Expanding Regional Supply Chains in the ASEAN Economic Community
—The Potential for Building Science Cities in Thailand—

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Summary

1. The launch of the ASEAN Economic Community (AEC) at the end of 2015 will not lead to dramatic changes in the business environment. There are no plans for currency union, and there are many obstacles to liberalization in areas such as migration and the service sector. However, Japanese companies need to focus instead on the fact that economic integration is progressing on a de facto basis, and to use the launch of the AEC as an opportunity to expand regional supply chains.

2. Efforts to expand supply chains in ASEAN should initially center on industrial clusters in Thailand. This is because of the financial and time benefits that result from using the massive industrial clusters formed by Japanese manufacturers as a result of large-scale direct investment in Thailand by Japanese companies since 1985.

3. Another driving force for the expansion of these supply chains is the growth of Thailand’s neighbors: Cambodia, Laos, and Myanmar. Since 2000, the annual average growth rate of all three countries has exceeded 7%, and there has also been growth in their consumer markets. There are now tangible signs of the expansion of supply chains centering on Thailand, thanks to infrastructure development made possible by international assistance led by the Asian Development Bank (ADB), and the Thai government’s support for development in border regions.

4. To enhance the competitiveness of these supply chains, it will be necessary to increase added value at Thai production bases. In addition to efforts by individual companies, this will also require not only core functions based on local characteristics, such as ① locations that provide excellent access to both customers and major cities, ② reliable basic infrastructure, and ③ support for the establishment and operation of bases, but also high-level functions essential to the creation of added value, such as ④ urban and cultural functions to attract human resources, ⑤ human resource development functions, ⑥ development support service functions, and ⑦ joint research and development functions.

5. In other words, it will be necessary to build science cities—cities that are integrated with advanced industrial clusters. The development of these composite support functions can be achieved most effectively through efforts by three different stakeholders: Japanese companies as investors in local development bases, local real estate companies in Thailand, and Japanese real estate developers.

6. The development of science cities involves several challenges, including ① the discovery of local investment partners, ② the achievement of smooth communications among stakeholders, and ③ the creation of frameworks to reduce investment risks. The construction of science cities would not only strengthen the supply chains of Japanese companies, but would also help Thailand to avoid the middle-income trap. In this sense, such projects would help to strengthen the relationship of shared prosperity between Japan and Thailand and should therefore be supported by the Japanese government.
1. Supply Chains in the AEC Era

(1) The Significance of the ASEAN Economic Community

The ASEAN Community that will come into being at the end of 2015 will consist of three elements: ① the Political-Security Community, ② the Socio-Cultural Community, and ③ the Economic Community. The AEC has become the focus of intense interest in the business world as an initiative that will create a new business environment\(^{(1)}\). The AEC will have four key characteristics. First, it will be a single market and production base. Second, it will be a highly competitive economic region. Third, it will be a region of equitable economic development. Fourth, it will be a region fully integrated into the global economy.

ASEAN’s economic scale has expanded steadily in step with the trend toward economic globalization. In 1990, the total nominal GDP of the 10 ASEAN members amounted to just $342 billion, or around one-tenth of the figure for Japan. By 2013 there had been a seven-fold increase to $2,419 billion, which is equivalent to almost 50% of the Japanese figure. The IMF is predicting that the region’s nominal GDP will reach $3,605 billion, which is over 60% of the Japan’s nominal GDP. In terms of GDP based on purchasing power parity, ASEAN overtook Japan in 2008 and reached 1.3 times the Japanese figure in 2013. This is expected to increase to 1.6 times by 2019.

This expansion of the region’s economic scale has been paralleled by steady progress toward the creation of structures for economic integration, starting with ASEAN’s decision in 1992 to make the establishment of the ASEAN Free Trade Area (AFTA) its goal. In 2003, ASEAN announced that an ASEAN Community would be established, and that the region would work toward integration on multiple levels. In 2007, ASEAN leaders signed the ASEAN Charter, which set down basic principles for the ASEAN Community. This document took effect in 2008\(^{(2)}\). In 2008, ASEAN announced the “Roadmap for an ASEAN Community 2009-2015”\(^{(3)}\), and the “ASEAN Economic Community Blueprint”\(^{(4)}\) was adopted as part of this process. Tariffs were eliminated in principle among the six original ASEAN members (Brunei, Indonesia, Malaysia, the Philippines, Thailand and Singapore) in 2010, and the four later members (Cambodia, Laos, Myanmar and Vietnam) plan to remove tariffs before the end of 2015. This will complete the formation of the ASEAN Free Trade Area.

Obviously the establishment of the ASEAN Economic Community will not result in dramatic changes in the economic or business environment within the region. In terms of per capita GDP, income levels in ASEAN countries vary widely from Singapore at over $50,000, to Cambodia at barely $1,000. For this reason, ASEAN has no plans for comprehensive economic integration along the lines of the EU. There are no plans for currency union, and the service sector and migration will remain strictly regulated (Sukegawa [2013], Ishikawa [2014]).

Despite this situation, Japanese companies need to focus on ASEAN’s progress toward de facto integration, and on ASEAN’s increasing competitiveness in the world economy.

We will look next at ASEAN’s competitiveness from the perspective of the region’s export mix.

(2) Changes in ASEAN’s Export Competitiveness

ASEAN’s exports have expanded from $71 billion in 1980 to $141.1 billion in 1990, $419.9 billion in 2000, and $1,249 billion in 2013 (Fig. 1). The region’s trade balance has been consistently in surplus since 1998.

This improvement in the trade balance is mainly attributable to export expansion and is linked to the progress of industrialization in the region. In 1980, manufactured goods accounted for 29.9% of total exports. This share subsequently rose rapidly, reaching 60.6% in 1990 and 80.8% in 2000. Since 2000, exports of primary goods, such as crude oil, natural rubber and palm oil, has increased due to
intermediate goods have increased by a factor of more than 30 times, from $5.4 billion in 1980 to $173.6 billion in 2012, or from 46.1% of intraregional trade to 67.4%. This shows that intraregional trade is being driven primarily by divisions of labor. Of course, these divisions of labor do not consist solely of activities within the region.

We will begin this analysis by dividing ASEAN’s exports into trade within and beyond the region. Intraregional exports have increased from $12.3 billion in 1980 to $321.5 billion in 2013, or from 17.3% to 25.7% of total exports. However, these figures are not indicative of exceptional growth in just the value of exports due to economic integration in the ASEAN region. Large amounts of final goods produced using intraregional divisions of labor are exported to destinations outside of the region, and total exports from ASEAN to external markets have risen from $58.7 billion in 1980 to $927.5 billion in 2013.

We need to focus on qualitative changes in intraregional trade. In Fig. 2 we have used RIETI-TID 2012 data to categorize ASEAN’s intraregional trade into raw materials, intermediate goods (parts, processed goods) and final goods (capital goods, consumer goods) and calculate the percentage for each category. Of particular interest is the fact that intraregional transactions in intermediate goods have increased by a factor of more than 30 times, from $5.4 billion in 1980 to $173.6 billion in 2012, or from 46.1% of intraregional trade to 67.4%. This shows that intraregional trade is being driven primarily by divisions of labor. Of course, these divisions of labor do not consist solely of activities within the region.

Fig. 3 divides intraregional and extraregional trade and transactions in final goods between advanced countries and emerging/developing countries. The level of transactions in intermediate goods with markets outside of the region remains high, and transactions with advanced countries account for large shares of both exports and imports. However, the shares of emerging/developing countries have risen in recent years, indicating a shift toward these countries as partners in divisions of labor. Specifically, there has been a shift from relationships with Japan, the United States, South Korea and Taiwan as partners, toward partnerships with emerging/developing countries, especially China. In addition, emerging/developing countries are increasingly the destinations for final goods exported from ASEAN to external markets.

In this situation we can see the potential for the emergence of new supply chains in the AEC era, with ASEAN functioning as the hub of networks.
developing countries can be seen as an urgent priority in this context. Between 2000 and 2013, the nominal GDP of emerging/developing countries increased from $6.7 billion to $29.2 billion in 2013, while their share of the world economy rose from 20.3% to 39.0%. According to IMF economic forecasts, the nominal GDP of emerging/developing countries will reach $43.4 billion, or 42.8% of the world total, in 2019.

One way to develop and secure consumer markets in an emerging/developing country is to establish a direct business presence in that country. However, the domestic markets of most emerging/developing countries are still not big enough to build a new production base. For this reason, and also because of the lack of production infrastructure and the existence of various restrictions, more time will be needed before emerging/developing

Fig. 3 Intraregional and Extra Regional Trade in Intermediate and Final Goods in ASEAN

![Bar Chart]

Source: RIETI-TID 2012

producing goods for exports to emerging/developing countries. There is substantial income disparity among the ASEAN members, but this can actually be turned into an advantage by using those income gaps as the basis for divisions of labor. With the establishment of the AEC, there will be opportunities to use this advantage. The growth achieved by East Asia in the 1990s resulted from the use of income gaps among Japan, the Asian NIEs and ASEAN members in ways that brought growth for all parties. Similar divisions of labor could spread within the ASEAN region in the future.

The world economy is in a transitional phase in which the axis of growth is shifting from advanced countries to emerging/developing countries. The creation of supply chains that can be used to develop and secure markets in emerging/
countries reach a stage at which companies can establish business operations directly.

This means that an export-based approach will be the main strategy. However, Japan lacks export competitiveness relative to emerging/developing countries because of its high production costs. Although Japan’s exports to emerging/developing countries are increasing in value terms, its share of import markets has been falling over the years (Fig. 4). This is because production costs in Japan are higher than in emerging/developing countries, and because rising industrialization levels in emerging/developing countries mean that these countries are now able to produce and export even technology-intensive and capital-intensive goods.

In this environment, the development of import markets in emerging/developing countries will require many improvements, including changes to marketing methods. Above all, it will be necessary to build supply chains based on the greatest possible use of production bases in emerging/developing countries.

Because the funds and time available for the development of new supply chains are limited, the process should begin with the modification existing supply chains. For this point the restructuring and reinforcement of supply chains in ASEAN will be especially important. This restructuring and expansion process should start with supply chains centering on Thailand, where numerous Japanese companies have already established business operations. In Part 2 we will highlight the potential for the extension of supply chains from Thailand into neighboring countries.

2. Japanese Direct Investment in Thailand and Industrial Clusters

Japan’s direct investment in ASEAN expanded at an accelerating rate during the strong-yen phase that followed the 1985 Plaza Accord. According to Bank of Japan statistics, the balance of direct investment outstanding in ASEAN by Japanese manufacturers stood at ¥8,440 billion, which is higher than China’s total of ¥7,642 billion. The ASEAN member with the highest total is Thailand at ¥3,264.8 billion and, followed by Singapore at ¥1,359 billion, Indonesia at ¥1,306 billion, and Malaysia at ¥1,001 billion.

Japanese direct investment in Thailand accelerated during the strong-yen phase after the 1985 Plaza Accord and has been expanding again since 2005 (Fig. 5). The fact that investment has continued to increase despite negative factors, including political instability since 2005 and major floods, is indicative of the Thailand’s importance as an investment target for Japanese companies. According to the FY2014 edition of the Report on Overseas Business Operations by Japanese Manufacturing Companies by the Japan Bank for International Cooperation (JBIC), Thailand is ranked fourth behind India, Indonesia and China as a promising country for business activities in the medium term. Toyo Keizai Shinposha’s Kai-gai Shinshitsu Kigyo Soran (Kai-sha-Betsu Hen) [Comprehensive List of Companies with Overseas Business Operations (Company Edition)]
lists 1,230 companies with operations in Thailand. This total breaks down into 223 electrical manufacturers, 215 manufacturers of transportation equipment, 187 machinery manufacturers, and 172 chemical manufacturers. These four industries alone make up 65% of the total. There has been significant cluster formation, especially by automotive and motorcycle manufacturers. According to a survey by the Thai Board of Investment (BOI), there are 17 manufacturers of finished automobiles with 23 factories, eight motorcycle manufacturers with eight factories, 709 parts manufacturers, and 1,700 related small and medium enterprises, including local companies (BOI [2014a]). Many manufacturers of related materials, such as iron and steel, rubber, electronics, glass and leather, have also opened factories in Thailand, along with numerous companies in related service industries, such as distribution and finance.

The facilities of these Japanese companies are concentrated in industrial parks in Bangkok and surrounding areas. Of the 1,209 companies for which locations are listed in Kaigai Shinshatsu Kigyo Soran, 91% are concentrated in Bangkok and the six surrounding provinces (Table 1). Electrical manufacturers have tended to cluster in Ayutthaya and Pathum Thani Provinces, and motor vehicle manufacturers in Samut Prakan, Chonburi and Rayong Provinces.

In China, which is Japan’s biggest investment target in Asia, companies have sited operations in a wide range of areas, including Beijing, Tianjin, Shanghai, Guangdong and Chongqing. In contrast, the area around Bangkok can be characterized as the location where the presence of Japanese manufacturing operations is most concentrated.

3. The Evolving Southern Economic Corridor and Business Opportunities

Growth in the neighboring countries of Cambodia, Laos and Myanmar is helping to drive the expansion of supply chains centering on Thailand. Emerging/developing countries have achieved remarkable growth in recent years. Some low-income countries have been recording high growth rates since the second half of the 1990s. Fig. 6 traces trends in the real GDP growth rates of high-income, middle-income and low-income countries.
have also achieved high growth, with an annual average of 7.9% for Cambodia, 7.3% for Laos and 9.9% for Myanmar in 2000-2013. These figures are substantially higher than the averages for both low-income and middle-income countries. All three recorded per capita GDP in excess of $1,000 in 2013, with figures of $1,028 for Cambodia, $1,594 for Laos, and $1,113 for Myanmar.

In the past, a per capita GDP of $3,000 was regarded as the threshold for entry into consumer markets in emerging/developing countries because of the potential for rapid expansion at that
defined in the World Bank’s World Development Indicators.

We tend to focus on the consistently high growth rates maintained by middle-income countries, but the graph also shows that low-income countries have been achieving high growth since the second half of the 1990s. The average annual growth rate of low-income countries has risen with the passage of time, from 3.8% between 1995 and 2000, to 4.6% between 2000 and 2005, and to 6.1% between 2005 and 2012.

The three low-income countries in ASEAN

Table 1 Locations of Operations Established by Japanese Companies in Thailand (Manufacturing)

<table>
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<tbody>
<tr>
<td>① Bangkok</td>
<td>33</td>
<td>53</td>
<td>165</td>
<td>420</td>
<td>380</td>
<td>158</td>
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<tr>
<td>② Samut Prakan</td>
<td>③ Pathum Thani</td>
<td>④ Ayutthaya</td>
<td>⑤ Chonburi</td>
<td>⑥ Rayong</td>
<td>⑦ Chachoengsao</td>
<td>⑧ Others</td>
</tr>
<tr>
<td>⑨ Bangkok</td>
<td>33</td>
<td>53</td>
<td>165</td>
<td>420</td>
<td>380</td>
<td>158</td>
</tr>
<tr>
<td>② Samut Prakan</td>
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<td>31</td>
<td>62</td>
<td>120</td>
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<td>70</td>
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<tr>
<td>③ Pathum Thani</td>
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<tr>
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<td>7</td>
<td>31</td>
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<td>18</td>
<td>3</td>
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<tr>
<td>⑤ Chonburi</td>
<td>2</td>
<td>3</td>
<td>13</td>
<td>61</td>
<td>69</td>
<td>22</td>
</tr>
<tr>
<td>⑥ Rayong</td>
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<td>0</td>
<td>2</td>
<td>49</td>
<td>46</td>
<td>27</td>
</tr>
<tr>
<td>⑦ Chachoengsao</td>
<td>0</td>
<td>2</td>
<td>12</td>
<td>22</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>⑧ Others</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>47</td>
<td>35</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: Compiled by JRI using Toyo Keizai Shinposha, Kaigai Shinshutsu Kyogyo Soran (Kaisha-Betsu Hen) (Comprehensive List of Companies with Overseas Business Operations—Company Edition)

as defined in the World Bank’s World Development Indicators.

We tend to focus on the consistently high growth rates maintained by middle-income countries, but the graph also shows that low-income countries have been achieving high growth since the second half of the 1990s. The average annual growth rate of low-income countries has risen with the passage of time, from 3.8% between 1995 and 2000, to 4.6% between 2000 and 2005, and to 6.1% between 2005 and 2012.

The three low-income countries in ASEAN have also achieved high growth, with an annual average of 7.9% for Cambodia, 7.3% for Laos and 9.9% for Myanmar in 2000-2013. These figures are substantially higher than the averages for both low-income and middle-income countries. All three recorded per capita GDP in excess of $1,000 in 2013, with figures of $1,028 for Cambodia, $1,594 for Laos, and $1,113 for Myanmar.

In the past, a per capita GDP of $3,000 was regarded as the threshold for entry into consumer markets in emerging/developing countries because of the potential for rapid expansion at that
level. Today even consumer markets in countries with per capita GDP of $1,000 are seen as business targets. Base-of-pyramid (BOP) markets have become the focus of keen interest, especially since the Lehman shock, and some companies have enjoyed success in those markets. This reflects the emergence of a high-income group, especially in urban areas, as a result of the high growth achieved by less developed countries. For example, if we estimate household spending in Cambodia using the World Bank’s PovcalNet(7), we find that the population with monthly household expenditure of $150-400 expanded from 5.5 million in 2002 to 8.6 million in 2010, while the population with expenditure of $1,000 or more per month increased from 200,000 to 440,000 over the same period and was expected to reach 500,000 in 2014. The majority of these high-income people live in the capital, Phnom Penh. Although Cambodia is a low-income country, there is a high-income group made up of residents living in the capital, and an increasing number of Japanese companies are starting to develop this market (Oizumi [2014b]).

There is interest in the future of Cambodia, Laos, and Myanmar because of the potential for major improvements in the state of their infrastructure through international assistance. The Greater Mekong Subregion program, which is administered by the Asian Development Bank, will bring particularly significant benefits. Launched in 1992, the program entered its third phase from 2013. Key projects with budgets totaling $51.3 billion are listed in the GMS Regional Investment Framework 2013-2022. Allocations for transportation sector projects, including road construction, account for $44.1 billion, or 86% of this total (ADB [2014]). This investment will accelerate progress on the Southern Economic Corridor. In Cambodia, the completion of the Neak Leung Bridge across the Mekong in February 2015 will create road links joining three major regional cities: Ho Chi Minh in Vietnam, Phnom Penh in Cambodia and Bangkok in Thailand (Fig. 7).

For Japanese manufacturers, this improvement of the infrastructure along the Southern Economic Corridor will be an opportunity to expand supply chains centering on Thailand. In fact, labor-intensive processes are already being shifted from production facilities in Thailand to factories in these neighboring countries. In the automotive industry, for example, Yazaki Corporation has relocated its wire harness operations to factories in Cambodia and Vietnam, which are already in operation. In the electrical industry, Minebea has shifted labor-intensive assembly operations for precision motors used in home appliances and digital equipment to a facility in Phnom Penh, which is supplied with parts from the company’s main factory in Thailand.

In addition to the cost savings, the establishment of production facilities in neighboring countries is also seen as a priority from the viewpoint of risk distribution(8). Development along the Southern Economic Corridor needs to be understood from a supply perspective, in terms of adding new partners to supply chains centering on Thailand, and also from a demand perspective, in terms of the expansion of consumer markets in major cities in step with economic growth.

Benefits from the increasing concentration of Japanese companies in Thailand and the growth of neighboring countries include the expansion and reinforcement of regional supply chains. Provided that export functions, including port facilities, can be further strengthened, not only The Southern Economic Corridor but the entire ASEAN region can be expected to evolve into a center for the development and production of strategic products for markets in emerging/developing countries.

The Thai government has announced measures to provide additional impetus for this process. In his keynote address, Prime Minister Prayut emphasized that the provisional government would develop special economic zones in border regions (Oizumi [2014c]). On December 15, 2014, the Thai Board of Investment (BOI) responded by announcing the “Seven-Year Investment Promotion Strategy: 2015-2021.” Under this strategy, investment in special economic zones near borders will be eligible for corporation tax exemptions during the eight years covered by the strategy, followed by 50% reductions during the subsequent five-year period, while machinery imports will be

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chains centering on Thailand, companies will need not only to expand their supply chains, but also to change the role of their production bases in Thailand. For example, production bases in Thailand will need to provide the following functions for consumer market in the Southern Economic Corridor.

First, it will be necessary to respond quickly to local market needs. As we have already seen, purchasing power in the Cambodian capital, Phnom Penh, is greater than might be expected. Infrastructure development along the Southern Economic Corridor will further facilitate the supply of products from production bases in Thailand to Phnom Penh in Cambodia and Ho Chi Minh in Vietnam, and manufacturers will need to build production structures capable of adapting to changing needs in these major cities. This will

tariff-free. There will also be concessions in other areas, including approval for the employment of unskilled foreign workers (BOI [2014b]).

4. The Importance of Raising the Added Value of Production Operations in Thailand

(1) Thailand’s Positioning in the Production and Development Activities of Japanese Companies

① Strengthening Functions at Local Sites
To enhance the competitiveness of supply

Fig. 7 The Southern Economic Corridor and Supply Chains

Notes: City having a large number of population.
Source: Compiled by JRI
require not only an increase in the scale of production, but also the reduction of lead times for the introduction of new products. A system based on prototype development in Japan would be too slow to keep pace with rapidly changing local needs.

As the importance of production bases in Thailand increases, parent companies are also likely to step up their support activities. At present, the technology and expertise needed to keep pace with new technology and changing customer needs can only be developed in Japan. At the appropriate time, however, companies will have to shift to structures that allow them to respond promptly and appropriately to customer needs that differ from those in Japan.

② Strengthening Development Functions at Production Bases in Thailand

Some companies are already transferring development functions from Japan to their Thai production bases and taking steps to strengthen development capabilities in Thailand. An increasing number of companies are also adding regional coordination functions to the capabilities of their bases in Thailand (Table 2). In the automotive industry, for example, Nissan announced in 2013 that it planned to strengthen its development functions in ASEAN, especially Thailand. It also revealed that Nissan Technical Center Southeast Asia (NTCSEA) would be carrying out development processes from the initial engineering stage onwards for models produced for sale in ASEAN. Currently this work is carried out by Nissan’s global R&D organization in Japan.

Table 2 Improvement of Local Development Capabilities in Thailand

<table>
<thead>
<tr>
<th>Company</th>
<th>Date</th>
<th>Description</th>
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<tr>
<td>Nissan Motor</td>
<td>February 2013</td>
<td>Announcement of a plan to expand R&amp;D at the Nissan Technical Center Southeast Asia. Nissan announced a plan to expand the Nissan Technical Center Southeast Asia (NTCSEA), which provides R&amp;D functions in ASEAN, in order to speed up R&amp;D activities in the region. By 2015, NTCSEA will handle all development processes from the initial engineering stage onwards for models produced for sale in ASEAN. Currently this work is carried out by Nissan’s global R&amp;D organization in Japan.</td>
</tr>
<tr>
<td>Mitsubishi Motors</td>
<td>March 2014</td>
<td>Establishment of test course as part of improvements to the R&amp;D capabilities of Mitsubishi Motors Thailand (MMTh). Mitsubishi motors announced that it will build a new test course near its production plant. In addition to the expansion of production capacity, MMTh has also strengthened its R&amp;D capabilities. The construction of the new test course is part of that process. The R&amp;D organization in Thailand will have the first test course established by Mitsubishi Motors outside of Japan.</td>
</tr>
<tr>
<td>Bridgestone</td>
<td>January, August 2013</td>
<td>Establishment of technical center in Thailand. Bridgestone Asia Pacific Pte Limited (BSAP) decided to establish a technical center in Thailand. By transferring technical functions that were previously carried out at technical centers in Japan, including tire development, tire production technology and quality management, to the new technical center. Bridgestone will further strengthen those functions and create a structure capable of quickly reflecting market information in R&amp;D activities. Operational since July 2013, this is Bridgestone’s first technical center in the Asia Pacific region (excluding Japan and China).</td>
</tr>
<tr>
<td>GS Yuasa</td>
<td>January 2014</td>
<td>Establishment of technical center in Thailand. GS Yuasa has announced the establishment of the GS Yuasa Asia Technical Center (GYAT) in Samut Prakan Province. It will strengthen ① product development based on local characteristics, ② product development based on new technology, and ③ market research for product development, and ④ the development of production facilities for high-quality, low-cost production, for lead acid storage batteries used in motor vehicles and motorcycles in Southeast Asia and surrounding regions.</td>
</tr>
</tbody>
</table>

Source: Compiled by JRI from corporate press releases
functions include tire development, tire production technology and quality management. Similarly, GS Yuasa established the GS Yuasa Asia Technical Center in Thailand in January 2014 and plans to strengthen its development capabilities for products geared toward regional needs in the area of lead-acid storage batteries for motor vehicles and motorcycles in Southeast Asia and neighboring regions.

Parts manufacturers, especially larger companies, have also started to strengthen their development capabilities, in part because of these moves by vehicle manufacturers of finished vehicles. This trend is being driven by the fact that it is easier for Japanese companies to work together on development, which is a feature of the local environment in Thailand. Another major factor is the fact that workers are beginning to achieve the skill levels required for development. The shortage of skilled workers is certainly a business problem in Thailand. However, a quarter of a century has passed since Japanese companies first began to expand into Thailand on a significant scale, and Thailand now has more workers suitable for development work than any other ASEAN member. Thailand is also preparing incentives to encourage the improvement of local development capabilities. For example, the aforementioned program for automotive development bases provides extremely generous concessions, including exemptions from corporation taxes for eight years followed by tax reductions in the subsequent five years, depending on the scale of the project.

3 Overview of Localization of Development
However, development localization by Japanese companies in Thailand has not yet reached the stage of full localization of all development processes. For example, development stages in the automotive industry can basically be categorized into the following processes (Fig. 8), of which research, conceptualization/development, basic design, evaluation and mass-production design are currently carried out in Japan. At present only processes after mass-production design, specifically market-focused development functions, such as tire development, tire production technology and quality management, are located in Thailand.

![Fig. 8 Development Processes in the Automotive Industry](image-url)
as the development of local specifications, design changes and evaluation, are carried out in Thailand.

Of course, the level of localization varies according to the product. For example, it would be difficult to develop products that affect vehicle safety or basic performance, such as engines and brakes, anywhere but in Japan, which has the necessary human resources, facilities and systems. However, the development of products used to modify the functions, feel and design of motor vehicles to match local needs, such as bodies and exterior and interior finishing materials, should be developed locally so that they can be more easily modified to reflect specific local preferences, and there is already a trend toward localization in this area.

(2) The Need for Composite Support Functions

(1) Efforts by Parts Manufacturers to Improve Local Development Capabilities

While manufacturers of finished vehicles are working to strengthen local development capabilities, manufacturers of automotive parts have reached the stage of strengthening local development functions to create structures that allow them to participate in collaborative development projects when assemblers develop new products or implement model changes.

Compared with manufacturers of finished vehicles, parts manufacturers, other than major companies, find it difficult to deploy personnel, invest in the systems needed for development, and undertake capital expenditure all at the same time when transferring development functions. The risks of long-term investment in large-scale facilities are especially significant, and in some cases organizations in Japan are not fully capable of providing support for local development.

Given this situation, companies will need to establish structures to help parts manufacturers strengthen their development capabilities. For example, it might be effective to provide support in stages. Initially investment risk could be minimized by using services provided by local real estate developers or by leasing facilities, followed by support for relocation to the company’s own facilities once the business is operating stably. Another useful approach would be to establish facilities in locations close to major companies or research organizations with a view to engaging in joint development or obtaining research support. This would help to enhance the incentives for parts manufacturers to establish local development capabilities.

(2) Support Functions Essential for Local Development Bases

Even if manufacturers of finished vehicles strengthen their local development capabilities, significant local benefits are unlikely to emerge unless supporting parts manufacturers can catch up with those improvements. In the following analysis we will examine functions that help to lift the added value of production bases in Thailand, with particular emphasis on manufacturers of automotive parts. For the purposes of this analysis, we will classify functions that already exist in industrial clusters in Thailand to some extent as locally based core functions, and those needed to improve productivity in Thai industrial clusters as advanced functions used to generate added value (Fig. 9). The support functions referred to here are used to provide composite support through development activities at local development bases. There is likely to be a significant need for such functions in other industries as well as the automotive sector.

(i) Locally Based Core Functions

(1) Site Functions—access to Customers and Major Cities

To develop parts locally, parts manufacturers need sites from which it is easy to communicate with manufacturers of finished vehicles. Because development workers mainly live in urban areas, facilities also need to have good access to cities.
As noted earlier in this article, business sites established by Japanese companies in Thailand are concentrated in Bangkok and the six surrounding provinces, so this requirement has already been met.

Of course, there are other factors that affect the choice of sites, including regional differences in wage levels and government incentives. However, given that most finished vehicle manufacturers and parts manufacturers are already clustered in the area around Bangkok, the most suitable locations for development facilities will continue to be sites within or adjacent to industrial estates near Bangkok.

b. Reliable Basic Infrastructure Functions

The level of basic infrastructure development in Thai industrial estates is high compared with other ASEAN countries, but effective development activities require not only production infrastructure but also development infrastructure. For example, the requirements for an efficient development environment include high-speed communications systems to support exchanges of vast amounts of information, such as CAD data, as well as analysis tools and means of communication.

Other factors that influence decisions about investment in development bases include the availability of environment-friendly waste disposal and wastewater treatment systems, the installation of back-up power systems that are not dependent solely on the grid, preparedness against flooding and other natural disasters, security systems, and disaster preparedness.

Economic growth is reflected in growing community awareness, and companies wishing to develop business operations in Thailand will need to ensure that their activities are guided by consideration for the environment in industrial areas. It is important to be aware of the importance placed on aspects relating to harmonious coexistence with local communities, such as the operation of basic infrastructure as systems that also include surrounding areas, and exterior designs that harmonize with the local environment.

c. Support for the Establishment and Operations of Bases

The Thai government has a policy of actively encouraging development-related investment, but before these incentive systems can be accessed, it is necessary to negotiate with local authorities and complete the required formalities. In addition to their development activities, small and medium
enterprises must also apply their limited resources to various other tasks, including the recruitment of personnel, the discovery of customers and suppliers, and the management of taxation processes. These support functions are useful for reducing operating costs in these areas. Some companies with operations in Thailand, such as those without fully developed global business administration systems, are using services provided by Japanese staff working for industrial estate management companies.

Efforts will also be needed to project the attractiveness of these bases through the creation of landmark facilities designed to provide a visual representation of development activities, work and lifestyles, as well as control centers equipped to monitor on-site energy use and environmental loads. A development base also becomes a local source of information about the company concerned, and its impact on that company’s image should not be underestimated.

(ii) Advanced Functions Used to Generate Added Value

d. Urban and Cultural Functions to Attract Human Resources

To strengthen their local development capabilities, companies need to recruit people to carry out development work. There is strong demand for pleasant working conditions and lifestyles among local people who have reached a certain level of education and technical expertise, and companies that neglect to improve working and living areas will be unable to keep such people in their employ. In addition to comfortable joint development facilities and office areas, companies will also need to turn their attention to commercial facilities, restaurants and other facilities based on new concepts, serviced apartments for fashion-conscious single employees, environment-friendly residential facilities surrounded by extensive greenery and water features, and childcare facilities.

“Hardware” improvements needed to speed up the realization of development results includes the design of zones and spaces within the development area to facilitate networking and interaction among employees. “Software” improvements are also needed, including opportunities to access or share information about development achievements through promotional events for new products, and networking seminars at which development personnel can gather information about market trends. Initiatives to foster affinity toward Japanese culture are also important from the viewpoint of encouraging people to work for Japanese companies. Efforts should also be made to help local people deepen their understanding of Japanese culture by increasing the number of places where they can experience its attractions, such as commercial facilities, restaurants and residential facilities, and by providing opportunities for participation in cultural classes run by Japanese tutors. To reduce the distance between Japanese companies and local communities, companies should act as sponsors and support organizations for exchange events that include local community participation.

e. Human Resource Development Functions

In addition to the recruitment of development personnel, Japanese companies also need to provide educational services for people working at their development sites, including technical, language and management training and other educational programs to improve basic technical expertise and knowledge. Given that many Japanese companies are looking for local staff with a reasonable level of capability in relation to design work and development process management, rather than people to carry out basic research, the collaborative establishment of human resource development systems and organizations by multiple Japanese companies is likely to be a more effective approach to the training of people to meet needs at industrial sites than the provision training within individual companies.

Many Japanese companies have hitherto invited local personnel to Japan for a specific period to undergo training. However, local training is obviously preferable from a time and cost perspective. Even in cases where support is provided for internships in Japan, an effective way to recruit
and train not only current workers but also future development personnel would be to establish systems in Japanese universities with campuses in Thailand.

f. Development Support Service Functions

In the future, information security will be a key focus for development in Thailand. As Thailand’s development capabilities improve, local management of intellectual property will become an increasingly important priority. However, local employees are frequently unaware of the need to protect intellectual property, and there are occasionally situations in which preparedness at the systems level is also inadequate. It will be necessary not only to develop systems to offset these deficits, but also to create organizational structures to ensure information security, including the operation of these systems.

There is a need for collaborative activities involving local development bases and development bases in Japan. For example, those on the Thai side could provide information about local needs in relation to basic designs and make use of accumulated development achievements on the Japanese side. This approach would require the sharing of development databases and processes, and the improvement of systems and development environments to allow the management of development processes. Information systems to facilitate communications not only between local development bases and Japan, but also with customers and between development bases, and between development and production bases, will be essential to the reduction of development lead times.

g. Joint R&D Facilitation Functions

Companies today are increasingly going beyond closed in-house development activities with the aim of achieving different results through joint development with other organizations. For example, more and more companies are engaging in joint research using the intellectual property and research infrastructure of government research institutions and universities, or outsourcing the analysis of data relating to their development activities to research institutes. This shows that in addition to their in-house development activities, companies also need to carry out development activities across broader links, sometimes at the international level, via information and human networks, and in collaboration with research institutes.

If the research institutes that handle these development activities can achieve results through integration with industrial clusters, their profile as local development bases will also be enhanced. Just as cluster formation leads to further clustering, the evolution of more advanced industrial clusters provides infrastructure for further increases in added value and expands the potential for new joint development initiatives. It is also important to facilitate collaboration between industries and within the same industries. Collaboration between the automotive industry and other industries, such as electrical manufacturing and IT, has deepened in recent years, and there is a growing need for joint development. There have been cases in which companies belonging to specific industries have jointly developed industrial platforms. Local development bases are expected to build functions that will allow them act as receptacles for joint development.

These functions will provide important support for development activities. There will be reciprocal influence among these support functions. The key requirement is to provide them on an integrated basis.

5. Business Opportunities in the New Co-Prosperity Relationship between Japan and Thailand

(1) Expectations and Issues in the Real Estate Development Business

As we have seen in the preceding sections of this article, supply chains based on mutual collaboration among companies ranging from top-tier corporations to companies in supporting industries
in the procurement and supply of product development processes, parts and other requirements must be able to transfer labor-intensive functions to neighboring countries while supporting improvements in the development functions of production bases in Thailand.

Judging from the economic growth occurring in emerging and developing countries, including the Southern Economic Corridor, the time has come for manufacturers of finished vehicles and tier-one parts manufacturers to start forming new supply chains. However, supply chain formation in the AEC era will require not only efforts by individual companies, but also the development of businesses to provide the aforementioned support functions (Fig. 10). Real estate developers will play an important role in providing these support functions. Local real estate developers have a particular advantage as providers of locally based core functions, such as the provision of good sites, which correspond to items a. through c. in the list of support functions in Part 4(2). Japanese companies, such as real estate developers and manufacturers (referred to below as “supply-side Japanese companies”) have an important role to play as providers of functions that generate added value (Items d. through g), such as services to support development activities. Collaborative initiatives by real estate developers in Thailand and supply-side Japanese companies will therefore be very important. To achieve this, local real estate developers will need to form partnerships with supply-side Japanese companies that have the necessary technology and expertise, with the aim of developing composite support functions.

(2) The Potential of Science Cities

1. Science Cities as Sites for Urban Development Linked to Advanced Industrial Clusters

As previously stated in this article, Japanese companies need to develop and supply high-added value products that match local needs in Asia, a region that is expected to achieve continuing growth in the future. Moreover, Japanese companies can build highly competitive supply chains by using the advantages offered by the rapidly growing geopolitical advantages of the Southern Economic Corridor area. Improving composite support functions for local development bases will be important. Real estate developers will play an important role in providing these support functions. Local real estate developers have a particular advantage as providers of locally based core functions, such as the provision of good sites, which correspond to items a. through c. in the list of support functions in Part 4(2). Japanese companies, such as real estate developers and manufacturers (referred to below as “supply-side Japanese companies”) have an important role to play as providers of functions that generate added value (Items d. through g), such as services to support development activities. Collaborative initiatives by real estate developers in Thailand and supply-side Japanese companies will therefore be very important. To achieve this, local real estate developers will need to form partnerships with supply-side Japanese companies that have the necessary technology and expertise, with the aim of developing composite support functions.
Cooperation between the local real estate developers and supply-side Japanese companies providing support for Japanese companies that invest in development bases (referred to below as “demand-side Japanese companies”) will be essential to the reinforcement of development bases in Thailand, which will be the hub of these supply chains. The development and supply of high-added value products that match local needs will require three stakeholders—demand-side Japanese companies and local real estate developers and supply-side Japanese companies as providers of support functions—to work together toward the development of urban areas linked to advanced industrial clusters (Fig. 11).

The science parks that are already being established in Asia provide similar examples of the integration of urban development with advanced industrial clusters. Examples include Zhongguancun Science Park in China, Hsinchu Science Park in Taiwan, and Singapore Science Park. The best features of these existing science parks should be used to enhance the advantages of industrial clusters in Thailand. A real estate development model based on the integration of development functions will be referred to in the remainder of this article as the “science city” model. The Thai government is establishing a support environment. For example, under the “Seven-Year Investment Promotion Strategy” recently announced by the government, science cities that meet specific conditions will be eligible for support measures, including corporation tax exemptions for eight years (BOI [2014b]).

However, the transfer of development functions to Thailand through science cities should not be seen as an outflow of development functions from Japan. Instead, the partial transfer of development functions to Thailand should be recognized as an opportunity for Japan to concentrate on development activities with higher added value. If Japanese companies continue to rely on development activities that could be transferred to Thailand, they are unlikely to survive against the rapidly rising international competitiveness of emerging and developing countries. Technically advanced Japanese companies in supporting industries could also open satellite offices in science cities to feed back information to Japan about new needs in emerging and developing countries and responses to those needs. Science cities will function both as hosts for development cities, and also as bases for the dissemination of information to Japan.
Challenges and Initiatives Relating to the Development of Science Cities

However, the following challenges could affect the participation of Japanese companies in the development of science cities.

The first challenge will be the discovery of good local partners. Local real estate developers have an important role to play as providers of support functions. If there are issues with locally based support functions, the conditions will not be suitable for investment by either supply-side or demand-side Japanese companies. Many real estate developers are currently involved in the development and management of industrial estates and high-tech parks, but there are clear differences between parks operated by leading developers, and other parks, and companies are becoming selective about industrial estates and high-tech parks.

The key to forming a partnership with a good local real estate developer is the selection of a developer on the basis of various criteria, including the state of each company’s business operations and presence in neighboring countries, and site conditions in existing industrial parks. A developer that is successfully managing an existing industrial estate where major Japanese companies have established operations can be judged to have the skills needed for science city development, including the ability to acquire sites, coordinate with local authorities, and develop and manage real estate. It would also be necessary to check the vision of the management team and their stance toward joint investment with Japanese companies. Science city development will be a bridge head for the future formation of industrial infrastructure in both Thailand and Japan. A long-term management vision and strong motivation toward joint investment with Japanese companies will be key yardsticks for selecting local partners.

The second challenge will be the establishment of efficient communication among stakeholders. Science city development becomes an appropriate target for investment only when there is a reasonable level of communication between the demand-side Japanese company and the local real estate developer, and when the necessary support functions can be identified. There also needs to be a discussion between the local real estate developer and the supply-side Japanese company about such aspects as the business scheme and division of roles needed for investment in support functions.

One possible approach would be for a local real estate developer to hold talks with a candidate company that could potentially become a demand-side Japanese company in order to ascertain that company’s needs, and to formulate a business plan in collaboration with a supply-side Japanese company with the aim of carrying out real estate development and providing support functions to meet those needs. Because of the advanced nature of science cities, their development in Thailand will be limited to developers with a track record of similar investment projects. Local real estate developers would need to go beyond traditional concepts of service provision, and to create investment models jointly with supply-side Japanese companies.

The third challenge will be to reduce investment risks by shortening the time required to recover investments. The establishment of support functions for local development bases will require composite development leading to combinations of industrial and urban functions. Local real estate developers and supply-side Japanese companies have little experience with this type of composite development in other countries, and risk minimization would be an important consideration for these advanced and strategically significant projects. Investment recovery periods could be longer than for conventional composite development projects encompassing industrial estates, residential areas and urban facilities, and there is concern that business corporations might take a cautious stance when deciding whether to invest in this type of development project.

One possible solution for these issues would be to use financial institutions and investment funds, which prefer stable long-term investments, as conduits for secondary investment after a project has reached the commercialization stage and has been operating stably for a reasonable period. Moreover, given the role of science cities in leading the creation of new supply chains in the AEC era, and the benefits that they will provide by dissemi-
nating information, it should be possible to attract businesses to consider secondary investment based on this value. Mechanisms should be created to allow investors at the initial start-up phase to achieve reasonable returns and shorten investment recovery periods through participation by a wide range of investment entities.

To take the science city concept closer to the realization stage, it will be necessary to design projects as real estate businesses based on comprehensive development. The establishment of this type of science city will lead to the formation of a new relationship of shared prosperity between Japan and Thailand. This is because science city development is essential to Japanese companies as a way of strengthening new supply chains, and to Thailand as a way of improving productivity and avoiding the middle income trap(9). From this perspective, science city projects should also be included as targets for assistance from the Japanese government.
8. In recent years, companies investing in emerging/developing countries have increasingly prioritized investment distribution as a way of avoiding risks, including natural disasters, as well as political instability and the resulting policy shifts (Fukazawa, Sukegawa [2014]).


End Notes

1. The Association of Southeast Asian Nations (ASEAN) is a cooperative organization established in 1967.


5. The RIETI-TID 2012 data used in this article can be downloaded from http://www.rieti-tid.com.

6. See Oizumi [2014a] for an analysis of changes in the import markets of emerging/developing countries.

7. Data compiled by the World Bank using aggregated household budget survey results from various countries can be downloaded from the following address. http://iresearch.worldbank.org/PovcalNet/index.htm
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