

Chapter 1

Overall assessment and recommendations

This chapter presents the overall assessment of Malaysia's intellectual property (IP) system and specifies recommendations that can help enhance its contributions to innovation. It provides an overview of the context in which IP policy is made, including the mandates of different government ministries, the composition of Malaysian industry, and the needs, usage, development and attitudes toward IP of different industries and research institutions. Major recommendations include the need to consolidate IP policy making powers within the government, with a strong secretariat providing support; to encourage the use of cheaper and easier-to-access IP rights; to improve collaboration and information sharing between research institutions and industry; and to increase knowledge about, and the use of, IP among smaller businesses and smallholders.

Malaysia has made **substantial economic progress in recent decades** thanks to competitive labour costs, natural resources, capital incentives to attract foreign direct investment (FDI) and significant infrastructure investments, which have helped create an attractive business environment. Government funding to create national champions has had mixed success. As global competition continues to increase and growth based on traditional drivers has declined, Malaysia has stepped up its efforts to build a more innovation-led economy. The 11th Malaysian Plan (2016-20), which was launched in May 2015, is expected to place measures aimed at enhancing innovation at the top of the policy agenda. The plan aims to set the conditions for Malaysia to become a high-income nation by 2020. This is in line with plans since the 1990s, but places even greater emphasis on innovation. However, several recent evaluations and reviews of the Malaysian innovation system have shown that, despite progress, significant efforts are still required to strengthen the foundation for innovation.

- The overall context provides opportunities for initiatives that support innovation, including measures to enhance the performance of the national intellectual property (IP) system. The country needs to boost investment significantly in knowledge-based activities if it is to remain competitive internationally.

Malaysia's innovation **framework conditions** – product market competitiveness, red tape, infrastructure and ICT access – are very favourable by international standards. Malaysia ranks 18th in the World Bank's "Ease of Doing Business" assessment, just ahead of Thailand (19th) and Chinese Taipei (26th), but well behind Singapore, the ranking's leading economy (World Bank, 2014). The conditions for registering property, in particular, can be improved. Moreover, financing constraints are substantial owing to a weak venture capital market that mainly benefits large corporations. Small firms, which constitute the vast majority of businesses, have limited opportunities to access finance.

- In this context, developing financing opportunities based on IP is attractive, including promoting the use of IP as collateral to finance innovations or, alternatively, creating opportunities to sell or license IP-protected inventions to other actors who have access to the investment sources necessary to develop them.

Although the availability of tertiary education has increased in the past decade, as has the number of universities, the **scarcity of adequately skilled**

human capital continues to be a substantial impediment for the economy. This shortcoming points to the importance of universities as providers of the skills that Malaysia's innovation system needs. Public research can also benefit from the innovation system in other ways, for example, by public research institutions becoming directly involved in innovation activities by obtaining and commercialising their own IP. Collaborative research between industry and research organisations' technological services is also an important means in which public research can contribute to innovation. Malaysia's Education Blueprint 2015-25, launched by the Prime Minister on 7 April 2015, sets the emphasis on the tertiary education sector's role in contributing to the skills base for Malaysia's innovation system in addition to their contributions to innovation ecosystems (MOE, 2015).

- The education and research roles of universities and public research institutes have to be taken into consideration when discussing IP policies to support the commercialisation of public research.

Malaysia's economy is diversified. Successful development has reduced the country's dependency on primary commodities (crude oil, rubber, tin and palm oil) that dominated the economy in the 1960s. Malaysia's industrial development has been based on FDI and export-led manufacturing, following the development path of the first wave of "Asian Tigers". It has developed a much stronger manufacturing and services base, and its electrical and electronics (E&E) sector, mainly located in the state of Penang accounted for 34.4% of total exports, equivalent to USD 12.4 billion (MYR 23.3 billion) in 2014 (Department of Statistics Malaysia, 2015). However, natural resource sectors remain important to Malaysia's economy and are major contributors to the gross domestic product (GDP) in Sarawak and Sabah. Natural resources also provide opportunities for innovation, and several research institutes are engaged in activities that could support innovation in these sectors, as well as in fields such as biotechnology, pharmaceutical industries and traditional knowledge (e.g. traditional medicines).

- In view of this diversity, it is critical to consider IP from the perspective of different economic players and conditions, taking into account the innovation opportunities offered by natural resources and traditional knowledge, as well as the opportunities in more advanced high-technology sectors.

National gross expenditure on research and development (R&D) increased to 1.13% of GDP in 2012, the last year for which these statistics are available. This is comparable to investment levels in many southern and eastern European economies (OECD, 2014). Since 2000, the business sector, including large government-linked companies, has been the biggest contributor of investment. Major investors include Proton, an automobile manufacturer that mainly serves

the domestic market, and Petronas, a publicly owned petrol company, which ranked 69th on Fortune's list of the world's largest companies with revenue of USD 100.7 billion in 2014 (Fortune, 2015). Most foreign R&D investment is concentrated in electronics, which is also the primary recipient of national R&D investment. In contrast, most of the country's small and medium-sized enterprises (SMEs) do not engage in innovation. A substantial share of large domestic firms in natural resource-based sectors invest little in innovation activities.

- IP policies need to consider that only a small percentage of firms actively seek to innovate. Complementary innovation policies are required to raise opportunities for IP to support business innovation.

Tight public budgets have led the government to introduce reforms to enhance socio-economic returns from public investments in **research institutions and universities**. The government has also brought in performance-evaluation programmes with quantitative performance measures, which have had some success. For example, according to SCOPUS, which tracks peer-reviewed research publications, Malaysia improved its ranking based on the number of scientific publications, moving from 51st position in 1999 to 23rd in 2013 (SCImago, 2014). In addition, universities have given greater emphasis to engineering in recent years, which offers more opportunities to commercialise public research. However, the impact of Malaysia's research publications remains low: improved research quality, rather than quantity, is needed. The pressure on universities to commercialise research results will be even greater in coming years: starting in 2015, all Malaysian public universities must raise 25% of their own operating budget. This will present a daunting challenge to institutions that were used to receiving all of their funding from public funds. It is only recently that these institutions have had to adopt a more business-oriented way of operating that puts greater emphasis on performance.

- Policies to support universities and public research institutions' commercialisation activities need to be considered within the overall context of the fundamental changes to the way these institutions operate.

Malaysia's **business sector** is characterised by firms of different sizes, including large corporations and government-linked businesses, as well as a large number of small businesses. Small businesses account for 30.2% of gross value-added economic activity and 32.7% of employment (Department of Statistics Malaysia, 2012). The inequalities in size and structure require diversified approaches to IP to meet the different needs of businesses, as well as different approaches to the incentive programmes that are provided because some businesses are more affected by market developments while others are more sensitive to policy changes.

- IP policy will need to reflect these differences to effectively support innovation in Malaysia in all its diversity.

Social inclusion is a challenge in Malaysia. There are a large number of pockets of limited development, including in the country's informal economy. Inequality is also an issue in Malaysia: its Gini index (0.46 in 2012) is higher than that of neighbouring Southeast Asian countries, including the Philippines (0.43 in 2012) and Indonesia (0.38 in 2011).¹

Natural resources (wood, palm oil, etc.) and **traditional knowledge** are important in Malaysia's economy, particularly in the states of Sarawak and Sabah. However, some of the potential in these areas has not yet been exploited. Both of these areas matter when it comes to involving excluded groups, including economically disadvantaged communities located in remote rural areas. Certain economic activities – e.g. Sarawak's pepper production – engage a large number of smallholders. Whereas a few government institutions, such as the Malaysian Foundation for Innovation (*Yayasan Inovasi Malaysia*, YIM), support innovations from inventors from less advantaged backgrounds, more effort to improve the economic integration of excluded groups is needed. Support for innovation serving lower-income groups is also one of the objectives of Malaysia's SME Masterplan (SME Corp., 2012).

- IP policy can serve the development of innovations based on natural resources and their commercialisation to the benefit of regional development. It can also promote social inclusion, as can IP policy geared towards support of traditional knowledge.

The **governance** of Malaysia's innovation system is complex and involves numerous players with overlapping mandates. These include the Ministry of Science, Technology and Innovation (MOSTI); the Ministry of Education (MOE) and central agencies; other sectoral ministries and special units or agencies; as well as the Malaysia Innovation Agency (*Agensi Inovasi Malaysia*, AIM) and the Malaysian Industry-Government Group for High Technology (MIGHT). AIM is a department within the Prime Minister's Office entrusted with overseeing the commercialisation of research findings from public research institutes and universities. MIGHT falls under the authority of the Science Advisor to the Prime Minister. It provides technology inputs for industry and government and nurtures technology-based enterprises. Industry interacts with government institutions via industry associations and chambers of commerce.

- The complex institutional context of innovation policy poses a challenge for integrating IP policy aimed at ensuring coherence for a stronger policy impact.

1.1. Malaysia's national IP system

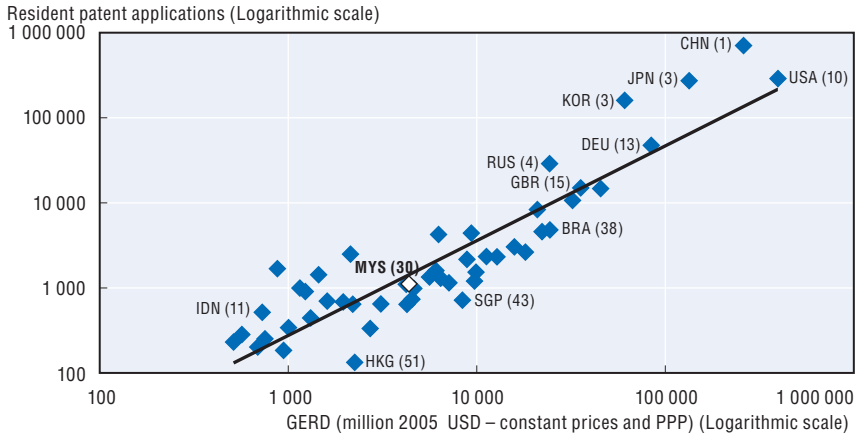
Malaysia's national IP system has matured in the past decades, notably from a legal and operational perspective. Several reforms of IP laws have

brought policies in line with international standards by adopting legislation to implement the Agreement on Trade-Related Intellectual Property Rights (TRIPS). Malaysia has also signed additional IP-related commitments under the Association of Southeast Asian Nations (ASEAN), and other international IP treaties, including the Patent Co-operation Treaty (PCT) system (in 2006). In 2003, the IP office was corporatised, and today, the processing of IP titles is very efficient by international standards. Management reforms and examiner reward programmes for high productivity have contributed to this achievement. Application fees compare favourably with international fees, although smaller entities perceive maintenance fees as expensive. Enforcement has been improved, and in 2007 a new system of IP High Courts was introduced to ensure that IP titles obtained are enforced.

With regard to Malaysia's use of IP, the country is a net importer of intellectual property rights, paying USD 1.4 billion in royalties and receiving USD 101 million in royalties in 2013. In comparison, the United States is a net exporter, paying USD 39.5 billion in 2012 for royalties and receiving USD 125.3 billion. This reflects Malaysia's status as a "catching up" economy that is actively engaged in efforts to capture foreign technologies. Foreign inventions also dominate national patent registrations, while resident patent applications reflect the country's R&D spending (Figure 1.1). However, the use of the IP system by Malaysian residents has increased compared to regional peers, including for trademarks, industrial design rights and geographical indications. On the other hand, utility models are little used in comparison with other middle-income countries such as Thailand, where local SMEs use them more actively. Leading users of the IP system have engaged in filing PCT applications: the most intensive users are public research institutions, such as the Malaysian Palm Oil Board and the Malaysian Rubber Board; public universities, such as Universiti Sains Malaysia, Universiti Teknologi Malaysia and Universiti Putra Malaysia; and government-owned companies, such as MIMOS Berhad (by far the most important PCT applicant) and Petronas. By contrast, most local businesses in Malaysia are not active users of the IP system. This is also the case for firms operating in the E&E sector, as some of them make little effort to innovate and provide only services of lower value-added to multinational corporations.

The active use of IP by Malaysia's universities – the five public research universities contribute substantially to national IP registrations – and research institutions is a result of policies introduced in the past decade. These were aimed at raising the returns on public spending for these institutions. IP has become one of the "private sector" elements introduced into public research. The number of IP titles held by universities is among the quantitative performance measurements used in performance evaluations that influence funding. Such efforts have successfully prompted universities to operate more

Figure 1.1. Resident patent applications and gross domestic expenditure on R&D



Note: 1. A resident application is an application filed with an IP office by an applicant residing in the country/region in which that office has jurisdiction. 2. Countries were selected if they had a GERD greater than USD 500 million PPP (in constant prices, 2005) and more than 100 resident patent applications. 3. Resident patent application data are for 2013 and for 2012 for GERD, except for Argentina, Australia, Belarus, Brazil, Egypt, Malaysia, Mexico, New Zealand, Pakistan and Ukraine (2012 and 2011 for GERD); Slovenia (2011 and 2010 for GERD); Hong Kong and Indonesia (2010 and 2009 for GERD); and Thailand (2008 and 2007 for GERD). 4. A ranking of "resident patent applications-per-GERD" out of 51 offices for which data are available is displayed in parentheses.

Source: OECD calculations based on WIPO Statistics (database) <http://ipstats.wipo.int/ipstatv2/>; OECD (2015), *Main Science and Technology Indicators* (database), <http://stats.oecd.org/Index.aspx?QueryId=33210>; and UNESCO UIS.Stat (database), <http://stats.uis.unesco.org>.

efficiently, to tackle the challenges of registering and obtaining IP, and to create incentive programmes that encourage researchers to engage in IP ventures and look for effective partnerships with industry.

However, effectively turning IP into commercial products, either as part of university start-ups or by providing SMEs with knowledge content, has proven difficult. While it is difficult to directly compare Malaysia's rate of return on public R&D with those of other countries, its commercialisation rates are not far behind the global average and the average of OECD member countries. It is well known that the value of IP is skewed: only a few ideas produced in a few institutions become blockbusters. Nevertheless, other challenges that hinder wider success include: i) weak linkages between universities and industry, with little research conducted that explicitly responds to industry requirements; ii) large bureaucratic obstacles to reaching co-operation agreements between research institutions and industry; combined with iii) firms' lack of absorptive capacity to take advantage of public research; iv) lack of awareness of IP protection among firms; v) weak regional and national markets for certain technologies; vi) limited interest on the part of researchers to seek patents and even less to commercialise their findings; and, viii) limited resources to develop prototypes of patented inventions.

The country's biodiversity – particularly in the states of Sarawak and Sabah – and its traditional industries offer opportunities to improve the application of IP in Malaysia. Geographical indications (GIs) have been taken up actively, mostly in Sarawak, but investment in support of industry associations has been limited. These associations are critical to developing quality products and creating a market for them. An example is Sarawak's pepper industry, where the Malaysian Pepper Board provides quality training to the many smallholders and has a test system in place to ensure product quality for exports. However, opportunities to develop higher value-added products from Sarawak pepper that would generate higher revenues for smallholders are limited because the industry does not offer many options for creating such products.

Malaysia's IP policy has recognised that policy measures that were initially useful in establishing universities and public research institutions now need to be replaced by more ambitious and integrated policies to promote the commercialisation of innovations. The policy requiring universities and public research institutes to generate a share of their own revenue creates incentives to increase commercialisation. Researchers are allowed to take a sabbatical if they want to engage in spinoff companies and receive more than 5% of the equity from such an engagement. Awarding a high proportion of royalty returns to researchers has also been implemented to support commercialisation efforts. Creating technology platforms to display patents held by universities and public research institutes is another approach Malaysia has taken with this objective in mind. New initiatives to enhance collaboration between industry and research institutions include the Public-Private Research Network (PPRN) (introduced in 2014), a CEO faculty programme for senior industry or public sector leaders to teach in universities, as well as other industry engagement and cross-fertilisation programmes, including the Collaborative Research in Engineering, Science and Technology (CREST) programme, introduced in 2012 to facilitate industry-public research collaborations, particularly in the E&E sector.

An additional approach consists of finding ways for IP to serve as collateral for loans to finance innovation activities. This policy measure, which is implemented by Malaysia Debt Ventures, a wholly-owned corporation of the Ministry of Finance, is still in its initial phase and is very much a worthwhile experiment by global standards.

However, these policy efforts may fail because industry-science linkages are still weak and all of the legal framework conditions for IP to serve as collateral are not yet in place. For the moment, these efforts are all the initiative of the government, which is creating the technology platforms and subsidising the credit rates for the loans using IP as collateral. For the policy to succeed, however, the private sector must become involved. Government support may be necessary to promote, for example, the initial uptake of the

IP-as-capital idea because Malaysia's private banks have little familiarity with this type of financing programme. However, the policy will succeed only if banks eventually take over the system and it begins to operate internationally.

The main challenge restraining the system from supporting innovation effectively is the division of responsibility in making IP policy. The National Intellectual Property Policy (NIPP) Action Council and the National IP Steering and Monitoring Committees, the co-ordination bodies for IP policy under the auspices of the Ministry of International Trade and Industry (MITI), focus mainly on legal, administrative and enforcement matters, as well as the international dimensions of IP policy. The corporatisation of the Intellectual Property Corporation of Malaysia (MyIPO) in 2003 created the institutional capacity to deal with legal and administrative matters related to IP rights; however, MyIPO does not have the capacity or the mandate to anchor an agenda aimed at strengthening the contributions of IP policy to national innovation performance. The national IP system is still best characterised as one of multiple institutions that implement separate policies aimed at incentivising the uptake and effective use of IP policies (Table 1.1). MyIPO itself

**Table 1.1. Malaysia's intellectual property system:
An overview of institutions involved**

Role	Institution
IP co-ordination	<ul style="list-style-type: none"> National Intellectual Property Policy (NIPP) Action Council and National IP Steering and Monitoring Committees: organised by Intellectual Property Corporation of Malaysia (MyIPO)
IP policy design	<ul style="list-style-type: none"> Ministry of Domestic Trade, Co-operatives and Consumerism (MDTCC) Malaysian Industry-Government Group for High Technology (MIGHT) Ministry of Science, Technology and Innovation (MOSTI), Economic Planning Unit Intellectual Property Corporation of Malaysia (MyIPO) Ministry of Agriculture and Agro-based Industry (MAABI) for plant variety protection
IP administration	<ul style="list-style-type: none"> Intellectual Property Corporation of Malaysia (MyIPO) for industrial property and copyright Ministry of Agriculture and Agro-based Industry (MAABI) for plant variety protection
Foreign IP policy design	<ul style="list-style-type: none"> Ministry of International Trade and Industry (MITI)
IP enforcement	<ul style="list-style-type: none"> Ministry of Domestic Trade, Co-operatives and Consumerism (MDTCC), Enforcement Division IP courts Ministry of Agriculture and Agro-based Industry (MAABI) for plant variety protection National Intellectual Property Policy (NIPP) Monitoring Committee
Other entities in charge of supporting the IP system	<ul style="list-style-type: none"> Ministries: Ministry of Science, Technology and Innovation (MOSTI), Ministry of International Trade and Industry (MITI), Ministry of Education, Ministry of Health Malaysia Innovation Agency (AIM), including PlaTCOM Ventures, Innovation Business Opportunities (IBO) Malaysia Debt Ventures Malaysian Technology Development Corporation (MTDC) Sarawak State Planning Unit Industry related agencies: Collaborative Research in Engineering, Science and Technology (CREST); Steinbeis Foundation Malaysia

implements some, but not all, of these policies. Although the diversity allows for policy experimentation, initiatives can benefit from greater co-ordination. The case of IP platforms illustrates this well. While there is much to be gained from having a joint platform initiative, Malaysia has several initiatives rather than a single, consolidated platform, a suboptimal outcome arising from insufficient co-ordination.

1.2. Recommendations for Malaysia

Malaysia's IP system offers the conditions for empowering its innovation system, with a fully adequate legal structure and an efficient operational system. Further efforts at maintaining its efficiency in processing high-quality IP are under way. Regional offices ensure that potential and actual IP users in other regions are not at a disadvantage compared to those in the capital. Improvements in enforcement have also contributed to raising the value of IP. A few challenges remain, however. First, the cost, duration and evaluation criteria for utility models relative to patents should be reconsidered to create a system that costs applicants less, does without substantive examination and imposes a less stringent novelty threshold (below the threshold required for patents). While utility models can be more accessible than patents and can act as useful stepping stones towards more innovation-intensive production for many Malaysian businesses, they are not often used in Malaysia. Second, providing discounts and support in filing patents and other types of IP rights systematically may be useful, particularly for small entities and public research organisations. They should, however, be linked to commercialisation efforts and socio-economic impacts. Third, Malaysia may consider adopting the "licences of right" system used in other countries, whereby applicants who declare their willingness to license their patents benefit from fee discounts.

Beyond legal and organisational aspects, which come under the auspices of the MITI and, in many cases, MyIPO, there is little coherence in IP policy governance. There is no co-ordinating body that would bring together all policy-making entities and actual and potential users of IP, including private entities. Such co-ordination should extend to those initiatives aimed at increasing the effective use of IP. For example, consolidating recently created technology platforms into a single platform can make it much more successful. Creating a powerful governance structure to regulate IP, and creating the secretarial capacities within MyIPO to provide such initiatives, is essential in order to establish a powerful co-ordinating body. A dedicated research unit could also investigate more widely factors that hold back the use of IP by smaller entities in Malaysia. Industry needs to become much more involved. Such involvement would ensure that industry-specific requirements, including the needs of different industries and users, are reflected in discussions over IP policy. Japan's

IP commission is an example of effective institutional oversight aimed at enhancing IP support to innovation performance.

Public research organisations have been the primary target of IP policies in the context of reforms aimed at increasing returns from public funding. Institutional reforms, which granted these organisations greater autonomy, introduced more performance evaluation programmes and modified the funding provided to leading universities, have changed the way Malaysia's research organisations operate. Many institutions have gained valuable experience in obtaining IP rights. Commercialisation has not been very successful to date, as is the case in many other countries. Public research policy should take a different direction and focus on commercialisation for those institutions with good research capabilities in disciplines that lend themselves to commercialisation. Institutions with an orientation in social sciences have fewer chances to succeed. Those institutions with a primary teaching role should focus more on their education role and incentive schemes should be set accordingly. International experience clearly indicates that successful commercialisation is necessarily limited to select institutions and, within them, select IP. This needs to be reflected adequately in Malaysia's IP policies. Getting the business sector more involved is another objective. The incentives for researchers should be set such that they work with industry on specific IP that has been selected by industry, and which industry consequently will be willing to fund and support in order to realise its full commercialisation.

Firms in Malaysia engage to different extents in innovation and, consequently, do not have the same needs with regard to the IP system. Most R&D is conducted in a few large businesses, often government-linked corporations, which apply for national and international patents. By contrast, many SMEs engage very little in technology-based innovations and have for that reason limited interest in applying for patents. Other types of IP, including design rights and trademarks, as well as utility models, are more relevant when it comes to supporting SMEs' innovation capacities. Firms' shortcomings in R&D capacity also make efforts aimed at increasing their benefits from public research more important. Different matchmaking agreements, such as that of the Collaborative Research in Engineering, Science and Technology (CREST) programme, if it operated on a much larger scale, are relevant as they can help firms and research institutions find ways of benefitting each other. Starting with opportunities in the E&E sector seems a good approach as this high-technology sector has the greatest potential for innovation.

Malaysia's biodiversity and, more broadly, traditional industries, represent an important part of Malaysia's economy. They are not only important as a source of income but also provide opportunities for more inclusive growth. Creating a GI for Sarawak pepper has been useful in enhancing quality standards and training. It has proved useful for integrating smallholders,

helping them to produce higher quality products with higher rewards. In general, GIs are helpful in creating brands and signalling origin and quality for plants whose properties are well known, such as pepper. Therefore, similar efforts aimed at creating value from other GIs should be made, including investing in creating industry institutions that will promote quality and market these products.

Another way to support traditional industry with different IP requirements is through traditional knowledge (TK). Efforts to protect Malaysia's biodiversity and TK jointly by developing sustainable business models for those natural resources, as in the pharmaceutical sector, can help uncover new sources of income. Such potential should not be neglected even if it lies outside high-technology sectors. Moving forward in uncovering the potential of TK requires conducting basic research aimed at identifying the potential of developing products from Malaysia's TK.

Broader initiatives aimed at using IP to obtain finance and creating markets for IP, where IP titles are sold or licensed, can be conducive to successful commercialisation by universities and small entities. Malaysia has been active in this field and followed international practice in creating technology platforms to showcase inventions. However, dispersed experimentation on multiple platforms has limited their success. This idea of IP-based financing has made Malaysia a frontrunner in this area, and experiments are currently being conducted to find a model that will allow for IP to serve as collateral for innovation activities.

1.3. Detailed recommendations

This section provides a detailed list of recommendations that, if implemented, will help enhance the contributions of Malaysia's IP system to innovation. The different recommendations, which are aimed at supporting IP policy planning, very much complement each other and will have the greatest effect if all are undertaken.

These recommendations can be prioritised in the following order:

- First, create an effective co-ordination body that would ensure coherence among different stakeholder initiatives (Recommendations 1, 2, 3 and 4). Arguably the most difficult recommendation to implement, this is an essential condition to facilitate coherent policies in support of IP for innovation.
- Second, consolidate IP platforms and improve industry-university relations in order to improve research capacities for the purpose of innovation (Recommendations 15 and 17). Such efforts require setting realistic incentive schemes for universities that focus on achieving the highest potential and quality (Recommendations 7 and 8). Existing institutions and projects should be leveraged where possible.

- Third, introduce SMEs, other smaller stakeholders, as well as larger businesses with little experience of IP, to the benefits of IP. Introducing them to how they can, by engaging in innovation, benefit from the IP system can substantially stimulate performance (Recommendations 13 and 14). Such policy priorities should not stop at SMEs but could extend support to smallholders, including by supporting GIs of large potential.

These priorities arise in a current context where framework conditions for IP are already well established, although the improvements available (Recommendation 5) can increase uptake further, specifically with regards to creating an effective and operational utility model system.

A longer-term objective can be to experiment in line with international practice with financing opportunities based on IP (Recommendation 17), and in that context provide information on registration practices that will also serve to know better how IP is used in Malaysia and consequently what policy can do to support such uptake further.

1.3.1. Connect IP policies to innovation policies

1. Build the governance structure and establish a comprehensive policy mix to support IP for innovation policy.

IP policies are only one tool among a variety of instruments. Their effects will be largest if implemented jointly with a broader set of innovation policies. For instance, some of the obstacles to the commercialisation of publicly funded research results stem from the lack of science-industry linkages and insufficient support in the final stages of commercialisation, as well as firms' low absorptive capacities and innovativeness. These obstacles are not related to specific challenges that IP policy could address but they affect its results. Complemented by policies that remove these obstacles, IP policy could be more effective in supporting Malaysia's ambitious innovation agenda. To make this happen, a suitable governance structure (see Recommendation 2) must be created, and building innovation policy support capacities at MyIPO is needed (see Recommendation 3). Another priority involves providing continued support for activities promoting innovation. The forthcoming *OECD Review of Innovation Policy: Malaysia* will provide detailed recommendations (OECD, forthcoming).

2. Create a powerful body dedicated to co-ordinating and advancing the "IP for innovation" agenda.

There is no active high-level governance body or council where IP policy as an instrument for innovation is being discussed. The governance bodies for IP policy are the NIPP Action Council and the National IP Steering and Monitoring Committees. The focus of these bodies' activities is on the legal, operational and international IP agenda. Policies aimed at increasing the use

of the IP system by local businesses, universities and public research institutes, or efforts aimed at protecting traditional knowledge, are not discussed by these bodies. Consequently, IP policy aimed at supporting innovation is fragmented and uncoordinated. A more powerful NIPP Steering Committee could be created if MyIPO became the technical secretariat. It should have the capacity to prepare an agenda on “IP for innovation” issues (see Recommendation 3). The committee would also benefit from high-level effective governance, at prime ministerial level, and the capacity to take and enforce decisions. For the committee to provide relevant advice, both business and public sector IP users need to participate in gatherings. An example of such a body is Japan’s IP Commission. At present the business sector is not sufficiently involved in the governance of IP and innovation policy in Malaysia.

3. Provide MyIPO with resources to create a unit dedicated to helping the IP council move beyond legal aspects to consider strategic “IP for innovation” issues.

MyIPO has become a reliable institution for the efficient processing of IP applications and in providing legal support for users and the government. Improvements are partly a result of the autonomy it gained in 2003, which has helped introducing measures to improve the efficiency of its services. A shortcoming is that MyIPO mainly concentrates its analysis of IP use on forecasting demand for IP rights titles for internal budgetary purposes; it does not have the capacity to consider more broadly how the IP system can provide greater incentives to the country’s innovation system. A unit within MyIPO that adopts a more strategic perspective on IP and innovation, combining economic, legal and technical expertise, could support a more innovation-gearred NIPP Action Council and National IP Steering Committee and co-ordinate an IP for innovation agenda. In order for MyIPO to gather leading-edge knowledge about the IP needs of different Malaysian users, it is important that MyIPO engage with external professionals in the field. Such exchanges would ideally extend also to IP examiners to improve their knowledge, including about international regulations.

4. Ensure that the implementation of programmes aiming to support local uptake of IP are co-ordinated to avoid unnecessary duplication, especially where such duplication weakens a programme’s impact.

A number of public institutions provide programmes that support local use of the IP system and the effective commercialisation of IP rights. These programmes have allowed trying and testing different approaches to addressing challenges. However, fragmentation across institutions and a lack of continuity in support of such programmes have reduced these programmes’ success. This is the case of Malaysia’s IP platforms (see Recommendation 15). This co-ordination can be achieved by giving a committee in charge of

governing IP policy the responsibility to oversee programmes across institutions. Some programmes might usefully be implemented by more than one institution and have a shared budget (to effectively develop joint efforts) (see Recommendation 2).

1.3.2. Improve legal and administrative conditions

5. Reduce the costs of IP filings for smaller firms and research institutions, conditional on commercialisation efforts, and unleash the potential of utility models.

The pricing structure for IP registration is uniform across all entities and inventors in Malaysia. Tax rebates also apply to everyone in the same way. This differs from the case in other emerging economies, such as Colombia or Indonesia, which provide fee reductions for small entities. While the application fees are not deemed too high and are not likely to pose a major challenge, public research entities consider the costs related to renewal fees to be high. With increasingly tight budgets for public research institutions, these IP rights costs might become more of an obstacle. In these cases, subsidies could be awarded and extended to support the preparation of national and international applications. Currently no systematic discounts are provided, although institutions such as PlatCOM Ventures provide support to selected entities. To ensure that lower patenting costs do not lead to the hoarding of limited-value IP, fee discounts and subsidies could be made conditional on commercialisation efforts (see Recommendation 7). Costs and conditions for access to utility models should also be revised. These are hardly used even though they are more accessible to local firms than patents and could serve as a stepping stone for a more effective use of IP as part of these firms' innovation efforts, particularly if the novelty threshold is adequately set and if substantive examination requirements and costs do not make them as equally complex to obtain as patents.

6. Provide free access to, and enhance the analysis of, information about IP to create better-adjusted IP use policies.

There are no studies on the impact of different policies and pricing on the use of IP in Malaysia. Neither does MyIPO publish statistics on changes of pendency (the time between a request for examination and the granting of an IP protection) over the years. Moreover, user statistics and further information are not available on the Internet but can be requested from MyIPO at a cost. MyIPO could improve its annual reporting system and offer more detailed statistics about types of applicants, technological fields, etc., as well as the identities of major local applicants. This would raise MyIPO's capacity to adopt a "strategic perspective" on IP matters (see Recommendation 3). This could help provide greater understanding of what is holding back different types of

potential and actual users from applying for IP protection. It would also be useful to provide free access to MyIPO's information to analysts and researchers. Moreover, a system where ownership changes and licensing operations are systematically registered would facilitate IP markets, including financing schemes. The lack of such an information system has effectively contributed to slowing down opportunities to develop IP finance in Europe. Adopting such a registration system as IP market activities develop in Malaysia gives the country the opportunity to leapfrog other countries' efforts.

1.3.3. Adapt the IP system to users: Universities and public research institutions

7. Implement procedures that support the commercialisation efforts of the most relevant institutions and prioritise quality without deterring research institutions from conducting high-quality research and providing high-quality education.

Incentive programmes need to focus increasingly on quality if they aim to result in successful commercialisation. The public research sector has undergone substantial reforms in recent years. Universities in particular have been subject to a new performance-based regime. A performance-evaluation process that emphasises quantitative performance criteria – notably publications and patents – has had positive effects on public research output. Universities have not only increased their number of publications but also engaged in efforts to explore commercialisation. While the commercialisation experience has often been unsuccessful (as is the case for many countries internationally), the initial phase has been extremely useful in helping identify good practice in dealing with industry, establishing first contacts with relevant partners where previously hardly any relationship existed, and setting up a base of researchers engaged in IP-gathering activities. The incentive programme, therefore, served its purpose well. However, it is now time to adjust incentive programmes to focus more on commercialisation. Success will require an emphasis on quality in IP rather than on quantity. The value of IP rights is highly skewed: only a few IP rights bring high commercial returns, while many others will produce only limited revenues. It will be critical to ensure that incentive programmes focus on producing IP with the potential for successful commercialisation and socio-economic impacts. These programmes should take into account the different strengths of the country's research institutions. For instance, institutions specialised in vocational training have more to contribute in addressing shortcomings in human capital. Their opportunities to commercialise IP are rather limited, as are those of institutions with a strong emphasis on social sciences. In both cases, it is difficult to require that they focus on greater commercialisation. A more differentiated incentive programme would recognise the indirect contributions of these institutions to

innovation. In addition, institutions should adopt a broad definition of knowledge transfer, one that includes providing expert services and that relies on different forms of IP, trademarks among them, rather than narrowly focussing on technology transfer and patents.

8. Set more realistic and quality-based revenue targets for public research institutions.

With greater autonomy provided to public research institutions, they are also expected to raise 25% of their own operating budgets beginning in 2015, a share that will increase to 75% by 2025. This is a very sharp increase given that until recently public funds covered all costs. Such requirements can play a useful role in creating commercialisation incentives to help raise some revenue. It might, however, divert attention away from knowledge-transfer activities, which are not based on IP rights but might serve a useful purpose in building industry-university relations. These are critical for the future success of commercialisation efforts. The commercialisation of research results is only one possible source of revenue. Universities will seek commercialisation opportunities if real possibilities exist; however, other countries' experiences have shown that this is often only the case for a small number of the best universities. More modest commercialisation targets would be appropriate, and performance should not be evaluated based primarily on quantity. Moreover, as was noted above, only a small number of IP-protected inventions generate the large majority of revenues, while most IP titles generate little if any revenue. This needs to be taken into consideration by the government: universities should not be encouraged to keep a large pool of IP that will be costly to maintain (due to ongoing fees); instead, they should focus on developing only those innovations with the greatest potential to produce revenue.

9. Universities and public research organisations should remove cumbersome bureaucratic obstacles where they still exist.

Universities have gained substantial flexibility and are less restricted by bureaucratic constraints than in the past. The creation of wholly-owned corporate subsidiaries to handle commercialisation has helped substantially to improve the process of engaging with industry. These subsidiaries can operate like private entities, and freedom from regulatory constraints has allowed them to handle IP licensing agreements and spin-offs. Importantly, researchers can create and decide to work for spin-offs. However, bureaucratic obstacles do still exist, particularly in some public research institutions. For instance, approval cycles can be very long because licensing agreements must be approved by university management at the highest levels. Management processes should also be reconsidered and streamlined to create more cost- and time-effective decision-making. Simplified signature requirements from high-level officials can ease the process.

10. Introduce attractive incentives for researchers that allow research institutions to cover overall costs.

Royalty revenue-sharing programmes tend to favour the researcher (80:20 shares for royalties in some cases). Yet among researchers, tenure-track positions and wider rewards relative to publishing efforts have had limited success in changing the dynamics whereby researchers have limited interest to aim for commercialising inventions. This applies particularly if a short-term perspective is adopted, so that the long-time involvement necessary to profit from IP becomes largely unattractive to researchers. Funding for the last stages of R&D projects should also be provided to facilitate the development of inventions that can more easily be adopted by industry, but not to the detriment of funding for the first, more exploratory stages. Currently such late-stage funding is often missing. Funding for research projects must take account of the full budget: research, development, proof of concept, prototypes, IP protection (filing, international extensions and renewals) and commercialisation (exhibitions, IP markets, etc.). At the same time, the share that remains for institution as overheads is not always sufficient; it may challenge the quality of services their technology transfer offices (TTOs) provide. Thinking of alternative reward programmes for researchers – where IP and commercialisation efforts receive greater rewards – may be a more suitable objective than having higher revenue-sharing programmes. At the same time, improving the efficiency of universities' support services, e.g. by creating an association of TTOs to pool support efforts, may be an easily achievable improvement.

11. Support initiatives and structures that aim to enhance knowledge-sharing among Malaysian technology transfer managers.

TTOs tend to have limited budgets and a research-based perspective, with a reduced ability to reach out to industry, particularly in areas of marketing and commercialisation. Staff rotation is an issue in some instances, as is the limited expertise in helping with commercialisation. Experienced staff should be hired, and, if necessary, regional or state-level TTOs that achieve critical mass by serving several universities could be helpful. One of the problems in the Malaysian innovation context is a lack of technology transfer experts. The Ministry of Education (MOE) created the Innovation and Technology Managers Association as a platform to discuss ways of advancing their institutions' innovations and technologies so as to improve capabilities of managing IP by means of exchanging experiences. Efforts to help these types of institutions will be particularly valuable in improving support for commercialisation. Moreover, only if greater importance is given to the position will IP managers at universities be able to effectively support IP commercialisation.

1.3.4. Adapt the IP system to users: Industry, SMEs and the informal sector

12. Support relevant GIs to foster different types of non-technological, inclusive innovations.

Malaysia's state of Sarawak has actively engaged in identifying potential GIs and registering them. In this phase, quantity has been favoured over a comprehensive strategy to "develop" some of these products, which would require building associations capable of ensuring product quality and marketing GIs. These steps are critical to generate value from GIs. Sarawak's Pepper Board is a well-functioning model to be followed by other products. Another example of a successful GI is Colombia's Juan Valdez coffee, whose success is built around a powerful industry association in charge of marketing and quality control.

13. Enhance companies' capacity to take advantage of IP to support their innovation performance.

Efforts to improve SMEs' absorptive capacities to foster their uptake of public research will be valuable. The Malaysian Technology Development Corporation (MTDC) is engaged in such efforts. Further support policies have been implemented under the aegis of different ministries, including as part of the measures to realise the objectives of the SME Masterplan. PlaTCOM Ventures supports firms with advice on how to obtain IP for their inventions and how to source IP developed elsewhere, as well as how to commercialise their own IP. Such broad-scale initiatives targeted specifically at SMEs would be valuable in today's context. The enterprise's current capacity, which in its first months had only supported 16 companies, will do little.

14. Broaden IP support policies beyond patents to make IP rights more accessible to SMEs.

It will be critical to focus IP policies on promoting the use of more "accessible" types of IP such as utility models, trademarks and design rights. Many of Malaysia's SMEs do not have the R&D capacity needed to obtain patents, particularly the large number of SMEs operating in the services sector. In many activities, trademarks, design rights and utility models can be more relevant. However, much of the support is focused on pursuing patents, while little has been done to raise the uptake of utility models. Moreover, there is no large-scale programme aimed at supporting SMEs to manage and obtain other IP titles beyond patents. This should be changed by introducing projects such as the *Propiedad Intelectual* project in Colombia (see Box 5.5).

1.3.5. Promote markets, standards and diffusion

15. Consolidate and maintain existing platforms for IP commercialisation.

Government policy has supported the development of platforms that allow inventors to connect with those interested in commercialisation, effectively helping universities but with the potential to help individual or small-scale inventors. Malaysia currently has two initiatives, PlaTCOM Ventures and MyIPO, which aim to give research institutions the opportunity to display their technologies to potential licensors or purchasers. It is worth finding synergies among platforms to increase opportunities for these platforms to succeed. Having more technologies on display matters, as does having contributions from Malaysia's best research institutions. Moreover, the different approaches adopted by these platforms are usefully considered in a combined way: the approach adopted by PlaTCOM aims to provide information in simple terms; this can be combined with the more technical information provided by MyIPO. A joint effort can help raise interest among IP owners to feature their technologies on these platforms. Currently, users are increasingly reluctant to contribute as they have received multiple requests to provide information in different formats. This increases the workload for those in charge of commercialisation activities. There is also some fatigue because past contributions had not paid off: platforms were discontinued a few years after their creation. A credible effort needs to be made to create a single platform to increase users' interest in contributing to the platform and in teaching potential licensors and buyers how such a platform can help their innovation activities.

16. Make all necessary legal adjustments to enable the IP financing initiative, set realistic objectives and track developments to build success.

Malaysia has been in the vanguard of countries introducing an IP financing model whereby IP would serve as collateral for business loans. The model is in its infancy and much fine-tuning will be needed. Consequently, tracking success in uptake among different stakeholders, including banks, will be important. An immediate step that needs to be taken for Malaysia to develop its financing model is to ensure the adoption of legal adjustments that would allow patents to function as collateral. Efforts towards the development of IP-based technology markets are also important. This can be done by joining efforts with other countries in the region to create a harmonised legal framework for IP financing and, what is more, a regional market for IP.

17. Improve the conditions of industry and universities to create collaborative IP, in particular through industry-specific organisations.

Collaborative Research in Engineering, Science & Technology (CREST) is an excellent example of good practice in support of industry-led collaborative research. The organisation provides collaborative research funding for the E&E

industry, with projects involving multinationals, local SMEs and academia. Projects, which are conceived and funded in private-public partnerships, follow a very strict selection process. The model could produce greater benefits if applied to other sectors that also feature large local firms and public research institutes. Shift 7 (Innovation Ecosystem) of the Malaysia Education Blueprint 2015-25 also involves the creation of the Public-Private Research Network (PPRN) to enhance collaboration between academia and industry, notably to enhance the contributions of public research to Malaysian businesses, including SMEs (MOE, 2015). One way of increasing support for such public-private collaboration is via the provision of standard collaboration agreements, such as the United Kingdom's Lambert toolkit, which provides model research collaboration agreements to facilitate negotiations and agreements (UK IPO, 2015). Another way could consist of adopting policy measures to encourage the country's largest firms to use publicly funded research results in innovative projects. These companies are relevant stakeholders as they have financial resources and higher absorptive capacities than small firms.

18. Extend the use of standards as a way to diffuse national intellectual property.

Standards offer another method of transferring intellectual property created by researchers and firms internationally to others, including in sectors that are not based on high technology. In the case of Malaysia this includes, for instance, standards in Islamic banking practices or halal food production. Standards can promote the diffusion of Malaysian IP. Standards are already used in this way in regard to halal food and logistics products, supporting Malaysia's position as a leading producer. Malaysia is also strongly involved in international standard-setting committees in relation to products derived from natural resources (e.g. rubber) and sustainability. These efforts can often complement IP rights because standards can support groups of national firms, particularly as they seek to enter foreign markets.

Note

1. The Gini coefficient is a standard measure of inequality, where "0" means everybody has the same income and "1" means the richest person has all the income. Gini coefficients are provided by the World Bank's World Development Indicators.

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