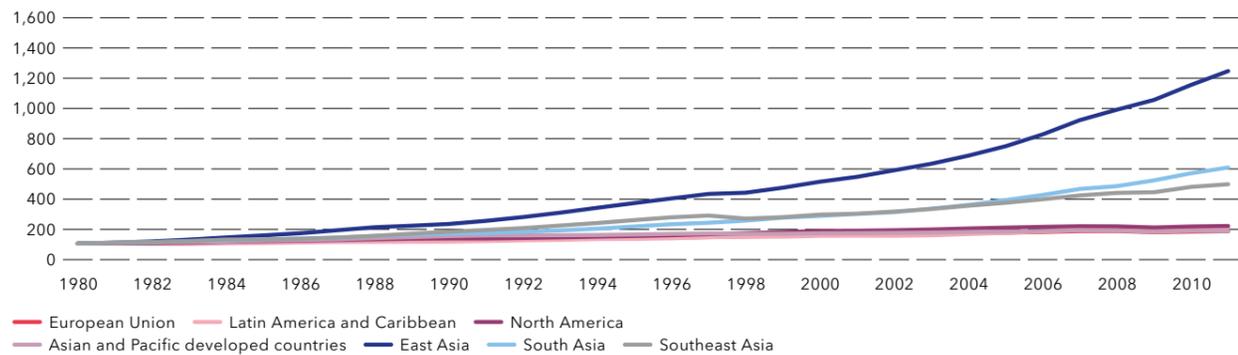


Figure 2: Growth in world regions, 1980–2010, constant US\$2,000. Source: World Bank / OECD

Labour productivity is still low, and significantly below that of the main industrial powers such as the U.S., EU and Korea, with the exception of Singapore (APO 2012, OECD). The drivers of economic growth are changing, with capital accumulation (non-IT) currently playing the greatest role, while the contribution of total factor productivity growth is still low in many countries, but increasing. Thailand and Vietnam have both high total factor productivity growth rates, pointing to structural shifts in their economies, while the high growth performer, the Philippines, experiences very low rates, pointing to a corresponding meagre structural change (APO 2012, OECD).

Figure 3 shows the gross expenditures in R&D (GERD) as a percentage of GDP, illustrating mostly very low investment in this field. Of the ten ASEAN countries, only Singapore is on a par with other industrialised countries, while Malaysia is steadily increasing in the context of an ambitious plan for innovation-led growth (see DEGELSEGGER ET AL. 2014). The overall low levels of GERD also illustrate a significant weakness in the framework conditions for innovation in the region, stemming in part from weak taxation revenues.

A serious challenge for the region is weak infrastruc-

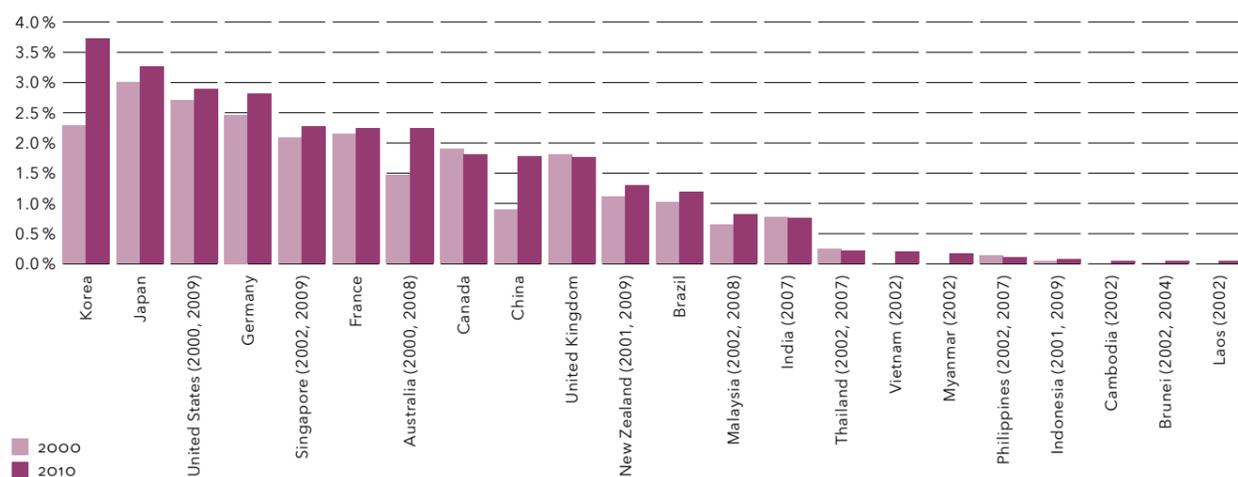


Figure 3: GERD as a share of GDP

ture. Infrastructure is a key component of framework conditions for innovation, providing the enabling framework and structural conditions for innovative processes. This is particularly weak in the poorest Southeast Asian countries, with even the most basic parts of an infrastructure missing, such as electricity and a viable road network, causing severe challenges for logistics. The indicator “internet users as a share of the population” shows better scores (ITU 2011), however, and represents a useful element in the framework conditions, as in many developing countries.

The World Bank has developed indicators for new business start-ups as part of regulatory framework conditions for innovation. The scores for 2013, covering the number of procedures needed to establish a company, number of days until completion of the procedure, cost and minimum requirements for capital, show a mixed picture for all Asian countries. Singapore stands out as the most efficient country, with the Philippines, Indonesia and Cambodia at the other end of the spectrum. Malaysia, Laos, Thailand and Vietnam are positioned mid-way down the ranking list, suggesting less bureaucracy for start-ups than in many industrialised countries, such as Japan (WORLD BANK 2013).

Overall education levels are similarly a key part of the framework conditions in a country or region. While basic, primary level education is mostly relatively common, secondary education is more mixed, and tertiary education varies significantly across the region. Public expenditure on higher education is low, as are engineering skills. Thus, the overall picture of human capital is challenging, especially for the poorer countries in the region (OECD, UNESCO).

In sum, the general framework conditions in South-east Asia are mixed and in some cases vary greatly, with the poorer countries showing framework conditions that are less conducive to innovation. Singapore stands out with generally very good, innovation-friendly conditions, and Malaysia is making great strides, as is Thailand. In addition there are significant gaps in institutional framework conditions such as institutional management and the governance of universities and research institutes, with correspondingly challenging conditions for cooperation and innovation (DEGELSEGGER ET AL. 2014, OECD IHERD undated).

## 2.4 Emerging economic integration and framework conditions

The most important process driving change in the ASEAN structure is currently taking place within the ASEAN Economic Community (AEC). It represents the key component of the next phase of regional integration, where ASEAN sets out to establish: “(a) a single market and production base, (b) a highly competitive economic region, (c) a region of equitable economic development, and (d) a region fully integrated into the global economy”<sup>1</sup>. Similar to Europe’s single market, established by the EU, the AEC strives for an integrated ASEAN economy through characteristics such as the free flow of goods, services, investments, capital, and skilled labour. The main areas of cooperation are:

- Human resources and capacity building
- Joint and mutual recognition of professional qualifications
- Closer consultation on macro-economic policies
- Trade financing measures
- Development of electronic transactions through e-ASEAN
- Integrating industries across the region to promote regional sourcing
- Enhancing private sector involvement in building the AEC.

On a more principal note, economic integration may have an effect on innovation through two mechanisms: increased competition in product (and services) markets, and more effective flow and hence utilisation of resources such as skilled labour and financial resources. Economic integration is also linked to trade, and ASEAN

is characterised by low intra-ASEAN trade, while external trade with other economic partners is generally high, with a relatively high level of integration of the ASEAN economies in global value chains (DEGELSEGGER ET AL. 2014, OECD 2013).

As ASEAN aims to shape the next level of economic integration through AEC by 2015 “to transform ASEAN into a region with free movements of goods, services, investments, skilled labour, and freer flow of capital”, the potential impact on innovation deserves a more thorough analysis than can be achieved here. Without taking the comparison too far, however, lessons can be learned from the development of the integrated European economy through the Single Market Act in recent years.

Broad lessons can be learned from a study by the Institute for Fiscal Studies commissioned by the European Commission, DG Economic and Financial Affairs. The product market reform associated with the Single Market Programme led to a reduction in average mark-up and hence increased product market competition; increased competition led to increased R&D investment in manufacturing services; the Single Market Programme may have had a negative effect on R&D expenditure in high-tech industries, although the findings are unclear; competition led to increased innovation by players already in business, but reduced incentives for new entrants; there is in general a higher effect on innovation in countries that are more advanced and closer to the technological frontier; increased R&D expenditures led to faster total factor productivity growth in manufacturing industries; competition is associated with faster productivity growth in services; the effect of labour market (de-) regulations is mixed and complex (GRIFFITH ET AL. 2006).

The impact of a single market programme will vary across industries and sectors. As mentioned above, the impact on manufacturing industries is the most obvious. This is also evident through chain reactions such as a more effective and competitive market in ICT typically having a positive effect on innovation and growth in small and medium enterprises using these services<sup>2</sup>. The European Union has thus been pushing the single market agenda in several years, most recently through the EU 2020 strategy to boost jobs and growth. An inherent part of this strategy is a European single market of innovation that includes improving framework conditions across the European economy. The impact is, however, dependent on how various countries in an integrated region implement the policies and measures intended for all. Indeed, a study by Nordic Innovation (2012) shows very clearly how national governance systems are highly variable in delivering a single market through their respective means and tools of implementing single market legislation. Greater competition and innovation pressures may have some detrimental effect on jobs and growth in the short term, but is widely

<sup>1</sup> <http://www.asean.org/communities/asean-economic-community/>

<sup>2</sup> <http://www.euractiv.com/innovation-enterprise/european-smes-need-digital-singl-analysis-512320/>

acknowledged to represent the backbone of economic development in the longer run, not least in a context of increased global competition. Thus, a Single Market Programme should be seen as a means to boost the overall competitiveness of a region in such a global context.

It is not to be expected that by 2015 the AEC will have suddenly developed into a set of framework conditions that directly impact innovation. For example, there are many elements of this integration that are weakly or indirectly linked to innovation. Further, the substance of the economic integration in ASEAN seems to be a slow-moving process based on the mutual Southeast Asian approach of non-intervention in other countries' affairs (GORON 2011). Two developments in the context of the AEC point to a shift in direction, however, and to greater commitment. First the AEC Blueprint introduced the concept of "connectivity", emphasising physical, institutional, and people-to-people links, to foster increased intensity in the integration process. This also includes greater attention to economic and social diversity between the member states, as well as focusing on the need to address the great gap in infrastructures. A "Master Plan of Connectivity" was adopted at the 2010 ASEAN summit in Hanoi, and includes a detailed list of actions. Second, the ASEAN Scorecard system was introduced, building an indicator-based approach to implementation and benchmarking as a way to improve a

joint compliance mechanism (ibid., see also DEGELSEGGER ET AL. 2014).

The ASEAN countries have for some time now experienced robust growth, and a growing middle class that is underpinning demand and, as such, also improving framework conditions for innovation. However, there is great diversity between the member countries, and with the increasing economic integration that is now taking place, countries hitherto lagging in development will have to increase their efforts in capacity building and also avoid further and increasing diversity and inequality in the region. Regarding the above mentioned capacity to implement joint "single market" policies, it is critical that the ASEAN countries also develop and implement national programmes that effectively address their individual weaknesses and shortcomings. It is true that all countries in question have developed such plans (see *figure 4*), but it is also true that the capacity to finance and effectively implement them is highly variable (see DEGELSEGGER ET AL. 2014).

## 2.5 Selected framework conditions for cooperation

Framework conditions for innovation are, as mentioned above, normally understood as the generic conditions

<b>Brunei</b>	Human capital development Private sector development Innovation	Improve private sector development to diversify beyond the hydrocarbon economy Legislate and implement competition policy Improve tertiary education attainment
<b>Indonesia</b>	Education Disaster management Social security reform	Widen access to education (in particular for low-income households) Strengthen natural disaster management and protection infrastructure Accelerate reform of the pension system to improve transparency and quality
<b>Malaysia</b>	Education SME development Taxation	Improve the quality of education Improve the productivity of SMEs Widen the tax base and improve tax administration and compliance
<b>Philippines</b>	Poverty Human capital development Governance	Create more jobs for sustainable poverty reduction Build holistic disaster risk reduction and management capacities to reduce vulnerability to natural hazards Improve agricultural productivity and transport infrastructure in Mindanao
<b>Singapore</b>	Land use SME development Education	Optimise land use and allocation by incorporating a green growth strategy Raise SME productivity through well co-ordinated assistance programme Strengthen lifelong learning to increase labour market flexibility
<b>Thailand</b>	Education Agriculture Green growth	Upgrade human capital by improving the national curriculum and teaching standards Improve agricultural productivity through modernisation and education Improve institutional co-ordination to achieve green growth
<b>CLMV</b>		
<b>Cambodia</b>	Agriculture Financial sector Tourism	Improve productivity of agriculture (in particular rice production) Improve the prudential and supervisory framework for the financial sector Develop tourism-specific infrastructure
<b>Laos</b>	Poverty Natural resource management Infrastructure	Reduce poverty through inclusive growth Improve national resource management (in particular mining) to ensure environmental sustainability Develop transport infrastructure to speed up rural development
<b>Myanmar</b>	Private sector development Human resource development Financial sector development	Create a business-enabling environment Upgrade education and anticipate future demands for skilled labour Create a stable and efficient financial system
<b>Vietnam</b>	Human capital development Private sector development Financial sector development	Increase access to education and strengthen TVET to improve the quality of human capital Ease access to credit and lower transport costs to develop the private sector Restructure the financial system to enhance the effectiveness of monetary policy

Figure 4: Medium-term challenges and responses in development plans in Southeast Asia. Sources: OECD (2013), ASEAN (2013)

external to a firm that have an impact on a firm's innovation behaviour and performance. However, innovation is not a discrete event or limited to a given firm's capability, but is a systemic process in which firms, research institutions, suppliers, customers and other players interact, compete and cooperate. This is not least true in the modern economic reality of increasing globalisation where innovators and researchers find themselves in a complex web of cooperation and even regularly exchange roles. Innovation policy and indeed framework conditions therefore also need to be understood and formulated at a transnational or global level (see e.g. POTTER 2014).

A recent contribution to policies and framework conditions for international cooperation was made by an Expert Group commissioned by the European Commission (EUROPEAN COMMISSION, DG R&I, 2012). One of their key messages was that a strategic approach to international cooperation that includes a focus on industry and innovation needs to balance two aims: strengthening international cooperation in R&D, and promoting framework conditions that underpin a global "level playing field" in innovation. Of the many recommendations and conclusions that were presented, some are highlighted here:

- The need to initiate activities that set standards and norms;
- The need to initiate key projects addressing some of the grand challenges, where a global effort is beneficial for everyone and thus acts as a framework condition;
- International cooperative projects need clear and transparent IP systems and rights with harmonised rules and practices;

Framework conditions for innovation thus include many dedicated or specialised instruments intended to increase cooperation, partnerships and ensure level playing fields. In the context of the SEA-EU-NET 2 project, three such framework conditions have been explored through workshops with participation from experts from both Southeast Asia and Europe. These three are: 1) material transfer agreements (MTA); 2) International Property Rights (IPR); and 3) public procurement for innovation.

The key message from these three cases is that international cooperation in science, technology and innovation increasingly needs to rely on institutional frameworks and agreements that are conducive to cooperation and innovation. Such frameworks are typically multilateral in character, such as treaties and protocols related to these treaties, as in the case of material transfer agreements that regulate the transfer of biological materials. Typical problems include lack of awareness and resources, as well as harmonised regulations across countries. This is particularly the case for IPR where international agreements still leave room for nationally diverse practices. To ease cooperation in innovation across nations and regions, sufficient attention needs to be paid to the harmonisation of practices and institutional framework conditions.

## 3 Material transfer agreements: a multipurpose tool for international cooperation

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### 3.1 Background

Biological materials are key components in health and agricultural research especially, and for many years they were freely exchanged. More recently, however, such materials have gained commercial value, and have also increased their role in innovation processes in the related economic sectors. Proprietary protection is therefore also becoming more important. Material transfer agreements (MTA) have been developed as a response to this challenge, and represent legal instruments that define the terms of transfer of biological materials. Typically, MTAs may also include provisions for intellectual property (IP), regulating terms for ownership and licensing, although this does not affect the main function and role of MTA. MTAs are therefore increasingly seen as important framework conditions for research and innovation in health and agricultural sciences, and innovators will need up-to-date knowledge of the state of affairs in the regions in which they intend to innovate or enter into partnerships.

In the context of the SEA-EU-NET project, an INCO-net project funded under the 7th Framework Programme, framework conditions for innovation in Southeast Asia have been a key component. While the project itself is geared towards encouraging cooperation between Southeast Asia and Europe, specific framework conditions for such cooperation need to be highlighted and discussed. In addition to intellectual property rights (IPR) and their management, this also concerns MTA. To better illuminate the main issues and promote mutual learning in this area, a workshop on MTA was held during the STI days in Bangkok in January 2014, a conference organised by the SEA-EU-NET project.

The objective of the workshop was to present and discuss the current situation concerning MTAs in the health and agricultural sciences, with a view to highlighting the overarching issues as well as specific challenges concerning the transfer of biological materials. Lessons from good practice were highlighted, in addition

to the role of MTAs in the research and innovation processes, and different experiences in public and private sectors in both the Southeast Asian and European regions. This workshop report is produced with the aim of making the results of the workshop available to interested parties in both regions. It is based on the presentations given by invited experts, and great appreciation is extended to Christoph L. Häuser of the Leibniz Institute for Research on Evolution and Biodiversity in Germany, Harry Herkutanto of the National Institute of Health Research and Development in Indonesia, Ruaraidh S. Hamilton of the International Rice Institute in Philippines, and Dominique Dessauw of the CIRAD French Agricultural Research Centre for Development. The programme of the workshop can be found in the annex to this report.

### 3.2 Material transfer agreements: definition and scope

The transfer and exchange of biological resources has taken place freely and without constraint over decades and centuries of agriculture and basic research. For example, farmers in many countries and regions have exchanged such resources (genetic material) in order to develop new types of plants and animals for specific use. This has led to a dramatic increase in biodiversity and is a sign of continuous adaptation and innovation by those concerned. In fact, agriculture has a 10,000 year history of the unrestricted exchange of genetic diversity without IP protection.

Scientists have also shared and exchanged such material freely. In fact, this has been the model of basic research where openness and access to data and research results are key to ongoing scientific efforts. The scientific landscape has changed, however, as has the global institutional landscape governing STI collaboration in general. The gap between basic and applied research is narrowing, academic institutions are pushed to be more commercial through national legislation, and the

scientific effort is to a greater extent seen as a key contribution to national economic growth and welfare, as well as a competitive advantage. There is much more intense collaboration between science and industry than before, with the implication that formal agreements need to be put in place to govern such relationships. There is also an ongoing, long-term structural change and shift in the technology cycle to a greater role for life sciences and the bio-economy, rendering the transfer and management of biological resources and materials more usual.

The exchange and transfer of genetic or biological materials may therefore become less free and more prone to legal constraints. Material transfer agreements (MTAs) have become the tool through which two parties can conduct an exchange under legally clarified conditions. In line with BENNETT ET AL. (2007), an MTA can be seen as a contractual agreement between two parties. Under this agreement, which is essentially a bailment, "a transfer of tangible property without transfer of title" is stipulated, and the recipient maintains possession for the stated period under given conditions. As was underlined in the workshop, an MTA is also a tool for traceability, as well as a means of conformity to international treaties (see below).

An MTA is thus typically seen as an agreement on bailment that is the transfer of possession of a given material without transfer of property, however, the MTA may also include provisions for the transfer or management of IP rights, either included in the MTA as such, or as an extra agreement associated with the MTA. As an MTA is typically restricted to the physical transfer of materials without any other intentions, it may also include or allow for an additional agreement on collaboration between the parties concerned. In the context of increasing international collaboration, in this case between Southeast Asia and Europe, an MTA may therefore be a crucial vehicle for governing such international collaboration.

An MTA may be very short and simple, as in the case of transfer of materials between trusted partners in the university system, or it can be very long and comprehensive, as in the case of a commercial environment. Independent of length, an MTA typically incorporates a set of normal components or articles (BENNETT ET AL. 2007):

- a preamble
- definitions
- a description of the use of the materials
- confidential information
- IP rights
- warranties
- liability or indemnification
- publication
- governing law
- termination
- signatures
- exhibits or appendices

Without going into detail about this structure, some comments on the third point are necessary. The materials in question may be quite diverse, and include, for

example, reagents, cell lines, plasmids or vectors, but may also include chemical compounds. As the overall purpose of an MTA is to avoid misunderstanding and conflict, a clear description is needed. This also concerns derivatives of the material in question that are sometimes created by the recipient. In any case, an MTA typically stipulates specific ways in which the materials can be used in research and also limitations on further transfer to third parties. An important function of MTAs is also that they help prevent the uncontrolled and unwanted distribution of biological materials.

### 3.3 Key dimensions of MTA

Material transfer agreements have been a useful vehicle to ensure smooth collaboration in basic research. Basic research, for example in biodiversity, is by nature international, and dedicated to publishing results in the open domain. It rests on a free and open access and exchange of data, biological materials, etc. for many purposes in the research process, such as verification, daily handling of biological materials, comparing and sharing materials and data between different locations and institutions, the characterisation and description of different species leading to catalogues, inventories etc., classification of organisms, and the interpretation of biodiversity patterns. Such materials are thus transported across national boundaries on a regular basis, and this exchange also hinges on long-established accepted standards for the documentation of the origin and transfer of biological specimens. In this context it should also be noted that many biodiversity rich countries do not have well developed or adequate scientific capacities and resources to document and monitor the transfer of their biodiversity. Other countries therefore hold and manage large deposits of materials, for example in research museums. In sum, MTAs in basic research represent a key tool to ensure access to materials under standards and cultures of responsibility and management of "the commons". As such, these exchanges take place between two or more partners, only with the MTA as the contractual relationship between them.

As mentioned above, the bio-economy has become all the more important, including new developments in agriculture, aquaculture, life sciences in general as well as bio-technology. This development shows even more strongly the differences in capacity and technology between countries. These differences typically give rise to a division of labour and thereby also cooperation and exchange between partners in different locations and countries. Furthermore, and in contrast to basic research, it leads to the greater participation of private sector organisations and a presence of commercial interests. Countries with great biodiversity, such as Indonesia, stand to become important partners in this division of labour. This development is no less evident in the case of clinical trials for medicine or drug development. Asia

in general represents great potential, with wide variations in disease, large patient pools, low costs compared to running clinical trials in many Western countries, and generally good support from regulatory bodies. Including both China and ASEAN, the region is home to a significant share of the world population, and is becoming known for low costs, fast execution, increasing capacities in science and education, and rapid economic growth. MTAs play an important role in this cross-border cooperation, where they not only play an academic/research purpose, but also medical, commercial and innovation purposes.

### 3.4 Policies, regulatory measures and MTAs

Although MTAs are legal documents for contractual relationships between partners, they also exist in a specific context. This context consists of several inter-related issues stemming from the need to govern sovereign interests and protect weak parties in a relationship. For example, in agriculture farmers have generated biodiversity over the years through continuous learning and improvements, with free diffusion of new species of rice. Commercial companies may wish to use this biodiversity for profit via property rights, and in effect sell the results back to farmers who then lose out on traditional access to their biodiversity. Countries with great biodiversity may also stand to lose rights and access to foreign interests, including commercial.

The national or sovereign interest in governing biodiversity led to the UN Convention on Biological Diversity (CBD<sup>3</sup>) in 1993. It recognised the sovereign rights of nations/states over their natural resources and access to biological materials became subject to national legislation. It provided for the permanent right of nations to an equitable share of the benefits arising from the use of biodiversity under their sovereignty, and the permanent right of indigenous communities to the protection of their traditional knowledge acquired over years and centuries. Thus a certain restriction to free access to biodiversity was implemented, with inter-governmental negotiations and mutually agreed terms for the allowable use and equitable sharing of benefits. MTAs have to respect the national regulations of the country of origin of the material (see also below).

A further step in international regulation in this field took place in 2001 when the UN/FAO International Treaty on Plant Genetic Resources for Food and Agriculture was adopted. It concerned 64 species and genii of plants and included a multilateral system of access and benefit sharing under the management of FAO. The text of the treaty states that: "The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and

equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security". Figure 5 presents the treaty's key aims<sup>4</sup>.

- Recognising the enormous contribution of farmers to the diversity of crops that feed the world;
- Establishing a global system to provide farmers, plant breeders and scientists with access to genetic plant materials;
- Ensuring that recipients share the benefits they derive from the use of these genetic materials with the countries from which they originated.

Figure 5: Aims of the treaty

The treaty's multilateral system for access and benefit sharing includes institutional mechanisms for the exchange of biological resources under standard conditions through standard material transfer agreements (SMTA). These are negotiated between governments and are in harmony with the CBD. As these MTAs are standard, they are efficient, help to reduce the transaction costs normally associated with exchange and transfer, and further avoid transaction costs through less involvement of lawyers and governments. They help protect national or sovereign rights by stipulating the specific use of the material, limiting or prohibiting commercial use, and restricting possible illegitimate or unacceptable claims on IP. They require recipients to make all non-confidential information from their research available, to make the material available to others in case of conservation/storage, and stipulate that further distribution of the material must be conducted under a new SMTA. There are also provisions in case of commercial use or development of products based on the material, in which case a certain share of the sales proceedings is to be paid to the Governing Body of the Treaty along with annual reports on liability of payment. This multilateral system including the SMTA induced a significant increase in the volume of transfers.

The CBD initiated a number of activities, and it led in 2010 to the Nagoya Protocol on Access and Benefit Sharing (see figure 6). This was intended to create greater legal certainty and transparency for both providers and users of genetic resources, through more predictable conditions for access to genetic resources, as well as ensuring the sharing of benefits for both parties. These benefits may be of monetary character, such as access fees, up-front payments, royalties, license fees or special fees to be paid to trust funds supporting conservation,

<sup>4</sup> <http://www.planttreaty.org/content/overview/>

or non-monetary benefits such as sharing of research results, easier cooperation and collaboration, participation in product development, education and training, admittance to facilities and technologies, and institutional capacity building.

*The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising From Their Utilization to the Convention on Biological Diversity is an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components. It was adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting on 29 October 2010 in Nagoya, Japan. The Nagoya Protocol will enter into force 90 days after the date of deposit of the fiftieth instrument of ratification.*

Figure 6: The Nagoya Protocol<sup>5</sup>

International regulation through the Nagoya Protocol stipulates certain guidelines and conditions for access to genetic or biological resources. For example, access should be subject to the prior informed consent of the party or country providing the resources (country of origin of the resources or a party that has acquired the resources in accordance with the Convention on Biological Diversity). So-called 'traditional knowledge' (TK) also plays an important role: the knowledge gained by local communities through constant development and exchange. Access to this knowledge is also subject to similar procedures, but with the participation of the holders of such knowledge. Thus, benefits acquired from the use of biological resources are supposed to be shared in a fair and equitable way through mutually agreed terms. These benefits may also be non-monetary. For example, the French Centre for Agricultural Research for Development (CIRAD) promotes advantages such as research collaboration, training, transfer of technology, co-publication, and co-ownership of results, and thus the regulatory mechanisms for access and benefit sharing (ABS) may be useful tools to stimulate research cooperation, including across countries.

An MTA can be launched without reference to ABS induced by the Convention or the Nagoya Protocol, however, as more than 30 countries are party to these

<sup>5</sup> <http://www.cbd.int/abs/>

treaties, there are several advantages related to including ABS-components in the MTA. There is a greater degree of security, as the legal basis for the MTA increases so that legal sanctions may be avoided, the capacity to obtain a Certificate of Origin to publish results increases, IPR may be easier to agree, the ethical basis of the MTA will be ensured, and confidence and reputation may have a better basis.

### 3.5 The role of MTA in STI cooperation

International cooperation in STI depends on long term perspectives, extensive knowledge sharing and willingness to sustain high risks. Basic research cooperation between universities or public labs without commercial interests may be based on simple MTAs, also including conditions of ABS. A number of non-monetary benefits may accrue to the providing party that are highly beneficial in the long term. MTAs help create a negotiated basis for long-term partnerships, and represent a flexible tool to include IPR sections if deemed necessary. The inclusion of guidelines from international treaties creates legal certainties with clear definitions of how "utilization" of biological resources should be understood. Hence MTAs, including provisions for ABS and IPR, provide increased incentives for international collaboration in fields where biological resources are exchanged. A key challenge in this regard is to avoid access regulations that are too restrictive and will impede international collaboration in research.

A specific example of the value of international cooperation in the exchange and transfer of biological resources is the case of CGIAR<sup>6</sup> (Consultative Group on International Agricultural Research). This network of research institutes engages in wide-ranging benefit-sharing, and estimates show that US\$1 invested in CGIAR research leads on average to US\$9 per year in benefit to developing countries. Another example is that an IRRI (International Rice Research Institute, partner in CGIAR) project in Laos in the period 1990-2005 led to an increase in annual Lao GDP that was seven times higher than the total investment over fifteen years. The conclusion from CGIAR is that restricting the exchange of biological resources hinders the development of developing countries.

While MTAs are on the one hand private, voluntary agreements between parties, and on the other hand subject to international treaties, they are also subject to national regulation and rules. Some countries, such as Switzerland and Germany, have official free access to biological resources. Other countries have distinct national regulations, such as India and Brazil. Indonesia has a national regulation on MTA for access to biological resources. Thailand's regulation includes a distinction

<sup>6</sup> <http://www.cgiar.org/who-we-are/>

<sup>3</sup> <http://www.cbd.int/>

between commercial and non-commercial research, with more restrictive regulation in the case of commercial research and innovation. The European Union adopted a regional regulation in 2014, but with application in national legislation by member states. France introduced legislation in 2014, and some research organisations (CIRAD, INRA and IRD) adopted voluntary rules for access and transfer of biological resources that serve as reference points in France.

To ensure the best possible basis for cooperation and MTAs, the Convention on Biological Diversity has included a list of national contacts or National Focal Points. This constitutes a training module and includes dedicated contacts in the various countries on the specific areas related to the convention<sup>7</sup>.

Overall, the role of MTA in international collaboration in research is important. With the growing importance of international collaboration and cooperation as such, and indeed also in the life sciences and related areas where genetic and biological resources are necessarily exchanged and transferred, MTA is also growing in importance. This is the case in normal, inter-institutional cooperation across countries, such as participation in the European Framework Programmes (now the Horizon 2020). With the growing globalisation of R&D, with commercial partners engaged in innovation and commercialisation, such as in the development of drugs, effective institutional instruments are needed to reduce transaction costs, increase confidence, and ensure benefit sharing. MTAs, either simple ones as in the case of basic research, or more extensive and detailed, are key to this development.

### 3.6 Conclusions

There are many reasons that MTAs are growing in importance. The informal exchange between farmers building upon traditional knowledge is less typical today than it has been previously. Knowledge creation and innovation increasingly takes place in the context of organised research and research cooperation across countries. In this process, the transfer of biological or genetic materials is not only commonplace, but growing in volume and importance in line with the increasing importance of the bio-economy and attention paid to biodiversity, climate change, food security and other challenges. The frontier between basic and commercially oriented research is becoming blurred, and the global organisation of, for example, drug development induces complex divisions of labour in clinical trials with implications for the transfer of genetic resources.

Today MTAs cannot be understood without the context of international treaties and national regulations. On the one hand these are necessary to ensure that developing countries, typically the providers of materials and

<sup>7</sup> <http://www.cbd.int/information/nfp.shtml>

biodiversity, can benefit from the exchange and transfer of biological materials. On the other hand they may amount to restrictions impeding research and development. This is a continuous balancing act. One of the purposes of these international treaties is to create conditions to facilitate access to genetic resources. MTAs are a tool for achieving this aim.

The future of MTAs and the treaties mentioned in this report should be carefully assessed. For example new developments in bio-informatics, modelling and computing may render physical transfer of materials less relevant. If commercial companies can develop new plant types or drugs in the laboratory without the use of these materials, the national value of biodiversity in developing countries may decrease, and it may become much more difficult for such countries to ensure their fair share of benefits from original biological resources. Still, MTAs are highly valuable contractual mechanisms that create incentives for international cooperation and reduce transaction costs and uncertainty.

The Southeast Asian countries represent a huge share of the planet's biodiversity. These countries are also in the process of continuous integration, with the next step to be taken in 2015, when the ASEAN Economic Community's single market is to be launched. This will encourage more open flow of capital, goods, services and people, and represents a change in framework conditions for innovation and economic development. MTAs and international treaties will still provide a stable set of conditions and regulations for STI cooperation, and appropriate contexts for IPR protection. Not least, as a standard mechanism the SMTA will be helpful in this new integrated environment.

## 4 Intellectual property rights in Southeast Asia

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### 4.1 Introduction

Intellectual property rights (IPR) is seen as an important element of framework conditions in Science, Technology and Innovation (STI). IPR is a legal concept, referring to exclusive rights that are given to persons over creations of the mind, specifically, the rights over the use of an owner's creation for a certain period of time<sup>8</sup>. Under IP laws, common types of IPR include patents, trademarks, trade secrets, copyright etc.<sup>9</sup>. IPR not only provides incentives for inventors, but also contributes to facilitating access to knowledge and inventions, stimulating innovation by resolving information asymmetries, assisting international competitiveness and trade, and enhancing opportunities for access to finance.<sup>10</sup>

The Association of Southeast Asian Nations (ASEAN) is an attractive market, being one of the fastest-growing economies in the world. ASEAN is also in a process of rapid development of its STI capacities and to this end, a sound protection mechanism for IPR is of crucial importance. In recent years, the ASEAN Member States (AMSs) have become aware that the creation, commercialisation and protection of IPR can be a major driver of regional economic growth and social development. However, the IPR infrastructure and expertise on IP protection varies a great deal among different AMSs. Such differences have implications for the nature and intensity of cooperation, not only within ASEAN, but also between ASEAN and the international markets. The IPR systems in ASEAN still seem to be underdeveloped and there are insufficient IP-related skilled and experienced human resources. Thus, efforts have been made in the region to protect IPR via improving current IPR protection poli-

cies, exchanging policy lessons learned by AMSs from signing international treaties, and implementing a series of programmes<sup>11</sup>.

In the context of the *SEA-EU-NET 2: EU-ASEAN S&T Cooperation to Jointly Tackle the Societal Challenges* project funded under the Seventh Framework Programme of the European Commission, a workshop entitled "Intellectual property rights in Southeast Asia" (IPR workshop) was organised during the ASEAN-EU STI Days 2014 in Bangkok in order to identify and support cooperation for the framework conditions in STI and effective private-public partnerships. The workshop featured presentations on the ASEAN IPR SME Helpdesk project with major findings and an overview of the IPR framework conditions in AMSs; provision of expert advice on producing IP from research activities in the ASEAN and good practice examples of supporting researchers of IPR issues in different cases; and a panel discussion including representatives from both private and public sectors.

This chapter will summarise and reflect on the points presented during the IPR workshop and desk research made available to interested stakeholders. It is based on the presentations and a panel discussion given by invited experts. In this context we are grateful for the contributions of: Jakub Ramocki, IP Business Advisor, ASEAN IPR SME Helpdesk; Nyunt Tin, ASEAN IPR SME Helpdesk; Reynaldo Garcia, Technology Transfer and Business Development Office, University of the Philippines System; Thavirap Tantiwongse, EABC Working Group on Healthcare & Pharmaceuticals; and Anil Kumar Anal, Food Engineering and Bioprocess Technology, School of Environment and Resources, Asian Institute of Technology. The programme of the IPR Workshop can be found in *annex 2*.

<sup>8</sup> World Trade Organization: *What are intellectual property rights?*, [http://www.wto.org/english/tratop\\_e/trips\\_e/intel1\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/intel1_e.htm)

<sup>9</sup> Wikipedia: *Intellectual property*, [http://en.wikipedia.org/wiki/Intellectual\\_property/](http://en.wikipedia.org/wiki/Intellectual_property/)

<sup>10</sup> OECD (2014): *National intellectual property systems, innovation and economic development: with perspectives on Colombia and Indonesia*

<sup>11</sup> ASEAN cooperation in intellectual property rights, [http://www.aseanip.org/ipportal/index.php?option=com\\_content&view=article&id=168:asean-cooperation-in-intellectual-property-rights&catid=218&Itemid=653](http://www.aseanip.org/ipportal/index.php?option=com_content&view=article&id=168:asean-cooperation-in-intellectual-property-rights&catid=218&Itemid=653)

## 4.2 Key issues in the current setting

Since the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) negotiations of trade liberalisation in 1994, IPR has become a more important aspect of science, technology and innovation development, as well as economic growth, as it affects both innovation and foreign direct investment (FDI) and trade<sup>12</sup>.

Developed countries have been keen on protecting their IPR; however, as it is a fairly new concept to developing and less-developed countries and regions, the relevant IPR policies are still under development and/or at an early stage of implementation. Several issues and challenges exist which affect SMEs and the science and technology community in protecting their IP. This is also applicable to many of the AMSs.

According to the ASEAN IPR SME Helpdesk, one of the most common IPR issues in the ASEAN can be a lack of awareness of the importance of protecting IP. This can result in a lack of enforcement authorities, and lack of efficiency and timeliness in the IP registration system (the patent application process takes about 5–7 years in the ASEAN region), lack of resources (organisational structure, legal, human and other support), counterfeiting (low deterrence of fines), first-to-file jurisdiction in case of trademarks and designs, and lack of protection of trade secrets<sup>13</sup>.

In addition to inadequate regulations and awareness, several international IP violations took place in the ASEAN, causing some of the AMSs to be listed on the United States' Special 301 Report "Watch List"<sup>14</sup>. Indonesia, the Philippines and Vietnam were included in the 2013 report<sup>15</sup>, while Malaysia, which had been on the list since 1989, was removed in 2012.

Research activities in ASEAN have suffered due to insufficient trust and investment from the international business community, as many universities and research and development institutions (RDIs) receive significant amounts of funding from international companies. According to the National Development Planning Agency of Indonesia, many international companies do not have R&D activities in Indonesia due to the lack of trust in Indonesia's S&T infrastructure<sup>16</sup>.

In many universities and RDIs, a systematic, organised structure providing legal support/guidance is missing, meaning that there is a lack of awareness about the protection available for research results such as publi-

cations, presentations, or the electronic distribution of materials. In addition, very limited financial support and incentives are available for researchers, scientists and innovators to apply for IPR.

The ASEAN as a whole does not have uniform laws and procedures for acquiring IPR, which means that the IPR regulations differ from country to country. For example, Myanmar does not accept IPR from any other country. These issues result in inadequate or ineffective IP strategies, difficulties for RDIs and companies in the selection of the right business partner for technology transfer, a weak link between innovative and scientific ideas and the market, and the theft of IP assets by local players, which impedes AMSs and their STI communities in fully exploiting their innovation potential.

Interestingly, there is a counter argument about the effect of IPR protection. This suggests that IPR protection may lead to a monopoly of power for patent holders, reducing the incentive for innovators and limiting the diffusion of knowledge<sup>17</sup>. Although little evidence supports this argument, a proper evaluation procedure for the effects of IPR protection is advisable.

## 4.3 IPR policies and initiatives

This section provides an overview of IPR policies and initiatives in the ASEAN at regional level, followed by some specific examples at country level.

### 4.3.1 IPR policies

In December 1995 the ASEAN Framework Agreement on Intellectual Property Cooperation was signed with the goal of fostering closer cooperation in the field of intellectual property and related fields in order to achieve realisation of the ASEAN Free Trade Area and prosperity among each Member State<sup>18</sup>.

The ASEAN Working Group on Intellectual Property Cooperation (AWGIPC) was established in 1996, aiming to develop, coordinate and implement all IPR-related regional programmes and activities in ASEAN. In 2004, the ASEAN IPR Action Plan 2004–2010 was launched in order to accelerate and expand IP asset creation, commercialisation and protection, to improve the regional framework of IPR policies and institutions, and to promote IPR cooperation and dialogue in the region<sup>19</sup>. Building on past accomplishments, the AWGIPC has prepared a new work plan (ASEAN IPR Action Plan 2011–2015) that aims to transform ASEAN into an

innovative and competitive region by utilising IPR for AMSs and ensuring that the region plays an active role in the international IP community<sup>20</sup>.

- A balanced IP system that takes into account the varying levels of development of Member States and differences in institutional capacity of national IP Offices to enable them to deliver timely, quality, and accessible IP services to promote the region as being conducive to the needs of users and generators of IP.
- Developed national or regional legal and policy infrastructures that address evolving demands of the IP landscape and AMSs participate in global IP systems at the appropriate time.
- The interests of the region are advanced through systematic promotion for IP creation, awareness, and utilization to ensure that IP becomes a tool for innovation and development; support for the transfer of technology to promote access to knowledge; and with considerations for the preservation and protection of indigenous products and services and the works of their creative people in the region.
- Active regional participation in the international IP community and with closer relationships with dialogue partners and institutions to develop the capacity of Member States and to address the needs of stakeholders in the region.
- Intensified cooperation among AMSs and increased level of collaboration among them to enhance human and institutional capacity of IP Offices in the region.

Figure 7: Specific strategic goals of the ASEAN IPR Action Plan 2011–2015

Compared to its previous version (2004–2010), the current version focuses more on building a balanced IPR system that takes into account the various levels of development of Member States and the differences in capacity of IPR services. Instead of trying to formulate a single set of laws and policies, the new work plan targets the design of a harmonised regional IPR system by integrating a higher level of cooperation via the implementation of joint programmes and activities<sup>21</sup>. Furthermore, the new work plan highlights the importance of intensifying cooperation between AMSs and in the

international IP community. The new action plan also clearly gives targets for ASEAN to become an active player in global IP systems.

At a national level, the ASEAN IPR policies vary greatly between different AMSs. In the Philippines, the Philippine Technology Transfer Act was signed and implemented in 2010 in order to enhance the transfer of technology. This act contains a detailed set of legislation and plays an important role in IPR protection, focusing on managing conflicts of interest and public (open) access policy. Based on this, the University of the Philippines, which holds the largest volume of IP of all universities in the country, underwent a comprehensive revision of its IP management system, focusing more on consultancy, access to dissertations and training for spin-out companies<sup>22</sup>. It is worth mentioning that there is a clause in the act, giving the ownership of certain IP to the government in cases of national interest or importance, which seems to be essential for a diffusion-oriented policy where IP can be transacted for a low cost or even for free. In April 2003, Singapore published an "IP Hub Master Plan" with several strategies recommended, such as developing a vibrant IP marketplace by attracting top IP intermediaries, facilitating IP transactions by increasing access to IP financing, and enhancing the tax environment to attract and anchor IP portfolios<sup>23</sup>.

### 4.3.2 IPR initiatives

The EU-ASEAN Project on the Protection of Intellectual Property Rights (ECAP III) was approved by the European Union and the ASEAN Secretariat in a financing agreement signed in 2009, aiming to integrate ASEAN countries into the global economy and world trading system, specifically to create harmonised systems for IPR creation, protection, administration and enforcement in ASEAN region<sup>24</sup>. The ECAP III project has two phases, with Phase I implemented in 2010 and 2011 and Phase II during 2013–2015. The current Phase II focuses on the areas of trademarks, industrial designs, geographic indications and IPR enforcement, providing a series of coordinated activities at the regional level.

Additionally, the ASEAN IPR SME Helpdesk, an online portal<sup>25</sup>, was launched in 2013. It is a project co-funded by the European Commission's Directorate-General for Enterprise and Industry under the Competitiveness and Innovation Framework Programme (CIP). It targets support to European SMEs going into the ASEAN market with IPR related issues. It offers confidential, free of charge advice, as well as training and online resources.

<sup>12</sup> The strategic use of intellectual property to enhance competitiveness in select industries in ASEAN, WIPO-ASEAN study, [http://www.wipo.int/edocs/pubdocs/en/intproperty/953/wipo\\_pub\\_953.pdf](http://www.wipo.int/edocs/pubdocs/en/intproperty/953/wipo_pub_953.pdf)

<sup>13</sup> <http://www.asean-iprhelpdesk.eu/>

<sup>14</sup> An annual review which provides a list of countries with insufficient IPR protection or enforcement

<sup>15</sup> 2013 Special 301 Report, <http://www.ustr.gov/sites/default/files/05012013%202013%20Special%20301%20Report.pdf>

<sup>16</sup> Trienes, R., et al. (2014): *Indonesia*, in: Degelsegger, A., et al. (eds.): *Spotlight on: stimulating innovation in Southeast Asia*

<sup>17</sup> [http://www.unido.org/fileadmin/user\\_media/Publications/Research\\_and\\_statistics/Branch\\_publications/Research\\_and\\_Policy/Files/Working\\_Papers/2006/WPjuly2006%20IPR\\_rights\\_in\\_technology\\_transfer.pdf](http://www.unido.org/fileadmin/user_media/Publications/Research_and_statistics/Branch_publications/Research_and_Policy/Files/Working_Papers/2006/WPjuly2006%20IPR_rights_in_technology_transfer.pdf)

<sup>18</sup> ASEAN Framework Agreement on Intellectual Property Cooperation, <http://www.aseanip.org/ipportal/ASEANFrameworkAgreementonIntellectualPropertyCooperation.pdf>

<sup>19</sup> ECAP III: ASEAN IPR Action Plan 2004–2010, <http://www.ecap-project.org/resources/asean-ipr-action-plan-2004-2010/>

<sup>20</sup> ECAP III: ASEAN IPR Action Plan 2011–2015, <http://www.ecap-project.org/resources/asean-ipr-action-plan-2011-2015/>

<sup>21</sup> Ibid.

<sup>22</sup> Technology Transfer and Business Development Office (2014): *Midterm report 2011–2013: accomplishments of the TTBD*

<sup>23</sup> Intellectual Property (IP) Hub Master Plan, <http://www.ipos.gov.sg/Portals/0/Press%20Release/IP%20HUB%20MASTER%20PLAN%20REPORT%202%20APR%202013.pdf>

<sup>24</sup> ECAP III: *ECAP III Phase II*, <http://www.ecap-project.org/about/ecap-iii-phase-ii/>

<sup>25</sup> ASEAN IPR SME Helpdesk: <http://www.asean-iprhelpdesk.eu/?q=en>

The helpdesk has organised a series of training events both in the ASEAN and in Europe. For instance, a workshop "How to Avoid Common IP Strategy Mistakes in Indonesia" took place in Jakarta, on 19 November 2013. In December, another workshop "IP Enforcement: Challenges Faced and New Enforcement Functions of the IPO in the Philippines" was held in Manila. Several webinars on various topics have been implemented, including "Protection of Online IPR in Southeast Asia", "Intellectual Property Rights Protection Strategies in the Philippines for EU SMEs", "How to Effectively Protect Your IP While Doing Business in Malaysia" etc.

The AWGIPC also launched an online portal<sup>26</sup> (ASEAN Intellectual Property Portal) in 2013 which contains comprehensive information on ASEAN IPR systems and IP-related data. It also includes the web links to different ASEAN regional IP offices, enabling stakeholders to access relevant information on specific AMSs. In addition, the ASEAN Intellectual Property Portal is also cooperating with several IP offices outside ASEAN such as the Japanese Patent Office (JPO), State Intellectual Property Office of the PRC (SIPO), and the European Patent Office (EPO).

The ASEAN Patent Examination Co-operation (AS-PEC) programme was launched in 2009 by Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand, and Vietnam, as one of the programmes to achieve one of the five strategic goals of the ASEAN Intellectual Property Rights Action Plan 2011-2015 mentioned above. It offers sharing of search and examination results amongst the participating ASEAN IP Offices, allowing a faster and more efficient patent granting process<sup>27</sup>.

In addition to regional initiatives and organisations, each country also has their own initiatives and organisations which support IPR protection, such as the Intellectual Property Corporation of Malaysia (MyIPO) with its Intellectual Property Training Centre (IPTC) offering capacity building programmes in IP and IPR<sup>28</sup>; or the IP Intermediary (IPI) in Singapore that aims to support SMEs in the country by matching them with suppliers and providing solutions to technologies and technology-based problems; in Indonesia, the IPR support programmes exist in various fields. In education, the IPR support programme aims to increase the number of patents from universities by providing support funding for patent registrations<sup>29</sup>. In health, the IPR support programme provides necessary support for coordinating and assessing

the research results which can potentially be registered for patents or other types of IPR<sup>30</sup>.

To ensure IPR has a direct relationship with international commercialisation and STI cooperation, many countries have emphasised it via growing public support in the form of tax incentives. The Malaysian government allows income tax exemption (Pioneer status) for companies providing R&D services and an Investment Tax Allowance (ITA) for qualifying R&D capital expenditure; In the Philippines, R&D spending relevant to a trade, business or a profession is generally 100% deductible. Singapore offers up to 400% tax deduction for qualifying R&D expenditure whilst Thailand offers 200% deduction for eligible expenditure on R&D activities by approved Thai R&D Service Providers; and Vietnam also has tax exemptions or reduced tax rates for companies performing R&D activities<sup>31</sup>.

#### 4.4 The role of IPR in STI cooperation

IPR protection facilitates technology and knowledge transfer and FDI, which eventually leads to STI cooperation between nations.

In response to the growing trade in information and innovation, the World Intellectual Property Organisation (WIPO), one of the 17 specialised agencies of the United Nations, was created in 1967 "to encourage creative activity, to promote the protection of intellectual property throughout the world"<sup>32</sup>. WIPO has been very active providing intellectual property services, policy, information and cooperation involving a wide range of stakeholders and countries. Regional bureau assistance enhances national capacities to more effectively use IP for development, allowing a smoother STI cooperation between nations. Some examples of how ASEAN has benefited from their services include the creation of the ASEAN Framework Agreement on Intellectual Property Cooperation in 1995 (mentioned in section 3.1); and various workshops held for the ASEAN region, such as the "WIPO-ASEAN Regional Seminar on the Strategic Use of Intellectual Property for Development" held in Bangkok in Nov. 2006.

TRIPS, an international agreement administered by the World Trade Organisation (WTO), was also negotiated at the end of the Uruguay Round of the GATT in 1994. This agreement sets the minimum standards for forms of IP regulations and has raised awareness of IPR in ASEAN, which further enhanced ASEAN regional and international STI cooperation.

The ECAP III project (Phase II) has already been taking action in fulfilling its goals regarding IPR cooperation. One specific example is the on-the-job training sessions on the Madrid System (International Registration of Marks) in Indonesia, Thailand and Brunei Darussalam in July 2013. The number of international patents gained is also a good indicator of how IPR affects international STI cooperation as it reveals the innovation process within and outside a country.

ASEAN patent cooperation at international level can be seen through the participation of some of the AMSs becoming signatory members of the Patent Cooperation Treaty (PCT). This is an international patent law treaty concluded in 1970 which provides a unified procedure for filing patent applications. Starting from Vietnam, which became a member from March 1993, seven more AMSs have joined: Singapore since February 1995; Indonesia since September 1997; the Philippines since August 2001; Lao People's Democratic Republic since June 2006; Malaysia since August 2006; Thailand since September 2009; and Brunei since July 2012.<sup>33</sup>

International patent filing activities can be seen through the gradual increase of U.S. patents granted to AMSs (figure 8) as they attempt to internationalise the IP registration of their innovation. The EU's STI cooperation with ASEAN can also be seen: In 2010, European Patent Office (EPO) Member States accounted for around 30% of patent filings in the ASEAN region<sup>34</sup>.

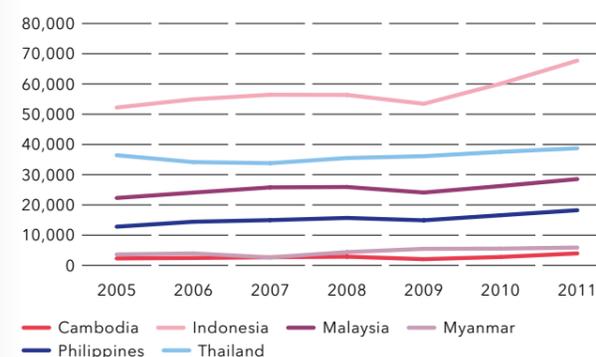


Figure 8: Number of U.S. patents granted distributed by year  
Source: U.S. Patent and Trademark Office (2012)

Taking an example from a specific AMS, the Intellectual Property Office in Singapore (IPOS) has published a ten year master plan to develop Singapore as a global IP hub in Asia. It deals with IP transactions and management, quality IP filings and IP dispute resolution. According to this plan, Singapore would contribute tremendously in developing IPR not only in the ASEAN but also in the international STI community.<sup>35</sup>

#### 4.5 Conclusions

With the increasing recognition of IPR as a powerful tool for STI development that will result in more rapid economic growth and social development, ASEAN, as is the rest of the world, is making efforts to harness, protect and promote IPR. The booming of the ASEAN market continues to attract European enterprises to invest in ASEAN and, in order to create a more regulated market that would encourage FDI to the region and enhance the overall competitiveness of the ASEAN companies, action needs to be taken to ensure IPR protection and enforcement between trading partners.

One of the main IPR related issues discussed in the ASEAN is the lack of awareness about IP protection. Realising the great importance of IPR in international trading and STI cooperation, governments in the AMSs have launched and implemented IPR policies and initiatives, allowing ASEAN increasing involvement in the global STI community.

In the process of developing a benign IPR system, ASEAN needs to take into account the various needs and capacities of individual AMSs. Different countries in ASEAN have their own IPR policies and strategies, which makes it difficult to launch and implement a single uniform policy or law for the entire region. However, it is still important to consider a higher level of regional IPR cooperation that can strengthen the links between AMSs and their IPR systems. Keeping a sound track of the global IPR environment and following the lessons and good practices of IP protection learned by the international community is highly recommended, while considering carefully the adaptation required at the regional/national level.

<sup>26</sup> ASEAN Intellectual Property Portal: <http://www.aseanip.org/>

<sup>27</sup> ASEAN Secretariat News (July 2012): *ASEAN enhances ASEAN Patent Examination Co-operation Programme*, <http://www.asean.org/news/asean-secretariat-news/item/asean-enhances-asean-patent-examination-co-operation-programme/>

<sup>28</sup> MyIPO: <http://www.myipo.gov.my/government-about-iptc/>

<sup>29</sup> Panduan Pengusulan Program Unggulan Berpotensi HKI (UBER-HKI): <http://www.dikti.go.id/files/Diktendik/Dosen/PANDUAN%20UBER%20HKI%202012.pdf>

<sup>30</sup> Laporan Tahunan 2012: *Badan Penelitian Dan Pengembangan Kesehatan*, <http://www.litbang.depkes.go.id/sites/download/LAPTAH/LAPTAH%20BADAN%20LITBANGKES%202012.pdf>

<sup>31</sup> *2013 Asia-Pacific R&D incentives guide*

<sup>32</sup> *Convention establishing the World Intellectual Property Organization (signed at Stockholm on July 14, 1967)*, preamble, second paragraph, [http://www.wipo.int/treaties/en/text.jsp?file\\_id=283854](http://www.wipo.int/treaties/en/text.jsp?file_id=283854)

<sup>33</sup> [http://www.wipo.int/pct/en/pct\\_contracting\\_states.html](http://www.wipo.int/pct/en/pct_contracting_states.html)

<sup>34</sup> <http://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1330&context=pilr>

<sup>35</sup> <http://www.ipos.gov.sg/News/Readnews/tabid/873/articleid/227/category/Press%20Releases/parentId/80/year/2013/Default.aspx>

## 5 Public procurement for innovation

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### 5.1 Introduction

Innovation has for some time been at the top of policy maker's agendas, as it is seen as key to meeting the economic, societal and environmental challenges of our time. Innovation policy is therefore increasingly seen as key to both economic growth and to our capacity to tackle grand or global challenges. The main thrust of innovation policy is on the supply side, with investments in R&D and human capital, as well as various means to stimulate technology transfer, as the main ingredients. However, the demand side of policies are becoming more relevant, and public technology procurement (PTP)–or public procurement for innovation (PPI, which will be the term used throughout the document)–is the main candidate. Currently, demand side policies in general, and PPI/PTP specifically, are intensely debated in Europe.

PTP/PPI is, in brief terms, a policy through which a government places an order or tender for the fulfillment of (technological) functions, typically performance-related, within a given period of time. PTP/PPI is thus intended to boost innovative capacity and ensure the introduction of a new standard of performance in a given area, such as energy efficiency. Governments may in this case exploit their organised purchasing power to create a demand, either for their own use or for widespread use in the economy or society at large. ASEAN countries may find increasing utility in this type of innovation policy instrument to enhance their overall innovation capacity and help address grand challenges.

PPI is a type of public-private partnership which can stimulate the best of both sectors: the government and private companies. PPI has been one of the most effective demand-side measures for decades.

In terms of the characteristics of the procurer, PPI can be divided into Direct PPI and Catalyst PPI. When considering the novelty of the product and its position in the innovation cycle, there is developmental PPI and adaptive or diffusion-oriented PPI. The following table demonstrates the matrix of these two dimensions of PPI:

	Developmental PPI	Adaptive/Diffusion PPI
Direct PPI	High risks, high rewards (potential lead market development)	Easiest and most often encountered type
Catalytic PPI	High risks, high rewards (potential lead market development)	Relatively easy process with coordination problems

Figure 9: Matrix of PPI dimensions<sup>36</sup>

PPI has the following functions: 1) stimulate innovation by creating a demand for innovative products or services; 2) help innovative firms bridge the pre-commercialisation gap for their innovative products and services by awarding contracts for pre-commercial innovations (i.e. first sales of technology); 3) help achieve the critical mass needed to bring prices down and be competitive; and 4) contribute to facilitating access to private third-party funding (The Innovation Policy Platform, European Commission)<sup>37</sup>.

PPI has been appearing in the innovation agendas of many OECD countries, and is becoming a more broadly used component of the innovation policy agenda in the EU. Its potential is great, demonstrated by the fact that overall public procurement accounts for about 19% of EU's GDP<sup>38</sup>. It is therefore important to address the current status of PPI in both the EU and ASEAN regions as it continues to affect the innovation and cooperation of both regions.

This report will discuss the role of PPI in innovation, explore the key issues in the current setting both in Europe and ASEAN, including the policy/regulatory issues; explore successful cases both in the EU and ASEAN (Malaysia); and discuss the possibility of cooperation between Europe and the ASEAN in PPI.

<sup>36</sup> Tsipouri, L. (2012): *Policy Brief No. 2 - Public procurement of innovation*

<sup>37</sup> <https://innovationpolicyplatform.org/content/public-procurement-innovation/>

<sup>38</sup> <http://www.innovation-procurement.org/about-ppi/>

The document summarises the opinions and discussions of experts and invited partners at the SEA-EU-NET 2 workshop on public procurement held on June 25th, 2014 in Paris, France, along with relevant desk research performed. The objective of the workshop was to define and clarify the conditions for using PTP/PPI in the innovation policy portfolio, explore key lessons from using it in the European and ASEAN context, and illuminate further options for developing the instrument and associated learning and transnational cooperation. It served as a part of a wider activity to address framework conditions for innovation in ASEAN and help improve the foundations for international cooperation between the two regions.

The contributions of the following attendants are highlighted and acknowledged: Svend Remøe, Special Advisor at the Research Council of Norway; Jakob Edler, Professor and Director at Manchester Centre for Innovation Research; Max Rolfstam, Associate Professor at Ålborg University; Khairul Naim Adham, Administrative and Diplomatic Officer from the Government of Malaysia; Lena Tsipouri, Professor of the University of Athens; Bertrand Wert, Policy Officer In Innovation Policies, DG Enterprise and Industry (in absentia, presentation given by Svend Otto Remøe); and those that participated in the round table discussion. A complete list of speakers can be found in the workshop agenda in *annex 3*.

### 5.2 The role of PPI in innovation

It is important to understand supply and demand measures of innovation in order to recognise the need for PPI. There is a long history of policies designed to boost the supply side of the innovation process. For example, venture capital (VC) finance, tax incentives, research and development funding, training, grants, advisory services and incubator and science parks have all been supported to stimulate the supply side of the innovation process.<sup>39</sup>

The demand-side of innovation, which was for some time of less importance, is now becoming more relevant and increasingly important. It may further encourage innovation by creating demand for the development of new products, processes or services, thus allowing its absorption, adoption, and promoting its use and acceptance. In the innovation process, users are seen as key, and early users typically play an important role. For suppliers such as technology intensive firms, poor demand conditions will represent the main hindrances to innovation.

Organised demand may be generated through PPI, with the state authority or government creating the demand and purchasing the innovation. PPI directly involves governments, policies and regulations. It can

<sup>39</sup> Edler, J., Georghiou, L. (2007): *Public procurement and innovation: resurrecting the demand side*

stimulate learning as well as the emergence and uptake of new organisational and technological capabilities by creating innovation-conducive environments<sup>40</sup>.

Innovation-oriented public procurement can also support innovation policy beyond encouraging the production of new products by, for example, supporting knowledge creation via R&D procurement<sup>41</sup> or supporting the market diffusion of already existing technologies<sup>42</sup>.

Empirical evidence increasingly supports the role of demand side policies and PPI, including the survey conducted in the context of the UNDERPIN project–Understanding Public Procurement<sup>43</sup>, which concerns the PPI policies of the UK government, followed between June and July 2011 with approximately 800 responding organisations. Sixty-seven per cent of the respondents reported that innovation occurred as a result of public procurement or bidding. It was reported that public procurement does drive innovation, but that much of this innovation is hidden and various problems exist. Additional details are discussed in the following section.

### 5.3 Key issues in the current setting

This section focuses on the key issues currently being discussed regarding PPI, based on the presentations from the speakers and desk research performed by the project team.

PPI has been high on the innovation agenda in many of the EU countries, however, Trendchart 2012<sup>44</sup> reports its weak implementation and that PPI is faced with several challenges. A recent survey by the University of Manchester (the UNDERPIN project) illustrates how innovators or users of PPI assess the instrument.

As shown in *figure 10*, too much emphasis on price is perceived as being the biggest barrier to innovation in procurement–indicated by 453 survey participants (around 60%), followed by lack of interaction with the procuring body–indicated by 344 survey participants (around 46%), and variants not allowed–indicated by 291 survey participants (39%). It was also found that other factors, such as issues with risks, specifications, contracts and IPR, can be barriers to PPI.

A report by the Procurement of Innovation Platform<sup>45</sup> also gives some reasons why PPI is not being more widely used across Europe at a larger scale. These reasons

<sup>40</sup> Lember, V., Kettel, R., Kalvet, T., et al. (2014): *Public procurement, innovation and policy*

<sup>41</sup> Edquist, C., Zabala-Iturriagoitia, J. M. (2012): *Public procurement for innovation as mission-oriented innovation policy*

<sup>42</sup> Hommen, L., Rolfstam, M. (2009): *Public procurement and innovation: towards a taxonomy*

<sup>43</sup> <https://underpinn.portals.mbs.ac.uk/>

<sup>44</sup> Regional Innovation Monitor (February 2012): *Demand side policies at regional level*, <http://www.rim-europa.eu/index.cfm?q=p.file&r=bf05a767d1f742736ac2c0266087aaa>

<sup>45</sup> [https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform\\_Guide\\_new-final\\_download.pdf](https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf)

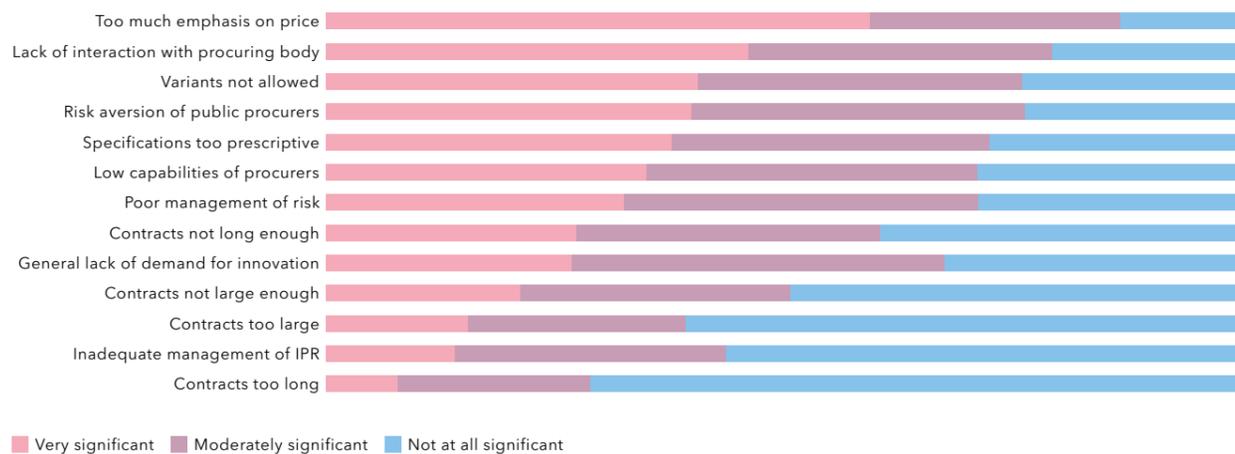


Figure 10: Barriers to public procurement for innovation

include: lack of incentives or wrong incentives for buying innovative solutions from a new company rather than long-term suppliers (risk); problems with awareness, knowledge, experience and capabilities related to new technologies and market developments; the fragmented PPI market in Europe; difficulties for innovative SMEs to be involved as direct providers; and policy issues.

Tsipouri 2012 also pointed out that possible barriers to a fast implementation of PPI include: 1) the dominant patterns of procurement and resistance to change (inertia); 2) the significant skills needed for operating PPI; 3) the risks of the PPI process; 4) market distortions; 5) the lack of an enabling environment; 6) institutional framework, namely the EU directives, may discourage procurers. A recent OECD NESTI study (2014)<sup>46</sup> indicated, for example, that in the case of the UK fewer contracts were made but were higher in value; and that France has a large number of smaller contracts of lesser value.

Given such issues, policy design and implementation become critical, including the regulatory issues that help create an environment conducive to innovation through constraints and incentives for innovator's actions.

### 5.3.1 Policy/regulatory issues

One of the challenges associated with policy and regulatory development and implementation in the area of PPI, is the difficulty in aligning PPI into a broad innovation policy objective, as procurement is often treated as a financial and administrative task.

Barriers such as high cost, risk aversion, or lack of communication can be solved by policy measures which support public procurement for improving organisational capabilities, communication and signalling, providing risk financing, risk management and multi-step procedures for introducing innovation that is new to the market.

<sup>46</sup> OECD (2014): *Measuring the link between public procurement and innovation*

Due to the slow adoption of PPI in Europe, there were a large number of barriers. The risks of the PPI process are one of barriers. Policy risks are greater than other technically-related risks, as policy makers need to anticipate the response of actors. There is also risk of hidden protectionism. Although competitive dialogue is open at the European level, procurers are more likely to follow an inherent preference to negotiate with suppliers in closer proximity and of a similar culture<sup>47</sup>.

The UK CATI-survey also points out that significant innovation is hidden and that public authorities can trigger or co-produce innovative solutions. Some of the most important policy and regulation practices to encourage innovation may be the requirement for innovation in tenders, early interaction with procuring organisations, outcome-based specifications, and advanced communication of future needs.

It should also be noted that the implementation of these policy measures needs to be tailor made: every country has different economic systems and supplier conditions, as well as different policy environments. PPI policies and instruments will therefore have to be aligned to the existing conditions and capabilities in each case.

### 5.3.2 Current PPI conditions in the EU and ASEAN

Although difficulties exist in PPI implementation in the EU, these issues are being increasingly addressed and solutions are being found. In the EU there has been a shift from a market efficiency policy towards an innovation policy since the 1990s. This means that priority has shifted from market performance or efficiency through, for example, competition policy to a policy geared towards economic growth through innovation and R&D. It has been claimed that the old member states of the EU generally adapted these policies faster than the new member states.

<sup>47</sup> Tsipouri, L. (2012)

With the improving economic conditions in ASEAN, innovation is increasingly emphasised and in demand. Malaysia, for example, is a successful case of PPI particularly oriented towards addressing grand challenges (see section 4 below). Indonesia has attempted to create a more dynamic eco-system for SMEs through PPI.

As ASEAN countries develop and implement policies for PPI, there are now abundant lessons from which to evaluate the success and failures of PPI in both EU and ASEAN cases, to better implement PPI. Section 4 below thus provides several case studies of PPI to better illustrate its reality in different countries in the EU and ASEAN.

## 5.4 Case studies

Section 4 presents three case studies (Malaysia, Greece and the UK) provided by the workshop participants and the lessons learned from each of them, in order to shed light on future practices and facilitate cooperation between the ASEAN and the EU region.

### 5.4.1 Malaysia

In 2013, public procurement in Malaysia represented 12%–15% of the country's GDP, with a total public expenditure of around 60 billion Euros. The public procurement system is characterised by being decentralised. The Malaysian government has made a great effort to regulate the procurement process in the country through several laws and regulations<sup>48</sup>. In addition, a portion of the purchasing power of 24%–33% of GDP aims to tackle environmental challenges by implementing policies to influence their government procurement decisions<sup>49</sup>.

In this context, it is important to highlight the role of the 10th Malaysian Plan (10MP) in which PPI is addressed as a priority area. In the 10MP, the government aims to promote the creation of incentives and opportunities for companies so they can invest in innovation through public procurement. In this sense, procurement will act as a tool to create demand for innovation and encourage SMEs to develop new products for different areas of interest. It is clear from the 10MP that the government wants to turn public investment into an enabler of innovation through R&D and venture capital funding.

The emphasis that the Malaysian government places on promoting PPI can be verified in several successful cases. Development of the electronic passport was supported by the Malaysian government and resulted in the producing company – IRIS – developing into a global player that provides electronic passport solutions for more than 12 countries. The Malaysian government

endorsed the new product and promoted the development of the electronic passport which was implemented in 1998, shortly after becoming a pioneer product for cross-border transactions. In the Government Green Procurement (GGP) plan, procurement was focused on setting environmental criteria and standards for the acquisition of products, services and work in the public sector. The government expects to promote green innovation and support local industry, serving as an important tool for market-entry opportunities and for innovative green Malaysian products and services. Some examples of regional cooperation within the GGP include that with the German International Cooperation (GIZ) and the United Nations Environmental Programme (UNEP), which aims to share experiences, lessons learned, and other information on good practices, and develop GGP common core criteria. Studies of GGP, in Austria, Denmark, Finland, Germany, Netherlands and United Kingdom, credited it as having potential for the reduction of CO<sub>2</sub> emissions. Malaysia's proactive role in beginning to take initiative could bring a considerable contribution to reducing CO<sub>2</sub> emissions. The policies currently established/in progress aim to encourage growth at a local level through local resource maximisation; encourage the participation of Bumiputera (indigenous) entrepreneurs and much more<sup>50</sup>.

This seems to be a very important example of EU-ASEAN cooperation, as recent studies indicate that green public procurement has been practiced on a large scale in the EU<sup>51</sup>.

### 5.4.2 Greece

Greece's current economic situation, with a government debt of 172% of its GDP, is an interesting case study for PPI. The Innovation Score Board 2010<sup>52</sup> classified Greece as a moderate innovator and below average performer; however, this brief report will showcase the value of the Greek experience in the area of PPI.

Greece saw rapid development in the first post-world war II decades, leading to its transformation from a rural economy to a manufacturing one. It was marked as a thriving economy with strong growth, however, failure of the national economic policy to shift from a low-wage economy to knowledge-based led to a persistent recession from 2008, induced by the financial crisis.

In terms of PPI, there have been both intentional and unintentional attempts to promote innovation through public procurement in Greece. In this context, "unintentional" means policy initiative for procurement that has not been intentionally geared towards innovation, but that has inherent characteristics leading the initiative to have innovation outcomes. A failed example of

<sup>50</sup> Ibid.

<sup>51</sup> <http://www.sustainable-procurement.org/newsroom/news-archive/?c=search&year=2012&month=4>

<sup>52</sup> [http://ec.europa.eu/research/innovation-union/pdf/iu-scoreboard-2010\\_en.pdf](http://ec.europa.eu/research/innovation-union/pdf/iu-scoreboard-2010_en.pdf)

<sup>48</sup> [http://www.ippa.ws/IPPC2/JOPP7\\_1/Article\\_1\\_JONES.pdf](http://www.ippa.ws/IPPC2/JOPP7_1/Article_1_JONES.pdf)

<sup>49</sup> Adham, K. N., Siwar, C. (2012): *Empirical investigation of government green procurement (GGP) practices in Malaysia*

intentional PPI is the solar energy tax incentives to promote the use of solar technology. The local demand was identified as "huge", but local businesses failed to meet that demand. The economic crisis led to the termination of this policy incentive.

PPI adoption by Greece's largest electric power company, the Public Power Corporation (PPC), has been met with significant resistance and ended up in multiple court appeals each time a new tendering technique was used. Nonetheless, there seems to be sufficient SMEs (or suppliers) offering rapid solutions with a considerable level of innovation.

There are also some positive cases of PPI in Greece. Two major examples are Intralot and Intrasoft International<sup>53</sup> which have been expanding due to unintentional PPI involvement. Intrasoft International won a competitive low budget procurement call from the Greek Customs Authority. Even without experience, the company managed to develop a valuable solution, which is an integrated customer information system. Consequently, they gained strategic insights which played a major role in helping them to win a larger European contract at a later stage.

Greece, as a moderate innovator with a relatively small population of 11 million, could provide a useful lesson in PPI for developing economies: unintentional attempts can be more successful and may not cause resistance to change compared to intentional attempts. Governments can lift barriers to entry in specific markets (which represent both strong economic and societal value) by improving legislation and encouraging public procurement. This should also aim to support local demand<sup>54</sup> and subsequently, create a lead market. This case also shows that policies can be a great tool if they are adapted rapidly to the needs of the market.

### 5.4.3 United Kingdom (UK)

The UK's National Health Service (NHS) has implemented a PPI approach through Forward Commitment Procurement (FCP)<sup>55</sup> in Rotherham General Hospital. In 2006, Rotherham General Hospital introduced LED lights (1st generation) which were already available on the market, but were not yet ready for mass scale production due to their high cost, sub-optimal conditions in both energy efficiency requirements and comfortable/indirect lightning. This situation thus encouraged the adoption of the FCP.

FCP can be seen as an early stage of PPI<sup>56</sup> whereby the market is provided with early notice of upcoming

contracts and a motivation to join the process. The early notice could involve the intention to deploy innovative solutions expressed by the buyer group (this could be any combination of public and private procurers, in this case, the NHS). The latter represents the critical mass on the demand side (to generate volume), thus triggering the supply side's interest to make the required investments by a specified date. This adapts/scales up their production chain to a level where the products are expected to meet the performance and price requirements for mass market deployment.

The project team (which included the Director of Estates and Facilities, the Head of Procurement and the BIS<sup>57</sup> Consultant FCP Programme Manager), with the FCP approach in mind, looked at the desired outcomes they were seeking and communicated their needs to the supply chain intermediaries. This encouraged cross supply chain cooperation, which acted as motivation and enabled sufficient time for them to come up with an innovative approach. Feedback from the supply side allowed testing of the requirements and solving of problems prior to an invitation to tender.

This is expected to help Rotherham General Hospital<sup>58</sup> reduce energy consumption and costs (anticipated savings of 30% or approximately €5,811<sup>59</sup> per 40 beds) over 10 years, reduce maintenance time/cost (anticipated saving of 88% or approximately €17,182 per 40 beds) over 10 years, and reduce construction and disruption costs due to faster turnaround.

Lastly, more FCP projects are nowadays undertaken by the NHS and in other health care organisations across Europe. Some examples include the Erasmus University Medical Centre in Rotterdam, which is looking for a more energy and resource efficient bed cleaning solution, and the Rawicz Hospital in Poland, which is looking for innovative low carbon refurbishment technologies<sup>60</sup>.

## 5.5 Conclusions and indications of EU-ASEAN cooperation in PPI

Although PPI has increased in both the EU and the ASEAN countries, there is still a great need for further development and refinement of this policy. In fact, most countries develop their own avenues for using PPI, while there is also abundant experience and lessons to draw on. This area should thus benefit from international cooperation.

Currently, it is a challenge for EU countries to cooperate in PPI considering the differences in development and implementation of PPI policies that exist within EU

member states, as mentioned in section 3.2. The large differences in economic and innovation developments, in addition to policy and regulation differences between the EU and ASEAN, may mean that cooperation between these two regions is not feasible currently or in the near future.

Interventions to improve the situation involve three dimensions: 1) the PPI culture and climate; 2) policies; and 3) governance. Actions can be implemented for enhancing PPI from the EU side: 1) It is necessary to build the human resources and skills for operating PPI; 2) structural funds could be instrumental in the moderate innovator countries; 3) a minister responsible for both procurement and innovation, possibly through dedicated agencies.

In terms of the PPI dimension matrix that was shown in chapter 5.1, the interventions needed are shown in the following table:

	Developmental PPI	Adaptive/Diffusion PPI
Direct PPI	Coordinated, ambitious interventions	Moderate interventions: use of structural funds can play a major role
Catalytic PPI	Ambitious interventions and multi-level coordination	Structural funds

Figure 11: Interventions suggested for PPI dimensions<sup>61</sup>

Instead of focusing on the direct cooperation possible, it is more realistic to study the different PPI policies and relevant cases from different countries in order to learn from their successes and failures, and furthermore, to modify, improve and apply them to a country's condition and needs. There is a need to develop more effective policy mixes, where PPI is more integrated into diverse public policy domains. Particularly when procurement is directed to "green" targets, innovation should be integrated. Organisational learning and change are keys to effectively designing and implementing PPI policies. In sum, PPI, to be successful, needs careful attention to governance of the strategy itself in narrow terms, and gross-institutional or ministerial boundaries to achieve the desired impact. Not least it is important to scrutinize the extent to which existing procurement regulations are built upon an "efficiency" logic that may work contrary to innovation objectives.

Discussions at the workshop also recommended that ASEAN countries should strive to gain political support, especially in the policy development process, realise effective planning that will highlight the right timing to adopt PPI, exchange best practices at a regional level, pursue inter-agency cooperation, use Pre-Commercial

Procurement (PCP),<sup>62</sup> focusing on SMEs as a starting point and increasing venture capital investment, and address shortcomings such as financial and personnel resources, and the time and consequences involved in projects with high risks.

The need for innovation in today's world is increasing and is inevitable. As examined in previous sections, PPI has a major role to play in facilitating innovation and should be further promoted and implemented. In order for this to be realised, shortcomings such as the lack of proper policy, regulation development and implementation need to be addressed. Moreover, countries should benchmark their current PPI policy conditions alongside the cases of other countries. Successful cases and methods can therefore be adapted to their situation and needs, further stimulating the creation of innovation.

<sup>53</sup> [http://unctad.org/meetings/en/Presentation/MYEM2\\_2014\\_Lena\\_Tsipouri.pdf](http://unctad.org/meetings/en/Presentation/MYEM2_2014_Lena_Tsipouri.pdf)

<sup>54</sup> Edler, J., Georgiou, L. (2007)

<sup>55</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/32439/11-997-case-study-innovative-ultra-efficient-lighting.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32439/11-997-case-study-innovative-ultra-efficient-lighting.pdf)

<sup>56</sup> [http://www.innovation-procurement.org/fileadmin/editor-content/Guides/Consultation/PPI\\_Guide\\_public\\_consultation\\_draft\\_with\\_case\\_studies.pdf](http://www.innovation-procurement.org/fileadmin/editor-content/Guides/Consultation/PPI_Guide_public_consultation_draft_with_case_studies.pdf)

<sup>57</sup> Department for Business, Innovation & Skills: <https://www.gov.uk/government/organisations/department-for-business-innovation-skills/>

<sup>58</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/32439/11-997-case-study-innovative-ultra-efficient-lighting.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32439/11-997-case-study-innovative-ultra-efficient-lighting.pdf)

<sup>59</sup> Based on Oanda, GBP:EUR = 1:1.26

<sup>60</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/32439/11-997-case-study-innovative-ultra-efficient-lighting.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32439/11-997-case-study-innovative-ultra-efficient-lighting.pdf)

<sup>61</sup> Tsipouri, L. (2012)

<sup>62</sup> Pre-commercial procurement (PCP) is the procurement of research and development of new innovative solutions before they are commercially available. PCP works in conjunction with PPI. <http://ec.europa.eu/digital-agenda/en/pre-commercial-procurement/>

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## Workshop on material transfer agreements

Bangkok, 22 January 2014

### Programme

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|-------------|---|
| 13.00-13.10 | <b>Svend Otto Remøe</b> , Special Adviser, The Research Council of Norway<br><b>Introduction to the workshop: objectives and content</b>  |
| 13.15-13.45 | <b>Christoph Häuser</b> , Leibniz Institute for Research on Evolution and Biodiversity, Germany<br><b>Material transfer agreements in basic research: key issues for international research cooperation</b>   |
| 13.45-14.00 | Q&A   |
| 14.05-14.35 | <b>Harry Herkutanto</b> , Ministry of Health, National Institute of Health Research and Development, Chairman of the MTA review team, Indonesia<br><b>Biological materials and biotech research: challenges, opportunities and the role of material transfer agreements</b>               |
| 14.35-14.45 | Q&A   |
| 14.45-15.15 | Coffee break  |
| 15.15-15.45 | <b>Ruaraidh S. Hamilton</b> , International Rice Research Institute, Philippines<br><b>Material transfer agreements: balancing IP rights and sovereign rights</b>   |
| 15.45-15.55 | Q&A   |
| 15.55-16.25 | <b>Dominique Dessauw</b> , Special Advisor for Seeds and Plant Genetic Resources, Coordinator of the Biological Resources Committee, CIRAD, France<br><b>International and national regulatory issues on access and benefit sharing and implications for material transfer agreements</b> |
| 16.25-16.35 | Q&A   |
| 16.35-17.20 | Panel debate, exchange with the audience  |
|             | Wrap-up and conclusion: <b>Svend Otto Remøe</b>   |

**Moderator: Svend Otto Remøe** [http://2014.stidays.net/index.html?page\\_id=188.html](http://2014.stidays.net/index.html?page_id=188.html)

## Workshop on intellectual property rights

Bangkok, 22 January 2014

### Programme

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09.00-09.35	Jakub Ramocki, IP Business Advisor, ASEAN IPR SME Helpdesk <b>ASEAN IPR SME Helpdesk project and introduction in the IP landscape in ASEAN</b>
09.35-09.50	Min Tayza Nyunt Tin, External Expert, ASEAN IPR SME Helpdesk <b>Dos and don'ts for producing IP from research activities in ASEAN: Myanmar case</b>
09.50-10.15	Reynaldo Garcia, Technology Transfer and Business Development Office, University of the Philippines <b>Good practice examples of supporting researchers with IPR issues</b>
10.15-11.10	Panel discussion <b>Bi-regional project:</b> Jakub Ramocki and Min Tayza Nyunt Tin <b>Public services:</b> Reynaldo Garcia <b>Research:</b> Anil Kumar Anal, Asian Institute of Technology <b>Industry:</b> Thavirap Tantiwongse, The European ASEAN Business Centre in Thailand (EABC) Working Group on Healthcare and Pharmaceuticals
11.10-11.30	Q&A

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**Moderator:** Sara Medina [http://2014.stidays.net/index.html?page\\_id=245.html](http://2014.stidays.net/index.html?page_id=245.html)

## Workshop on public procurement for innovation

Paris, 25 June 2014

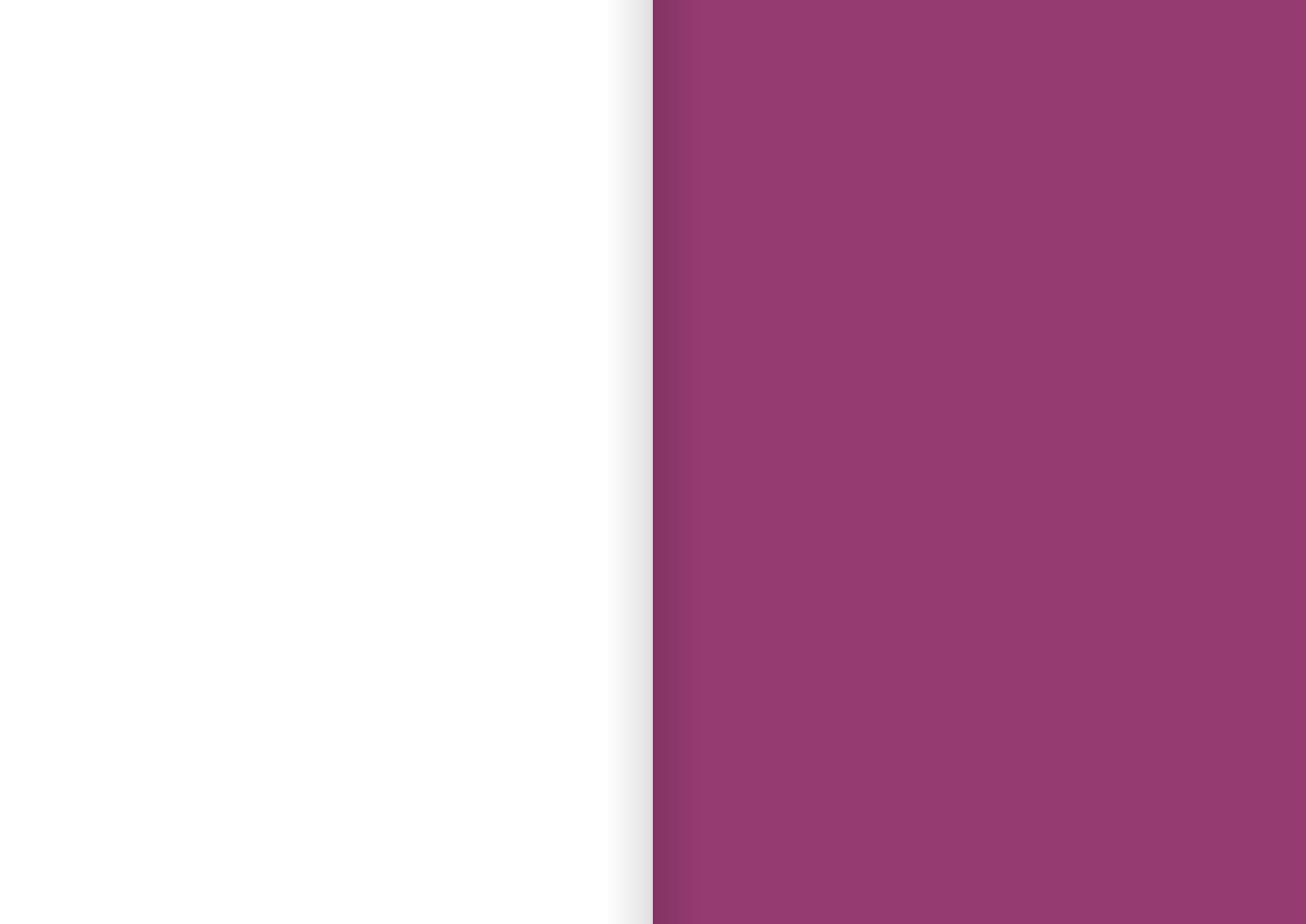
### Programme

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09.00-09.15	Svend Otto Remøe, The Research Council of Norway <b>Why are we here?</b> Introduction and tour de table
09.15-09.35	Svend Otto Remøe <b>Cooperation for innovation: framing the workshop</b>
09.35-10.20	Jakob Edler, Professor and Director, Manchester Institute of Innovation Research, UK <b>Public procurement for innovation: characteristics, benefits and risks</b>
10.20-10.30	Discussion
10.30-10.45	Coffee break
10.45-11.15	Max Rolfstam, Associate Professor, Aalborg University, Denmark <b>Institutional frameworks for public procurement for innovation</b>
11.15-11.45	Khairul Naim Adham, Administrative and Diplomatic Officer, Government of Malaysia <b>Promoting innovation through procurement: ecosystems for local industry</b>
11.45-12.15	Discussion
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12.15-13.30	Lunch break
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13.30-14.00	Bertrand Wert, European Commission, Belgium <b>Trans-national networks for public procurement for innovation: What lessons can be learned?</b> (in absentia, presentation was given by Svend Otto Remøe)
14.00-14.30	Lena Tsipouri, Professor, University of Athens, Greece <b>Public procurement for innovation: making the unintentional intentional – lessons from moderate innovators</b>
14.30-15.00	Discussion
15.00-15.15	Coffee break
15.15-16.30	Round table discussion: <i>What lessons can be learned?</i>

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**Moderator:** Svend Otto Remøe <http://sea-eu.net/object/event/135/>



This report reflects the increasing importance given to innovation in policies to promote international cooperation in science, technology and innovation. In the context of the growing cooperation between Southeast Asia and Europe, supported by the **SEA-EU-NET 2** project, the traditional focus on science and technology has also been complemented by a more explicit consideration of innovation.

International cooperation in innovation raises a set of complex issues, not least due to the potential commercial interests involved and the direct link that often exists with objectives for economic growth and development. This report offers a brief overview of the general framework conditions for innovation in Southeast Asia to then address three distinct aspects of the institutional framework conditions for innovation, which are particularly relevant in a cooperative setting: material transfer agreements (MTA), intellectual property rights (IPR), and public procurement for innovation (PPI).