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Supporting Industry Promotion Policies in APEC – Synthesis Report

APEC Policy Support Unit

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- Supporting industry, in its broadest sense, refers to manufacturers and suppliers of raw materials, capital goods and intermediate goods as well as production services to user firms.

- Supporting industry is an integral part of any manufacturing value chain, because unless user firms internalize all their activities including the production of every raw materials and capital goods such as machines and tools, they would need to source them externally at some stage. This is particularly so in the current globalized world, where improvements in technology and logistics have made it more cost-effective for firms to be focusing only on activities that they have comparative advantage in, and outsource the rest.

- Yet, the frontier is not stationary. Continuous change in production patterns and advancements of technology have posed both opportunities and challenges to supporting industries. On one hand, they have opened new possibilities. On the other hand, they have made it imperative that existing supporting industry firms adapt or be forced out of the market. To ensure that supporting industries in APEC remain competitive and relevant, policies in individual economies should be responsive to these changes.

- Through a case study approach, this project has collected policy experiences of three APEC economies (Australia; Mexico; and Viet Nam) in promoting competitive, highly-skilled and modern supporting industries[1]. These case studies have been selected to take into consideration geographical distribution in the APEC region and the level of development of member economies.

Motivations for development of supporting industry

- Evidence from the three case studies showed that there are variations in the motivations behind an economy's interest in developing or enhancing their supporting industry which, to a certain extent, can be associated to the level of development of the analysed economies.

- In the case of Viet Nam, a lower-middle income economy[2], progress and changing landscape mean that the economy has to complement its attractiveness as a low-cost labour location with other factors such as the competitiveness of its supporting industry. In the case of Mexico, an upper-middle income economy, competition from others in terms of cost and their engagement in the same sectors means that the economy has to focus on more complex activities within the same sectors and/or venture into even higher value sectors. In the case of Australia, a high income economy, inability to compete on costs means that the economy has to transform its existing supporting industry firms such that they are able to contribute to the value chains by being at the forefront of emerging trends/technological frontier.

- Besides development status, there exist other factors intrinsic to each economy which can also explain their motivations for wanting to develop their supporting industries. Hence, while Australia,

[1] Each case study report can be accessed at:
http://www.apec.org/Publications/SupportingIndustryPromotionPoliciesinAPECCaseStudyonAustralia;
http://www.apec.org/Publications/SupportingIndustryPromotionPoliciesinAPECCaseStudyonMexico;
http://www.apec.org/Publications/SupportingIndustryPromotionPoliciesinAPECCaseStudyonVietNam

[2] According to World Bank's fiscal year 2016, an economy is classified as low income if its GNI per capita (Atlas methodology) is less than or equal to US$1,045; lower-middle income if between US$1,046 and US$4,125 inclusive; upper-middle income if between US$4,126 and US$12,735 inclusive; and high income if more than US$12,735. For more details, please refer to:
https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.

Mexico and Viet Nam are selected as representative cases of high income, upper-middle and lower-middle income economies respectively, insights from the case study should be applied together with economy-specific considerations.

Policies for development of supporting industry

- While the three economies have taken different approaches to develop their supporting industries, there are still parallels that can be observed.

- Policies for SME development play an integral role in the development of supporting industries as most firms in supporting industries are SMEs, although it should be made clear that not all SMEs are supporting industries (and vice versa). Indeed, among the three case studies, only one made the distinction between policies for SME development and that for supporting industry. Even then, the two sets of policies are fairly similar. In the other two case studies, policies for supporting industry development are generally part of policies for SME development.

- One way of classifying policies for development of supporting industry is to group them into either supply side or demand side policies. Supply side policies are focused on enhancing the capacity of firms to increase their participation in value chains. Examples of such policies from the case studies include those formulated to promote R&D activities, to facilitate human resource development, and to provide financial incentives for various purposes.

- On the other hand, demand side policies entail linking supporting industry firms to larger markets, and hence widening their customer base. Examples from the case studies include business matching initiatives, as well as creating demand through regulations and government procurement policies.

- Policies for supporting industry development are often accompanied by efforts to improve the general business environment, which have broader implications as they aim to create a conducive macro-environment for all businesses.

Key takeaways across case studies

- The richness and wide variation of insights make it challenging to generalise policy recommendations which are applicable across all APEC member economies. Nevertheless, some common key takeaways stand out and these include the importance of:

    - **Exploring comprehensive range of policies** – Supporting industry firms face many different challenges in integrating into value chains, and a single firm is likely to face multiple challenges simultaneously. The range of challenges make it imperative that policymakers explore various policy options available to firms.

    - **Balancing sectoral nuances with flexibility** – Different sectors exhibit distinctive characteristics in terms of their value chains, evolving pace of industrial trends, sophistication of technology, and intensity of capital requirements among others. Thus, the requirements and needs of sectors vary and one-size-fits-all approach may not work.

    - **Engaging with multiple stakeholders** – Different stakeholders bring diverse perspectives to the table and can contribute at various stages of the process of supporting industry development. The involvement of multiple stakeholders are therefore more likely to lead to better policies as they have incorporated the collective wisdom of broader group.

    - **Timely policy improvements (in terms of content, awareness, implementation and monitoring)** – Content that may have been appropriate at the time of formulation may become less useful over time. Awareness among potential beneficiaries is important to

achieve the intended objectives of the policies. Implementation is critical as it operationalizes policies and enables access. Monitoring and evaluation lies at the crux as they provide the basis for policy improvement process.

- **Considering SMEs' inherent challenges** – Despite the notable contributions of SMEs across many measures such as number of total firms operating in APEC region and source of employment, the extent of their participation in value chains remains relatively low. If the targeted beneficiaries of supporting industry policies include SMEs, then it is critical that these policies and their accompanying institutional structure take SMEs' inherent challenges into account.

- **Balancing economy-wide and local priorities** – The challenges faced at national and local level may be different, and such differences may lead to variations in how policies are being operationalized. Policymakers should attempt to balance national and local priorities so as to overcome or minimize issues such as lower than expected awareness and access to policies.

- **Enhancing general business environment** – Policies that lead to a conducive business environment, although not specifically targeting supporting industries, are critical for the development of firms in supporting industries.

Way forward

- APEC can build on the insights from the study and contribute to the endeavour of improving the quality of policies for promoting supporting industry by:

    - Facilitating information sharing/exchange on relevant policies, particularly in areas such as how such policies have been developed, what the mechanisms to raise awareness are, as well as how policy implementations and their impacts are monitored and evaluated. Such platforms may serve to encourage deeper discussions on how policies can be bolstered. Specifically for SMEs, improvements in aspects such as awareness and implementation may go a long way in facilitating their knowledge of policy changes and new initiatives, and to benefit from them. These platforms can also be used as avenue to understand how policies for development of supporting industry can assist economies in overcoming middle income trap.

    - Formulating policy guidelines to serve as a reference on aspects that economies may wish to consider when developing policies to promote supporting industries. These can include the common key takeaways discussed in this synthesis report, as well as inputs from member economies based on their experiences.

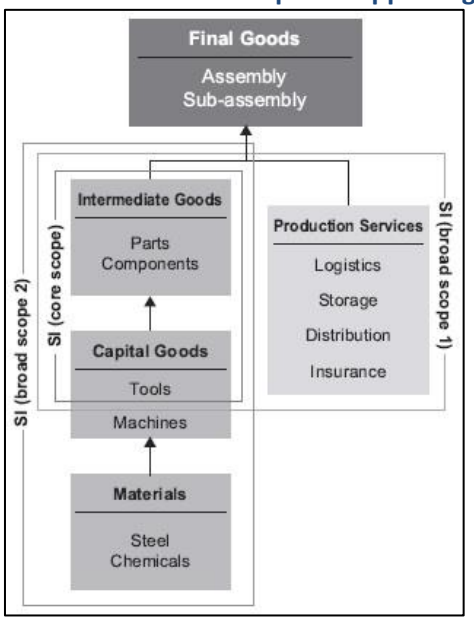
    - Organizing capacity-building activities to assist member economies in the development of their supporting industry. These can include workshops to enhance the capability of policymakers, as well as training assistance provided to supporting industry firms in developing economies by experts from international organizations, academia, and developed economies.

1. INTRODUCTION

Supporting industry - terminology and scope

The term 'supporting industry' is not new. According to Nguyen (2007), it was first used officially by the Japanese government more than three decades ago in its White Paper on Economic Cooperation in 1985. One reason for its use then (and even now) was to bring attention to the need of developing industrial base to support user firms operating in those economies where the presence of such industries appeared to be deficient. While its scope may vary depending on context, as illustrated by Figure 1 below, 'supporting industry', in its broadest sense, generally refers to manufacturers and suppliers of raw materials, capital goods and intermediate goods as well as production services to user firms.

Figure 1. An illustration of the scope of supporting industries



Note: SI refers to supporting industries
Source: Nguyen, Chapter 2 in Ohno (2007)

Although the term was not coined recently, it should be noted that 'supporting industry' is not a universal term used globally or in the context of APEC, by all member economies. Indeed, Nguyen (2007) observed in the same paper that besides 'supporting industry', there are other similar concepts such as ancillary industries, vendors and subcontractors. Furthermore, of the three case studies undertaken by the APEC Policy Support Unit (PSU) in support of the APEC Supporting Industry Initiative and which this synthesis report mainly draws its information from, only Viet Nam uses the term in its official documents. In contrast, both Australia and Mexico do not use the term. To overcome this issue on terminology and in recognition of variations in contexts across economies which will be elaborated in later sections, authors begin each case with a clear discussion of the scope of 'supporting industry' being analyzed (Table 1).

Table 1. Scope of 'supporting industry' covered by each case study

Economy	Scope as shown in Figure 1	Providers of raw materials	Providers of capital goods	Providers of intermediate goods	Providers of production services
Australia	Broad scope 1	✗	✓	✓	✓
Mexico	Core scope	✗	✓	✓	✗
Viet Nam	Broad scope 2	✓	✓	✓	✗

Source: APEC PSU compilations

'Supporting industry' and value chains

Supporting industries, subject to variations in the scope covered by each case study, are an integral part of any manufacturing value chains because unless user firms internalize all their activities including the production of every raw materials and capital goods such as machines and tools, they would need to source them externally at some stage. In a globalized world, the role of supporting industry is even more vital considering that improvements in technology and logistics have made it more cost-effective for firms to be focusing only on activities that they have comparative advantage in and outsource the rest. Other reasons for outsourcing include: (i) requirements by laws and regulations; (ii) lack of expertise or specialization in-house; (iii) non-feasibility to supply in-house; (iv) economies of scale; and (v) network economies (Low and Pasadilla, 2016). These developments have essentially made supporting industry an important contributor to economic growth in all economies, some more so than others.

The economic contributions of supporting industry can come through various mechanisms/pathways. For one, development of supporting industry increases the attractiveness of an economy as an FDI destination, since the strength of supporting industry is a significant factor in the decision to invest in the manufacturing industry. Specifically, the presence of competent supporting industry firms domestically is a boon to user firms because they would be able to save on import cost and time. Moreover, it would be easier for user firms to monitor their suppliers through regular visits for instance.

Additionally, supporting industry development can reinforce the industrial capability of the economy by enhancing productivity and potentially increase the opportunities available to firms (CIEM, 2016). For example, besides just supplying products and services to user firms domestically, competitive supporting industry firms can also export their products to overseas-based user firms and in doing so, boost the economy's growth potential. It thus comes as no surprise that many member economies have spared no efforts in further enhancing their supporting industry through a myriad of policies.

Yet, continuous change in production patterns and advancements of technology have posed both opportunities and challenges to supporting industries. On one hand, changing circumstances have opened new possibilities. On the other hand, existing supporting industry firms are required to adapt, or be forced out of the market. To ensure that their supporting industries remain competitive and relevant, it is imperative that policies in APEC member economies be responsive to these changes.

Case study approach to understanding supporting industry development

There is, however, a dearth of detailed information specific to supporting industries. This due in part to the fact that 'supporting industry' is not a universal term. Often, policies for development of supporting industry constitute part of the policies for development of SMEs, since many of the supporting industry firms tend to be SMEs and vice versa. Particularly for APEC, SMEs made up at least 97 percent of total enterprises in each member economy (Zhang, 2013)[3]. Case studies allow us to obtain insights more specific to 'supporting industries' at a more micro-level, which is important because policies are ultimately designed with the intent of assisting the development of firms. This project has therefore collected policy experiences of three APEC economies, namely: Australia, Mexico, and Viet Nam in promoting competitive, highly-skilled and modern supporting industries.

Nonetheless, the case study approach has its limitations. While obtaining more detailed information is an advantage of the approach, findings may not be readily extrapolated. This is particularly so if the number of cases studied is small, as is the situation in this project due to time and budget constraints. In an attempt to overcome some of the limitations of fewer case studies, the three case studies have

[3] The definitions of SMEs vary across APEC economies.

been selected to take into consideration geographical distribution in the APEC region and the development status of member economies (Table 2). Variation in the case studies across these criteria would hopefully lead to more diverse perspectives and richer insights.

Table 2. Regional grouping and income classification of each case study

Economy	Regional grouping	Income classification in 2016[4] (according to World Bank)
Australia	Rest of APEC	High
Mexico	Latin America	Upper middle
Viet Nam	Southeast Asia	Lower middle

Note: Southeast Asia refers to Brunei Darussalam; Indonesia; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam. Latin America refers to Chile; Mexico; and Peru. Rest of APEC refers to Australia; Canada; China; Hong Kong, China; Japan; Korea; New Zealand; Papua New Guinea; Russia; Chinese Taipei; and the United States.
Source: World Bank and APEC PSU

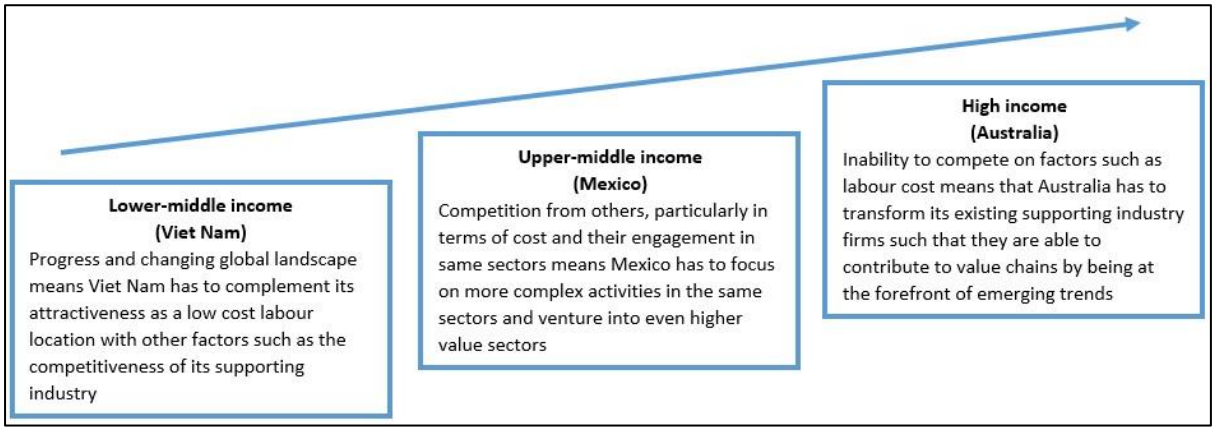
Findings from the case studies have been obtained via a combination of desk-based research and interviews with relevant stakeholders. The objective of this synthesis report is to distil and consolidate the findings from each case. It is organized into three main chapters. Chapter 2 explains the motivations for development of supporting industry by case study economies. Chapter 3 presents the various policy options that case study economies are implementing to develop their supporting industry. Chapter 4 discusses the common key takeaways across the case studies while chapter 5 explores the possible role of APEC in improving the quality of policies for promoting supporting industries in the region.

[4] This refers to World Bank's fiscal year. According to the classifications, an economy is classified as low income if its GNI per capita (Atlas methodology) is less than or equal to US$1,045; lower-middle income if between US$1,046 and US$4,125 inclusive; upper-middle income if between US$4,126 and US$12,735 inclusive; and high income if more than US$12,735. For more details, please refer to: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.

2. MOTIVATIONS FOR DEVELOPMENT OF SUPPORTING INDUSTRY

Evidence from the three case studies illustrates that there are various motivations behind an economy's interest in developing their supporting industry which, to a certain extent, can be associated to the development status of the economies analyzed (Figure 2).

Figure 2. Selected motivations for development of supporting industry by case study economies



Source: Authors

It is worthwhile to note, however, that while Australia, Mexico and Viet Nam are selected as representative cases of high income, upper-middle and lower-middle income economies, insights from the case study should be applied together with economy-specific considerations. Rather than emulating exactly the policies from the case studies, policies should be tailored to the specific needs of each economy.

Viet Nam (lower-middle income)

In the case of Viet Nam, a lower-middle income economy, one of its attractiveness as an FDI destination has been its low labour cost, as indicated by several surveys[5]. Nonetheless, this comparative advantage has been weakening in recent years. Other locations with low labour cost have sprung up and according to the same JETRO survey, labour costs in Viet Nam's manufacturing sector has increased by 10 percent annually between 2013 and 2015. Unless there are other factors that would encourage firms to stay, it is likely that FDI firms would re-consider their investment plans in Viet Nam.

One important factor which makes an economy stand out as a prospective FDI destination is the state of its supporting industry. In this regard, available information from various sources including the OECD TiVA database and business surveys indicate that domestic supporting industries in certain selected sectors in Viet Nam are relatively weak compared to their counterparts in other economies. Reasons for the under-developed state of supporting industry in Viet Nam include: 1) lack of resources to make capital investment necessary to manufacture parts and components of the appropriate quality; 2) lack of certifications issued by bodies such as International Organization for Standardization (ISO), resulting in firms being unqualified to be suppliers in certain value chains; 3) high cost of supplied parts and components due to low economies of scale, partly due to its small domestic market; 4) inability to respond quickly to changes in demand for parts and components; 5) relatively poorer quality of labour force; 6) firms' hesitation to be pro-active in upgrading and in the product development process; and 7)

[5] According to the ASEAN Business Outlook Survey 2016, availability of low cost labour is the highest rated business factor in Viet Nam. In a survey of current situation of Japan enterprises in Asia and Oceania, Viet Nam ranks third out of 15 economies in terms of cheaper labour cost.

communication barriers with potential customers. These limitations have in turn spurred the Vietnamese government to further develop their domestic supporting industries.

In addition, the development of supporting industries can bolster the industrial capability of the economy and hence, enhance Viet Nam's export and growth potentials. In fact, the continuous development of supporting industries is one possible way for Viet Nam to achieve its targeted annual GDP growth rate of 7 to 8 percent and an average GDP per capita in real terms of US$3,000, indicated in its Socio-economic Development Strategy (SEDS) 2011-2020.

Supporting industry development can also help an economy to overcome middle income trap, as highlighted by Ohno (2010). Viet Nam had many significant achievements under SEDS 2001-2010. These include moving from low income status in 2001 to lower-middle income status in 2010 (according to World Bank income classification) and growing its economy at an annual average rate of 7.3 percent. While this is certainly laudable, the paper noted that these past achievements have been made possible by lower hanging fruits such as systemic transition to market economy and global integration. As these processes are more or less nearing its completion, Viet Nam needs to be looking at areas such as moving up the value chain to sustain growth and hence avert middle income trap.

Although level of development is an arguably significant contributing factor to an economy's motivations for developing its supporting industry, it should be stressed that other factors which are intrinsic to the specific economy should also be considered. For instance, Viet Nam's impending reduction of import tariffs in 2018 to zero percent for certain goods including automotive as part of its commitment under the ASEAN Trade in Goods Agreement (ATIGA)[6] may have contributed to the economy's interest to start developing their automotive supporting industries. This is especially so if locally assembled cars are to be able to eventually compete with imported completely-built units (CBU) assembled in other ASEAN economies in terms of cost.

Mexico (upper-middle income)

For Mexico, an upper-middle income economy, the study notes that the economy has many appealing factors as a location of choice for manufacturing activities such as a vast network of free trade agreements (FTAs), economic stability, and mature infrastructure. Furthermore, while its labour cost was previously more expensive relative to other fairly similar locations in 2000, rising wages in these locations coupled with the devaluation of Peso have tilted the cost advantage back in the favour of Mexico (Stratfor, 2015). However, the ever-present competition from other economies, particularly in terms of cost means that Mexico has to focus increasingly on higher value sectors such as automotive and electronics. In fact, as these competing economies move up the value chain and are becoming increasingly involved in the same sectors as Mexico, the economy has to constantly distinguish itself from its counterparts by focusing on the more complex activities within the same sectors and venturing into even higher value sectors such as aerospace.

Despite being the backbone of Mexican economy, SMEs still face many challenges to participate in the value chains of these higher value sectors as supporting industries. Some of these include: 1) constraints in terms of skills and technological know-how; 2) lack of certifications; 3) limited access to credit; and 4) burdensome regulations. The main motivations of Mexico's policies are therefore not only to increase the number of SMEs that can participate as supporting industries, but also to transform the existing ones (i.e. those that already participate in value chains) so that they are able to undertake more complex activities within the same value chain and/or supply to even higher value sectors.

Beyond level of development, Mexico's proximity to the United States means that increasing the number of supporting industry firms that supply to one of the largest consumer markets in the world

[6] More details on Viet Nam's tariff schedules under the ASEAN Economic Community can be accessed at: http://asean.org/?static_post=annex-2-tariff-schedules.

would bring about huge potential in terms of economic growth. This is particularly so due to the large proportion of SMEs in supporting industries, and their sizable contribution to Mexico's GDP and employment mentioned above. However, this motivation may be affected by the possible renegotiation of the North American Free Trade Agreement (NAFTA) and withdrawal of US from the Trans-Pacific Partnership.

Australia (high income)

In the case of Australia, a high income economy, it is clear that competition based on labour cost is inapplicable to the economy. Indeed, the case study mentions the recent departure of automotive assemblers from the economy, specifically from the states of South Australia and Victoria.

Seen from this perspective, motivations for wanting to enhance its supporting industries may include: 1) replacing the customers that firms have lost from the departure by connecting them with new customers in other sectors; and 2) equipping firms with knowledge and skills which would enable them to be at the forefront of emerging trends in selected sectors such as food & beverages, automotive and fabricated metal products. Examples of emerging trends in food & beverages sector include high pressure processing, use of nanotechnology to alter taste and texture, as well as new packaging which can tell consumers if food is still fresh (Johnston, 2011). With regard to the automotive sector, examples of emerging trends include the development of autonomous vehicles, utilization of software for collection and transmitting vehicle data, as well as battery technologies to replace fossil fuels (Gao, 2016; Association of European Automotive and Industrial Battery Manufacturers, n.d).

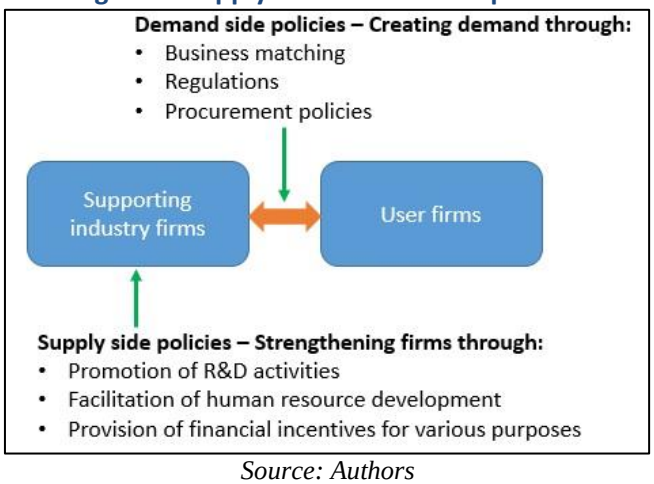
Australia's distance from major markets serve as another strong motivation for policymakers to want to develop their supporting industries in a way where physical barriers matter less.

3. POLICIES FOR DEVELOPMENT OF SUPPORTING INDUSTRIES

The previous chapter has highlighted the varying motivations for developing supporting industries in each of the three case studies, some of which are associated with their development status, and others which are intrinsic to the economy. In order to operationalize these motivations, it is unsurprising that variations can also be observed in the policy measures implemented by the three case study economies. Nonetheless, there are parallels in these policies in that they can largely be grouped into broad objectives or fairly similar 'policy menu' such as promoting R&D activities, enhancing human resource development, and improving linkage between suppliers and firms.

In addition, it is worthwhile to note that policies for SME development play an integral role in the development of supporting industries as most businesses in supporting industries are SMEs, although it should be made clear that not all SMEs are supporting industries (and vice-versa). Indeed, among the three case studies, only Viet Nam differentiates between policies for SME development and that for supporting industry development and even then, the two sets of policies are fairly similar. In the case of Australia and Mexico, policies for supporting industry development are generally part of policies for SME development. It should also be noted that not all programs on supporting industry development are initiated by government. In many cases, private or non-governmental organizations undertake parallel activities to complement government policies and this is particularly useful when resources are limited. Last but not least, policies for supporting industry development are often accompanied by efforts to also improve the general business environment which have broader implications as they aim to create a conducive macro-environment for all businesses. The sections below attempts to provide more details on some of these policies as gleaned from the case studies.

Figure 3. Supply and demand side policies



Source: Authors

One way of classifying policies for development of supporting industry is to group them into either supply side or demand side policies (Figure 3). Supply side policies are focused on enhancing the capacity of firms to increase their participation in value chains. Examples of supply side policies mentioned in this chapter include those formulated to promote R&D activities, to facilitate human resource development, and to provide financial incentives for different purposes such as purchase of new equipment. Conversely, demand side policies entail linking supporting industry firms to larger markets, and hence widening their customer base. Some examples include business matching initiatives such as trade fairs and promotion of international cooperation, as well as creating demand through regulations and government procurement policies. Policies in all three case study economies tend to be mostly supply side, although there exists a number of demand side policies.

As some programs may fall under multiple categories, they may be mentioned several times. This list is also not exhaustive, and only encapsulates major policy initiatives which were highlighted in the respective case studies.

Supply side policies

i. R&D and technological development

R&D policies are essential for developing supporting industries because they can facilitate firms to undertake activities which could potentially allow them to move towards producing higher value goods, rather than just relying solely on low labour cost as its major source of competitiveness. Indeed, some of the perennial concerns of middle income economies include the danger of being squeezed out by competing low-cost manufacturers from other economies, while not being able to keep up with their high income counterparts.. Boosting R&D among firms, including those in supporting industry is therefore one way for these economies to build on their comparative advantage. In a similar vein, high income economies are required to constantly innovate as well, in order to remain ahead of the curve. However, R&D tends to be highly risky and costly, as there is no certainty on the quality of results produced. Government support is thus crucial for such activities to occur, especially for small supporting industry firms who lack the resources to do so.

As such, governments in all three economies place heavy emphasis on making R&D accessible to supporting industry firms. This is done either by linking firms to external research institutes, or providing resources for supporting industry firms to embark on R&D themselves. In certain cases, technology transfers from user firms to supporting industry firms are encouraged.

Linking R&D providers to firms

A number of R&D policies from the case studies aim to link R&D institutions to firms. For instance, the Co-operative Research Centres (CRC) program in Australia encourages the formation of partnerships between R&D institutions and the private sector, including SMEs. The Australian government matches dollar for dollar the funds contributed by the partners to each CRC. Another program is the R&D Corporations, where the government and primary agricultural producers co-invest in research projects. At the state level, the Business Innovation Voucher Program in South Australia aims to link SMEs to research providers to solve commercial problems. The program provides funds of up to AU$50,000 to help SMEs develop new products through collaborations with R&D institutions. Likewise, the Manufacturing Technologies Program links SMEs to research institutions within the state with specific expertise such as big data analytics, photonics and automation. The AERIS[7] program by CONACyT[8] in Mexico seeks to build networks between firms and academic institutes to boost R&D in the automotive industry. In Viet Nam as well, R&D institutes such as universities and research institutes are encouraged to form linkages with supporting industry firms.

Linkages can also be between user and supporting industry firms, with the intent of facilitating the latter's learning. The *Strengthening Technical Support to Enhance the Competitiveness of SMBs in Mexico's Aerospace Sector Supply Chain* program administered by PROCEI[9] is a platform for original equipment manufacturers (OEMs) to collaborate with SMEs in R&D of new materials and models. This is beneficial to both parties as OEMs can evaluate their potential suppliers, and SMEs can develop the relevant technology required to move up the value chain.

[7] Alianzas Estratégicas y Redes de Innovación para la Competitividad. In English: Strategic Alliances and Innovation Networks for Competitiveness.
[8] Consejo Nacional de Ciencia y Tecnología. In English: National Council of Science and Technology.
[9] PROCEI stands for Competitividad E Innovacion Mexico – Union Europea. In English: Mexico-European Union Competitiveness and Innovation Program.

Developing new products

Certain policies provide firms with funds to develop innovative products. Many of such programs tend to be sector specific. In Australia, the Medical Technologies Program provides funds to develop medical machinery and equipment. The Cleantech Partnering Program also provides SMEs with funding to develop clean technology-related services, and the Advanced Food Manufacturing grants program supports the development of innovative food products. The Mexican state of Chihuahua provides resources for SMEs in the aerospace, automotive and electronics industries through a FabLab (fabrication laboratory) to design and develop their own products in a cost effective way. The Vietnamese government also provides sponsorship of up to 50 percent of investment costs from the Supporting Industry Development Program for projects that produce viable results.

Funding for general R&D

Tax incentives and funding for general R&D purposes are also offered to supporting industry firms. In Australia, the Research and Development (R&D) Tax Offset program was set up to encourage SMEs to undertake R&D. It provided AU$800million in tax concession to businesses in the financial year 2012-2013. In Viet Nam, technology transfers that benefit supporting industries are eligible for partial funding from the government. The Mexican state of Baja California has established a Mixed Funds program to provide funds intended to promote scientific and technological development in general.

Providing physical facilities

The Mexican federal government has research centres and laboratories which are specialized in manufacturing and can be accessed by SMEs. The equipment, knowledge and resources provided by these centres are aimed at helping firms to develop their capacity and increase their competitiveness within the value chain. Examples of such centres include the Center for Engineering and Industrial Development (CIDESI) which caters to the automotive and aerospace industries, the Future Internet National Laboratory (LANIF) which allows SMEs to experiment with new internet technologies, the Advanced Technology Center (CIATEQ) which enables SMEs to undertake R&D, as well as the Advanced Materials Center (CIMAV) which conducts chemical analysis and materials testing. In the case of Viet Nam, the government provides land for R&D facilities.

ii. Human resource development and capacity building for firms

Human resource development can serve to boost the capability of both firm owners and their employees and therefore, potentially allow supporting industry firms to enhance their competitiveness as well as undertake more complex activities. This is particularly so for upper-middle and high income economies that are no longer able to compete on labour costs. Lower-middle income economies can also benefit from human resource development which complements its relatively low labour costs.

Policies for human resource development can span a wide range, from general training such as improving existing business models through the use of consultancies, fostering collaboration with MNCs, governments and academia to more targeted skills training which improves the technical skills of employees and leads to attainment of certification by firms. The myriad of policy measures means that economies have the options to tailor a solution which is more specific to their situation. It is imperative that ‘skills development’ are not pursued indiscriminately, but rather on the needs of each economy. If business requires engineers for instance, then it would be less useful to provide unskilled labour only with basic training.

General training

General training programs including consultancy services aim to develop soft skills such as improving existing business models and helping firms to adapt to new situations, rather than acquiring hard technical skills. The Enterprise Connect program and Supplier Continuous Improvement Program (SCIP) in Australia, for example, aims to improve firm performance by assigning business advisers to analyze firm's strengths and weaknesses. Funds and assistance are then provided to implement the recommendations. At the state level, the SME Innovation Capacity Program provides SMEs with access to training in areas such as developing new business models from globally-recognized business experts. In Mexico, the state of Queretaro manages the Competitiveness Program for SMEs through the Secretariat of Sustainable Development (SEDESU). It is a consulting program which aids SMEs in improving their competitiveness and can take the form of helping them develop web platforms or implementing business models.

Viet Nam provides funding for training activities through its Supporting Industry Development Program (SIDP) funds, and encourages organizations such as universities and research institutes to provide relevant training to supporting industry firms. Additionally, the SIDP also aims to enhance the business administration capabilities of SMEs. Non-government organizations such as the Vietnam Chamber of Commerce and Industry (VCCI) and the Vietnam-Japan Human Resource Cooperation Center (VJCC) also conduct training courses for SMEs in areas such as marketing, financial and operations management, as well as business management.

Customer service is sometimes targeted as well, such as in Australia's SCIP which aims to help businesses better understand the needs of their customers. The SME Innovation Capacity Program mentioned above includes enhancing firms' customer insights and in doing so, hopefully helps them to increase their profitability. Furthermore, organizations such as the VJCC conducts Japanese language training courses to facilitate trade between Japanese and local Vietnamese firms.

Targeted/technical training

Training programs implemented by economies could also take the form of targeted training, which aims to help workers pick up technical skills or improve productivity. One example of such program in Australia is the Automotive Supplier Diversification program, which provides funding for companies to apply their skills to customers outside the automotive sector. Activities funded include helping firms to obtain international quality management certification. Within Mexico, the Program for Industrial Productivity and Competitiveness (PPCI) run by the Subsecretary of Industry and Commerce aims to help firms with capacity-building activities such as obtaining certification for various processes and providing equipment for training centers. The Center for Training and Certification in Design and Engineering Software (CATIA), which is managed and funded by PROCEI, also provides training and certification on CATIA and SolidWorks design and engineering software for firms in the aerospace industry. In Viet Nam, the Science and Technology Fund can be used to support firms' technical skills training.

Furthermore, Viet Nam is exploring the possibility of increasing investments in vocational training to improve the quality of technical workers. Examples of existing vocational colleges include the Long An Vocational College and the Ho Chi Minh City (HCMC) Vocational college which focus on engineering-related skills (Nham and Nguyen, 2016).

iii. Financial incentives

Financial incentives are vital in developing supporting industries, particularly for SMEs, which comprise of the bulk of supporting industry firms. According to the World Bank (2015), over half of SMEs worldwide lack access to formal credit, relying instead on personal funds to finance their

businesses. Many activities such as expanding capacity, obtaining certification and hiring more workers require financial resources. Without these undertakings, it would be challenging for supporting industry firms to produce higher value added products, or even to join the value chains.

Financial incentives to help supporting industry firms can be divided into tax and non-tax incentives. Tax incentives include tied and non-tied exemptions, while non-tax incentives are generally grants or loans provided at preferential interest rates.

Tax incentives

Tax incentives benefit supporting industry firms not just by directly easing their financial burden, but also by creating a favourable investment climate to attract foreign investors. A number of tax incentives are untied, and do not require firms to meet specific conditions to benefit from them. Corporate income tax reduction or general tariff exemptions are examples of such incentives. In Viet Nam, the current corporate income tax (CIT) rate was reduced from 22 percent in 2014 to 20 percent in 2016. Circulars were also released to clarify VAT and CIT incentives for supporting industry firms within the economy. Other incentives such as tax breaks for public services like sewage services are applied in the Mexican state of Baja California. This can help small firms with covering their operational costs.

Besides non-tied tax incentives, there are those which supporting industry firms can benefit from upon meeting certain conditions (i.e. tied tax incentives). One such example is the IMMEX[10] program in Mexico which allows manufacturers with a structured trade plan to temporarily import inputs without paying VAT, if they are to be used in the manufacture of exports. Another example of a tied program is the Sectoral Promotion Programs (PROSEC) which provide firms in specific sectors with duty-free importation of inputs approved by the Ministry of Economy. The program was designed to encourage SMEs to diversify their supply sources and encourage foreign investment to fill gaps in supply chains. Essential inputs identified by the ministry can move more freely into the economy, and these cheaper imports can address gaps in the supply chain not fulfilled by local suppliers.

Besides the above, other examples include tariff assistance provided by the Australian government amounting to AU$7.8billion in 2014-2015. The manufacturing sector received over 90 percent of this assistance, including support programs such as tax concessions which total to AU$15billion for all sectors nationally. The Mexican government implemented favourable trade policies such as reducing or eliminating import duties for inputs used in the manufacturing sector. In 2014, the average tariff on all imports was lowered from 13 percent to 7.5 percent (ProMexico 2016b, p.90). Vietnamese supporting industry firms are able to benefit from tax incentives and import duty exemptions as well, subject to existing laws.

Non-tax incentives

Non-tax incentives are generally composed of grants to fund programs to facilitate the development of supporting industry firms. Micro-financing or loans at preferential interest rates are also offered to firms.

Examples of government funding for firms include the Next Generation Manufacturing Investment Program in Australia, which provides financial assistance to firms investing in capital projects or expanding manufacturing operations. Grants from the program range from AU$500,000 to AU$2.5million and can be used to support up to one third of project costs. Additionally, the Export Market Development Grants (EMDG) program reimburses companies for part of the cost of export marketing. In Mexico, the SME Fund (Fondo PYME) and the National Fund of the Entrepreneur (FNE), which are administered by the Ministry of Economy and INADEM (National Institute of Entrepreneurs) respectively, provide grants for activities that increase the competitiveness of SMEs and encourage their

[10] The IMMEX maquiladora system refers to a system of tax incentives to encourage firms to export their products to the US and other economies.

integration into larger supply chains. In Viet Nam, the Capital Development Fund, which was launched with a capital grant from the State budget, aims to fund programs that improve the competitiveness of SMEs. Future plans include the State Bank helping to strengthen the capacity of financial institutions and tailoring their products and services to the needs of SMEs.

Loans at preferential rates are another form of incentives for supporting industry firms. The Mexican states of Nuevo Leon, Chihuahua and Queretaro have loan schemes which are available for SMEs at low interest rates. SMEs in Viet Nam are similarly able to take short term loans of up to 70 percent of their investments from financial institutions at an interest rate not exceeding the limit set by the State Bank.

iv. Cluster development

Clustering programs are essentially those that link entities such as suppliers, research institutions, final assemblers and other relevant actors with similar or complementary knowledge and interests together. Advantages of clusters include sharing common infrastructure and minimising logistics costs, therefore reducing the need for firms to individually invest in them. Clustering could also potentially increase demand from user firms located in the same area. Technological and knowledge spillovers from research institutes and other firms in the cluster could additionally benefit supporting industry firms. Clustering programs, by their nature, inevitably tend to overlap with the objectives of other policies such as facilitating R&D activities, enhancing knowledge transfer, and linking supporting industry firms to user firms.

Clusters are usually grouped by sector. For instance under its Manufacturing Works program, South Australia has identified specific industry clusters such as those focusing on premium food and wine, defense specialist vehicles, and health & medical devices. The state aims to link SMEs with large companies, as well as increase interactions between entrepreneurs, researchers, and innovators. The Competitive Foods Initiative in Australia developed in 2015 also aims to develop "smart food clusters" that encouraged collaborations between firms. The Mexican state of Queretaro has a relatively successful cluster program for aerospace firms that encourages cooperation between firms. This includes a permanent training centre which aims to assist SMEs in joining supply chains. Mexico also has an IT cluster often referred to as "Mexican Silicon Valley" in Guadalajara, Jalisco - it has over 380 specialized suppliers, which are particularly focused on high-tech industries and IT.

Clusters are not necessarily sector specific and can include general industrial zones which bring together a variety of firms, research institutes and training centres regardless of their area of expertise. Viet Nam for one has several hundred industrial parks. In addition to the previously mentioned benefits of clustering, advantages of being in these zones include free land rental, corporate income and value added tax incentives, as well as import and export duty reductions for both local and foreign investors. Examples of such zones in Viet Nam are the Ha Noi Southern Supporting Industrial Park and Urban Services (HANSSIP), the Saigon High-Tech Park and industrial zones in the Hai Phong and Quang Nam province.

The South Australian government established a Manufacturing Technologies Centre in 2016 which links SMEs from different sectors with technology providers in big data and photonics, amongst others. The centre complements existing programs under Manufacturing Works which aim to link SMEs to service providers in these fields.

Demand side policies

i. Business matching

Business matching activities serve to link firms to potential customers which they otherwise would have missed. Business matching could be carried out by both governments as well as non-governmental organizations. In Australia, the Industry Capability Network (ICN) allows registered companies to receive information about major infrastructure contracts. The ICN then helps these firms find business opportunities through their network of consultants within Australia as well as in New Zealand. Similarly, the ACT Model program in Mexico aims to improve SMEs' integration into the supply chains of MNCs by identifying qualified domestic suppliers for them. This is done by consulting closely with MNCs about their desired requirements for potential suppliers. Likewise, Viet Nam has a number of assistance policies (implemented by both government and non-governmental organizations) which are aimed at linking supporting industry firms to user firms. Officially, supporting industry firms are prioritized when participating in national trade promotion programs. Firms can also expect to receive partial funding to participate in trade fairs and exhibitions. Interviews have indicated that some firms have benefited from business matching activity conducted by the government, where foreign firms are linked to local suppliers. Furthermore, the Supporting Industry Enterprises Development Center (SIDEC) has compiled a business directory, the Viet Nam Manufacturing Supporting Industry Yearbook, for foreign firms to identify suitable local suppliers. Likewise, JETRO Viet Nam compiles a detailed catalogue specifically for Japanese firms, listing local suppliers with the capability to provide products to them.

There also exists demand side programs that encourage supporting industry firms to expand to international markets. In Mexico, Baja California has an agreement with California to promote exports and business partnerships over the border. The state also has supplier development initiatives such as the Supplier Outreach and Supplier Development programs to link MNCs with qualified local suppliers. Viet Nam has export promotion programs such as the Ho Chi Minh City Investment and Trade Promotion Centre (ITPC), which provides information for investors and exporters and organizes trade fairs for foreign firms. JETRO Viet Nam organizes reverse trade fairs as well, to link foreign firms to domestic suppliers.

ii. Regulations and procurement policies

Demand for supporting industry products could also be created by giving priority to SMEs when it comes to government procurement. In South Australia, the Small Business Innovation Research program supports SMEs' participation in government procurement projects by assisting firms to meet the needs of government tenders. In Viet Nam, Decree No. 56/2009/ND-CP on assistance to the development of SMEs include policies to increase SMEs' participation in government procurement.

Another method of generating demand is through regulations. Australia's Green Car Innovation Fund provides incentives for car assemblers to invest in new "green" technology. This, in turn, generates demand for suppliers to provide these firms with new types of parts and components.

General business environment

General business policies aim to create a conducive macro-environment for all businesses in general. A stable and open investment regime not only benefits supporting industry firms, but also attracts MNCs that bring with them potential knowledge spillovers and other resources. Examples include liberalising investments and ensuring macroeconomic stability, as well as reducing administrative burdens. These policies may not be specific to supporting industries, but nonetheless are essential for their development.

Liberalising investments is a common measure adopted by many economies to attract FDI. Such policies are beneficial to the development of supporting industry as the resulting increase in FDI firms not only increases demand, but also provides opportunities for learning from these firms.

The Mexican government does not impose any "local partner" rules, and allows 100 percent foreign ownership of businesses under the maquiladora factory system. In addition, Mexico maintains macroeconomic stability by ensuring stable foreign exchange rate, and implementing programs such as the Fiscal Certainty Agreement which commits to no new tax and no removal of existing tax benefits until November 2018. The government's efforts to simplify regulatory processes has also allowed firms to construct facilities rapidly.

Viet Nam has liberalised investments through its updated Law on Enterprise. Previously, businesses were only allowed to operate in industries permitted by the law. After the revision, businesses are free to operate in any industry not prohibited by law (Duane Morris Vietnam, 2014). Essentially the approach has changed from a positive list to a negative list. The new Vietnamese government led by Prime Minister Nguyen Xuan Phuc has also promulgated several resolutions such as Resolution No. 35/NQ-CP, which is aimed at fostering a conducive business environment through administrative reforms. In addition, the Law on Investment was updated to reduce the time needed to obtain an investment registration certificate (IRC). Prior to 2014, it took several months for foreign firms to obtain the certificate. After the law was updated, certificate can be obtained within 15 days, or expedited to 5 working days in the case of strategic projects.

Beyond policies for supporting industry development

While policies to support the development of supporting industry are critical, it is also important to note that there are other external factors at play, which are to a certain extent, beyond the scope of the supply and demand side policies discussed above. One pertains to the need to have strong entrepreneurial spirit. Many of the interviewees in the Viet Nam case study, for example, noted that although policies are useful, the inherent traits of many successful firm owners such as their high motivation and drive contribute significantly to the success of their firms. In addition to this, the role of market power and size in driving the development of supporting industry organically is significant as well. A case in point is the development of motorcycle supporting industry in Viet Nam, where high demand has led to the correspondingly high localization rate of parts and components as there are now economies of scale and hence value for sourcing locally. Last but not least, strategies of user firms matter. While economies can introduce policies to facilitate the development of supporting industry and encourage user firms to source for parts and components from them, the decision to do so ultimately lies at the hands of user firms and their corresponding sourcing strategies. Indeed, many interviewees shared that user firms tend to bring along their existing suppliers with them and it is a challenge to join their value chains.

4. KEY TAKEAWAYS ACROSS CASE STUDIES

Chapter 2 had shown that there are variations in economies' motivations for developing their supporting industries. Chapter 3 then discussed the gamut of policy options that the three economies covered in the study are implementing to assist with the development of their supporting industries. The wide variation of insights make it challenging to generalize policy recommendations that are applicable across three case studies, let alone to all APEC member economies. Nevertheless, some common key takeaways do stand out despite these differences.

Explore comprehensive range of policies

Supporting industry firms face many different challenges in integrating into value chains. While some firms may lack the necessary resources to make capital investment required to manufacture parts and components of the appropriate quality, another may not have the appropriate certifications needed to be part of specific value chains. As an example in the aerospace sector, assemblers generally require firms in its value chain to adhere to many standards and requirements set by the National Aerospace and Defense Contractors Accreditation Program (NADCAP) at different stages of the manufacturing process. Besides supply side challenges, firms may also face demand side issues such as not having enough customer base to sell their products to and difficulties in finding more customers beyond its existing ones. Often, a single firm is also likely to face more than one challenge at any time.

The range of challenges make it imperative that policymakers explore various policy options available to firms, which can generally be divided into supply and demand side policies and are discussed in more details in previous chapter.

In the case of Australia, it is observed that the government indeed takes both supply and demand side approach to the development of supporting industry, although the former appears to be more than the latter. Specifically on supply side policies, they include access to R&D and building firm's capacity via training, technical advice as well as equipment. On demand side policies, the focus is on business matching programs which essentially introduce SMEs to larger user firms in a range of sectors. Australia's federal structure also means that firms have access to policy options/programs offered at both national and state level depending on needs and eligibility.

Analysis of policies implemented by the Mexican government showed that the economy also utilizes both supply and demand side policies to promote the development of their supporting industry. Supply side policies include the provision of financial support, skills development grants/incentives, as well as access to equipment, knowledge and resources to undertake R&D activities. Demand side policies include business facilitation and matching programs whereby the government identifies parts and components imported by user firms, explores whether qualified suppliers are available domestically to supply them, and in some cases, trains SMEs so that they can meet the requirements to participate in the value chains.

The same can be said for Viet Nam. Analysis of laws and regulations such as Decree No. 111/2015/ND-CP ('Decree 111') indicates that the economy has a range of both supply and demand side policies. Supply side policies include funding for human resource development, R&D and technological transfers, as well as financial assistance in the form of tax incentives and investment grants, while demand side policies include assistance for market expansion and promotion of international cooperation.

Availability of comprehensive range of policies will ensure that firms get all the support they need to successfully participate in value chains. Piecemeal policy which is specific to only one aspect such as

human resource development raises the risk of it having no or minimal impact because of the diverse range of challenges faced by firms.

Balance sectoral nuances with flexibility

Besides the importance of having comprehensive range of policies, policymakers may also want to consider crafting policies which take into account sectoral nuances. This is because different sectors exhibit distinctive characteristics in terms of their value chains, pace of evolving industrial trends, sophistication of technology and intensity of capital requirements among others. As such, the requirements and needs of these sectors vary and one-size-fits-all approach may not work. An example where sectoral needs vary is perhaps in the types of standards that firms participating in the value chains should obtain. Table 3 provides examples of standards required in the automotive and aerospace sectors.

Table 3. Examples of standards required in the automotive and aerospace sectors

Automotive	Aerospace
• ISO 9000 • ISO 9001 • ISO 9002 • ISO 14000 • ISO/TS 16949 • QS 9000 • CQI 11 • Ford Q1 • Nissan ASES	• AS 9100 • AS 9110 • AS 9120 • FAA 145 • DO-178B • DO-178C • Eurocae ED-80 • NADCAP

Source: Various (Bamber et al, 2016; Sturgeon et al, 2016; Wirjo and Pasadilla, 2016; Wirjo et al., 2016)

It is worthwhile to point out that policymakers should not only look at inter-sectoral nuances when developing policies, but also intra-sectoral ones. This is because there are variations even within the same sectors. The electronics sector, for example, produces many different range of products such as communications equipment, IT equipment, and nano sensors. Even within a single value chain, the skillsets needed vary depending on tasks. Furthermore, the continuous evolution of business models means that there are many strategies for any sector at any one time. Table 4 provides examples of possible upgrading trajectories in the aerospace sector. Policies therefore need to be tailored according to how the economy envisions its supporting industries value-adding to these strategies.

Table 4. Possible upgrading trajectories in the aerospace sector

Type of upgrading	Corresponding trajectory (i.e. moving into)
Entry	Assembly of product
	Manufacture of parts and components
	Provision of maintenance, repair and overhaul (MRO) services
Functional	Provision of engineering and design services for sub-assemblies
Market	Provision of parts and components to after-market users
Product	Manufacture of more complex, higher value components (as opposed to simple components)
Process	Improvement of production systems to enhance productivity

Source: Adapted from Bamber et al, 2016

Nevertheless, it is also important to stress that policymakers should not attempt to pick winners through their policies because of the unintended effects on closely related sectors, and the difficulty in predicting trends. In other words, policies should not be too narrow that they become rigid and obsolete relatively fast. Rather, it is about creating policies which are flexible and responsive to these sectoral nuances.

One example from the case study where improvements can be made pertains to Viet Nam's footwear industry. Interviewees acknowledged the benefits of clarity, as evidenced by the presence of an annex in Decree 111 listing down the various supporting products eligible for assistance policies and incentives. Yet, many interviewees also questioned the need for such a list, particularly for sectors such as footwear and garment which need to follow fashion trends closely and be responsive to changes in these trends. Microfibers, which have been gaining in popularity as materials for sports shoes, are an example of newer supporting products not mentioned in the list and hence not eligible initially for assistance policies and incentives indicated in the Decree. Although Articles 3 and 14 allow for the list to be updated, interviewees shared that the process may take some time and there is a possibility that firms would not be able to benefit from first-mover advantage. It is also highly likely that fashion trends would have moved on by the time the list is updated.

Another example pertains to Mexico's aerospace industry. An interviewee noted that financing mechanisms were tailored more towards a high volume, low mix industry with a production cycle which is expected to yield returns in less than two years, while the industry requires mechanisms that are quite the opposite (i.e. low volume, high mix production cycle).

Engage with multiple stakeholders

Different stakeholders bring diverse perspectives to the table and can contribute at various stages of the process. User firms, for example, can provide a clearer picture of the state of relevant supporting industry where they operate and hence, and on what needs to be done to bring supporting industry firms to the required level of competency. As beneficiaries of the assistance policies and incentives, supporting industry firms can provide their viewpoints on several aspects of policies such as their usefulness and ease of access. Industry associations can also contribute by providing views on the above which are perhaps more representative. Academia, through their research activities and organization of workshops and seminars, provide an additional channel through which inputs from various stakeholders including industries could be obtained.

The involvement of multiple stakeholders is therefore more likely to lead to better policies as it incorporates the collective wisdom of a broader group. In this regard, it is observed that all three case studies have engaged their stakeholders at certain stages if not all of the process including policy formulation and implementation.

The case study on Australia indicates that besides analyzing manufacturing policies internationally, industry consultations are taken into account when developing state programs. It was also noted that national programs are frequently reviewed and inputs from industries (through industry associations, former beneficiaries, and other parties) are considered when programs are either re-formulated or decisions pertaining to their funding, continuation and cessation have to be taken. It is also interesting to observe that many of the support programs in Australia are delivered by industry associations and research institutes contracted by the government. The motivation behind this is to utilize the existing relationships which these associations have with the industry participants as well as to tap into the areas of expertise of these institutes.

In the case of Mexico, an innovation-based roadmap adopted by the aerospace industry in Mexico was indicated to have been developed through the collaboration of government, industry and academia, collectively referred to as the "triple-helix". Engagement and collaboration among various stakeholders can also be observed through some of the programs indicated in the case study such as the ACT Model program.

For Viet Nam, interviewees noted that the economy utilized several mechanisms when formulating supporting industry policies. One such channel was through industry consultations, with value-added tax highlighted as an example of incentives identified through the consultations. Particularly for Decree

111, it was noted that the drafting board of the Decree included representatives from research institutes who were able to provide recommendations by virtue of their position. In addition to giving inputs based on their own research, these research institutes organized workshops and seminars while the Decree was still in the drafting stage, hence providing an additional channel through which opinions from other stakeholders can be collected.

Despite the commendable level of engagement with multiple stakeholders, there is room for improvement. According to participants interviewed for the case study on Australia, although there exist programs which promote collaborations between firms and research institutes, the requirements set by some programs means that there are restrictions on the research institutes that firms can engage with and these institutes may not necessarily be the one that firms would have selected in the absence of restrictions. In the case of Viet Nam, all interviewees shared that they are generally able to provide their views and report any issues they encounter to the government, but there are differences in views on whether their feedback lead to concrete actions as well as the time the government takes to respond.

Besides contributing to policy development process, it is worthwhile to note that some of these stakeholders are already engaged in activities which are aimed at facilitating firms' participation as supporting industries. Therefore, in this regard, engagement with these stakeholders goes beyond obtaining their inputs on what policies the government should put in place or how existing policies could be improved on. Rather, it is to examine activities that these stakeholders are implementing, the challenges faced in undertaking these activities, as well as how the government could assist in any way possible. Such practices have many advantages. For one, it avoids the risk of formulating fairly similar programs and hence, re-inventing the wheel. It also raises the awareness of their existence among potential beneficiaries, in particular if the network of these stakeholders is limited. Most importantly, if successful activities have been done on an ad-hoc basis and one possible reason for their ad-hoc nature is funding availability, government's realization on the presence of these activities mean that they could explore various options to ensure their continuity.

Timely policy improvements

Related to the importance of engaging multiple stakeholders is the significance of continuously improving on policies in terms of content, awareness, implementation, and monitoring. However, policymakers need to balance policy improvements with certain level of stability.

Content that may have been appropriate at the time of policy formulation may become less useful in view of the ever-changing economic landscape. In addition, there is also the need to ensure consistency between laws/regulations. Other vital aspects of policy improvements include awareness of policies especially among potential beneficiaries, because their intended objectives would unlikely be achieved otherwise. Policy implementation is also critical as it operationalizes policies and enables beneficiaries' access to them. Finally, monitoring and evaluation of policies, to a certain extent, lie at the crux of policy improvement process because they provide the motivations and reasons behind the need to enhance existing policies. However evidence from the three case studies showed that economies' efforts in improving their policies across these areas to be generally mixed and can be further enhanced.

For the case study on Australia, despite the availability of numerous programs for supporting industry development at both national and state level, relatively few firms have accessed them due to structural issues within the industries and changes to the programs themselves. Indeed, one of the issues pertaining to support programs raised by interviewees is the short-term nature of state government's commitment. Although such programs are likely to be more responsive to developments, they may lead to confusion amongst firms as they attempt to keep up with rapid policy changes. Furthermore, state programs are mainly focused on linking organizations within the state. While this builds a local network, it may limit firms' access to critical technologies if they do not exist at state level. The requirement may also inadvertently limit firms' participation in some value chains, particularly in situations where user firms

do not operate in the state. Policymakers may therefore wish to explore how existing policies can be improved upon.

Pertaining to monitoring and evaluation, both national and state governments usually evaluate the usefulness of their programs. However, there appears to be differences in their level of transparency which can be enhanced. Information pertaining to national programs are easier to find and a major component of the evaluation process comprises of public submissions. On the other hand, while the state conducts evaluation of programs (specifically Manufacturing Works strategy by South Australia in the case study), it was noted that the evaluation seemed to be limited to inputs by the state government and former grant recipients.

The case study on Mexico noted that the economy had explored various ways to enhance their policies. In an effort to improve coordination and raise the visibility/awareness of policies, it created Instituto Nacional Del Emprendedor (INADEM) in 2013. Through evaluation of policies by the World Bank, Mexico was able to identify which programs are the most effective and show how participation have led to positive changes in the firms' sales, export and employment among others.

Despite these developments, there are evidences that more could be done. On content, a report by PwC Mexico (2014) found that policies to promote the development of auto-parts industry in Mexico are inadequate in terms of programs to develop qualified technical labour. In terms of awareness, the 2014 National Survey on Productivity and Competitiveness of Micro, Small and Medium Enterprises (ENAPROCE) found that awareness of support programs was low. On implementation, INADEM found that SME support funds were distributed across eight separate institutions, making it challenging to access them, which then led to correspondingly low adoption of the programs. Additionally, it appears that monitoring and evaluation process can be further improved by making them more thorough and regular.

In the case of Viet Nam, the government's commitment to supporting industry development could certainly be seen from the number of laws and regulations that it has issued since 2007, with recent ones having consolidated or built on past legislation. Although the general perception among interviewees are positive, they have indicated that there is room for improvement. One possible improvement would be to expand assistance policies and incentives to a wider range of activities. Another is to consider expanding the definition of supporting industry to include services providers, which is not currently the case. In terms of implementation, while interviewees noted that the simplification of process to access the assistance policies and incentives is a move in the right direction, they felt that more could be done in further improving application process and clarifying the definition of activities eligible for incentives. On monitoring and evaluation, although the government monitors the success of policies using several indicators, the level of aggregation and broadness of some indicators means that while they are informative, it is very challenging to attribute improvement in these measures, if any, to the impact of specific policies.

The Vietnamese legal structure has the National Assembly as its highest level of representation, which approves the Laws of the economy. As a result, Laws are placed at the highest level of the hierarchy, followed by Ordinances and Resolutions of the National Assembly Standing Committee, then Decrees promulgated by the Government, Decisions by the Prime Minister and subsequently Circulars[11]. The policies mentioned in Decrees or Decisions are therefore subjected to the conditions of existing Laws, which may not always be consistent with the overall aims/objectives of the Decree or Decision. Reviewing and resolving these differences would be useful.

[11] There are other legislative documents which are not reflected in this sentence. For full listing, please refer to Law No. 80/2015/QH13 on promulgation of legislative documents.

Consider SME's inherent challenges

SMEs account for over 97 percent of total firms operating in each APEC member economy (Zhang, 2013)[12]. They are also a significant source of employment and contributor to the region's economy. Despite their notable shares by these measures, the extent of their participation in value chains as supporting industry firms remains relatively low compared to their larger counterparts. Increasing SMEs' participation in value chains is therefore of particular interest among member economies. Indeed, for many economies, policies for the development of supporting industries are generally part of policies for SME development, although it should be made clear that not all SMEs are supporting industries, and vice-versa.

If the targeted beneficiaries of policies include SMEs, then it is imperative that these policies and their accompanying institutional structure are formulated with SME's inherent challenges taken into consideration. Some of these challenges include limited resources and capacity to search and compare, and finally apply for the available assistance policies and incentives.

Here, findings from the three case studies pointed to laudable efforts by economies to facilitate the development of SMEs, but which can be further intensified. In the case of Australia, interviewees noted that numerous food producers in South Australia are usually small family firms which may have limited skills in terms of basic business and innovation. In response, the style of state support programs developed by the government has taken this into account. Another challenge faced by SMEs is inadequate skills to recognize, understand and put into use new knowledge in a transformative way to the firm. In this regard, interviewees noted that the Manufacturing Technologies Program, which is part of the Manufacturing Works strategy, had been impressive in educating SMEs about new and emerging technologies so that they allow SMEs to understand them and how these technologies could affect their businesses.

Despite the positive developments, interviewees commented that it remained difficult to engage SMEs for various reasons. Due to the limited resources available, SMEs may find it difficult to keep track of programs which tend to change over relatively short periods, despite the provision of program information portals by the government. Most SMEs are followers rather than innovators and hence likely to be slower in responding to call for change. Therefore, programs need to recognize this and be willing to invest for a longer term.

In the case of Viet Nam, the case study noted the establishment of SME Development Encouragement Council (SMEDEC) whose responsibility is to advise the Prime Minister in the area of SMEs development. In theory, the Council should lead to better coordination of efforts in this area and hence facilitate SMEs across different areas such as access to assistance policies and incentives. However, its meeting frequency and lower level of representative assigned to attend the meeting made it challenging for the Council to exercise its coordinating role. Then, there are various local-level organizations which SMEs can interact with because different centers to support SMEs have been set up through several laws and regulations. The presence of multiple agencies at local level providing fairly similar services brings to the fore questions on whether there is value in consolidating them so that SMEs would only need to visit one to obtain all information. Even if there are valid reasons for multiple agencies to continue they could improve on their coordination perhaps in the form of better understanding of their different roles so that SMEs can be better served.

In the case of Mexico, the case study highlighted the need to develop innovative mechanisms account for issues likely to be faced by SMEs. For instance, SMEs are unlikely able to finance production cycle if buyers demand between 30 to 90 days for payment. SMEs are also constrained in making substantial capital investment which may be required by some user firms in order to move up the value chain, hence

[12] Note that there are differences in how MSMEs are defined by individual APEC member economies. In addition, data for Russia and Papua New Guinea were not available.

leading to them being relegated to lower value-added activities most of the time. On the issue of certification, the case study shared that SMEs often face a chicken and egg situation. On one hand, SMEs must obtain certifications in order to be considered by user firms. On the other hand, they must also be ready to start operation so as to produce records for auditing purposed by the certification agency. Furthermore, some equipment requires weekly calibration and the cost of maintaining their certification could incur more costs than the initial certification.

Balance economy-wide and local priorities

The challenges faced at the national and local levels may be different and correspondingly, the priorities of different levels of government on supporting industry development may vary as well. While they are unlikely to lead to major concerns, such differences may lead to variations in how policies are being operationalized and consequently, issues such as lower than expected awareness and access to policies. Therefore, it is important that policymakers attempt to balance national and local priorities.

The case study on Australia noted that national programs focus more on building internal capacity because of the emphasis on the ability to demonstrate national benefits and export potential. On the other hand, state programs focus on local job creation and adoption of tried and tested technologies by firms for immediate use. National programs offer support for linkages anywhere in Australia and assist in export marketing. On the other hand, state programs, specifically those offered by South Australia are focused at linking firms to customers within the state because of fears of state funding leaking into other Australian jurisdictions. These state programs do help to build local networks and hence develop industry clusters, but at the same time, may reduce access to potentially essential technologies if they are located outside the state.

For Viet Nam, there are strong support for development of supporting industry and SMEs at the national level. However, it was noted by a publication from CIEM (2016) that staff working on SME development at the local level have limited capacity and most have not undergone re-training or even trained. Additionally, majority of staff have responsibilities other than SME development.

Continue enhancing general business environment

Policies that lead to a conducive business environment, although not specifically targeting supporting industries, are critical for the development of firms in supporting industries. Facilitation of business registration and ease of obtaining credit, for instance, make it easier to start a business. State of the infrastructure affects the overall business operation. Favorable labour laws determine if firms have flexibility in adjusting size of labour force and working hours in response to sudden changes in demand. Network of free trade agreements (FTAs), to a certain extent, affect the market size that firms' products are able to access.

The wide range of policies that economies can implement to improve the general business environment means that it is unlikely for the case studies to cover all aspects. However, it could be observed that economies acknowledge the importance of policies which are supportive of businesses and are exploring various options to further strengthen their business environment. In the case of Australia, for instance, the case study noted that the state of South Australia has two programs which are aimed at providing finance for start-ups – both the Micro-Finance Fund and the Venture Catalyst program had attracted applications from different sectors including manufacturing. In the case of Mexico, the case study observed that the economy has a vast network of FTAs which allow Mexican goods preferential access to the markets of 46 economies. The economy also promised not to introduce new tax or eliminate existing tax benefits until November 2018 under the 2014 Fiscal Certainty Agreement. For Viet Nam, the new administration has promulgated several resolutions whose objectives include strengthening the general business environment and steering reforms in the right direction.

5. WAY FORWARD

This study has shown that despite the presence of nuances, case study economies regardless of their geographical location and development status view the development of their supporting industries as important in enabling increased (and continued) participation of their firms, particularly SMEs in value chains. Economies do so by using a range of policy options which have different objectives such as promoting R&D activities, enhancing human resource development, and improving linkage between supplier and firms, as well as those aimed at improving the general business environment. The study has also demonstrated that some common key takeaways stand out amidst the richness and wide variation in insights. These include the importance of having comprehensive range of policies, engaging multiple stakeholders, timely policy improvements (in terms of content, awareness, implementation, and monitoring), considering SMEs' inherent challenges, balancing economy-wide and local priorities, as well as continuously enhancing the general business environment.

APEC can build on the insights from the study and contribute to the endeavor of improving the quality of policies for promoting supporting industry among its members by:

- Facilitating information sharing/exchange on relevant policies, particularly in areas such as how such policies have been developed, what the mechanisms to raise awareness are, as well as how policy implementations and their impacts are monitored and evaluated. Such platforms may serve to encourage deeper discussions on how policies can be bolstered. Specifically for SMEs, improvement in some of these aspects such as awareness and implementation may go a long way in facilitating their knowledge of policy changes and new initiatives, and to benefit from them. These platforms can also be used as avenue to understand how policies for development of supporting industry can assist economies in sustaining growth and hence, overcoming middle income trap.

- Formulating policy guidelines to serve as a reference on some of the aspects that economies may wish to consider when developing their policies to promote supporting industries. These can include the common themes discussed in this synthesis report, as well as inputs from member economies based on their experiences.

- Organizing capacity-building activities to assist member economies in the development of their supporting industry. These can include workshops to enhance the capability of policymakers, as well as technical training assistance provided to supporting industry firms in developing economies by experts from international organizations, academia, and developed economies.

REFERENCES

AmCham and US Chamber of Commerce. ASEAN Business Outlook Survey 2016 – The ASEAN Economic Community and Beyond. http://www.amchamvietnam.com/wp-content/uploads/2016/04/150826-ASEAN-Business-Outlook-Survey-2016.pdf

ASEAN Secretariat. ASEAN Economic Community Annex 2 (Tariff Schedules). http://asean.org/?static_post=annex-2-tariff-schedules (accessed in March 2017).

Association of European Automotive and Industrial Battery Manufacturers (nd): A Review of Battery Technologies for Automotive Applications.

Bamber, P., S. Frederick, and G. Gereffi. 2016. The Philippines in the Aerospace Global Value Chain. Durham: Duke University Center on Globalization, Governance & Competitiveness.

Duane Morris Vietnam. 2014. Lawyer in Vietnam Oliver Massmann – New Investment and Enterprise Laws – Meaning Reform or Minor Fiddling? http://blogs.duanemorris.com/vietnam/2014/12/15/new-investment-and-enterprise-laws-meaning-reform-or-minor-fiddling-oliver-massmann/

Gao, P. et al. 2016. Disruptive trends that will transform the auto industry, McKinsey & Co., January 2016.

Government of Socialist Republic of Viet Nam. 2015. Decree No. 111/2015/ND-CP on development of supporting industry. (accessed in December 2016).

Government of Socialist Republic of Viet Nam. 2012. Vietnam's Socio-economic Development Strategy for the Period of 2011-2020. http://www.economica.vn/portals/0/maubieu/1d3f7ee0400e42152bdcaa439bf62686.pdf (accessed in December 2016).

Japan External Trade Organization (JETRO). 2016. Current situation of Japanese enterprises in Vietnam ~ In accordance with "Survey on current situation of Japanese enterprises in 2015 in Asia and Oceania.

Johnston, R. 2011. The Potential Role of Enabling Technologies in the Future of the Australian Food Industry 3rd Industry Uptake Foresight Workshop.

Low, P. and G. Pasadilla. 2015. Services in global value chains: Manufacturing-related services. Singapore: APEC Policy Support Unit.

National Assembly of Socialist Republic of Viet Nam. 2015. Law No. 80/2015/QH13 on promulgation of legislative documents. (accessed in April 2017).

Nguyen, T. X. T. 2007. Supporting Industries: A Review of Concepts and Development. In Ohno, K., *Building Supporting Industries in Vietnam - Vol.1* (pp. 27-50). Tokyo: Vietnam Development Forum.

Nham, P. T. and T. H. Nguyen 2016. Mekon Supply Chain Study Country Report Vietnam. Institute for International Trade and Investment.

Ohno, K. 2007. Building Supporting Industries in Vietnam Vol. 1, Vietnam Development Forum. http://www.grips.ac.jp/vietnam/VDFTokyo/Temp/books.html

____. 2010. Avoiding the middle income trap: Renovating industrial policy formulation in Vietnam. http://www.grips.ac.jp/vietnam/KOarchives/doc/EP32_ADB_HQ_MIT.pdf

Organisation for Economic Co-operation and Development (OECD).
Trade in Value Added database. https://stats.oecd.org/index.aspx?queryid=66237 (accessed in June 2014).

PwC Mexico. 2014. Doing Business in Mexico: Automotive Industry. September 2014, accessed February 2017. https://www.pwc.de/de/internationale-maerkte/assets/doing-business-mexico-automotive.pdf

Stratfor. 2015. "Mexico's Manufacturing Sector Continues to Grow." April 6, 2015, accessed February 2017. https://www.stratfor.com/analysis/mexicos-manufacturing-sector-continues-grow

Sturgeon, T., J. Daly, S. Frederick, P. Bamber, and G. Gereffi. 2016. The Philippines in the Automotive Global Value Chain. Durham: Duke University Center on Globalization, Governance & Competitiveness.

Thorburn, L. 2017. Supporting Industry Promotion Policies in APEC – Case Study on Australia. Singapore: APEC Policy Support Unit.

Wirjo, A., and G. Pasadilla. 2016. Manufacturing of aircraft control systems in the Philippines, *In Services in Global Value Chains: Manufacturing-Related Services*. Singapore: APEC Secretariat.

Wirjo, A., G. Pasadilla, and J. Bassig. 2016. Manufacturing of automotive components in Mexico: Perspectives from three firms, *In Services in Global Value Chains: Manufacturing-Related Services*. Singapore: APEC Secretariat.

Wirjo, A., and D. Cheok. 2017. Supporting Industry Promotion Policies in APEC – Case Study on Viet Nam. Singapore: APEC Policy Support Unit.

Wood, C. 2017. Supporting Industry Promotion Policies in APEC – Case Study on Mexico. Singapore: APEC Policy Support Unit.

World Bank. 2015. Small and Medium Enterprises (SMEs) Finance.
http://www.worldbank.org/en/topic/financialsector/brief/smes-finance

World Bank. World Bank Country and Lending Groups.
https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed in January 2017).

Zhang, Y. 2013. SMEs in the APEC Region. Singapore: APEC Policy Support Unit.