

Infrastructure for Global Value Chains in ASEAN & East Asia

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The Great Convergence

In his ground-breaking book *The Great Convergence* (2016), Richard Baldwin discusses his idea of the first, second, and third unbundlings, with subsequent reductions in trade costs, communication costs, and face-to-face costs brought about by technological breakthroughs. Because the third unbundling is yet to come, we still do not know what it will be like. We East Asians, however, have already experienced the first and second unbundling.

The first unbundling means the separation of production and consumption across national borders with industry-by-industry division of labor based on comparative advantage. The second unbundling, on the other hand, refers to the unbundling of production processes or tasks across national borders, which is supported by international production networks with massive intermediate goods trade. The Association of Southeast Asian Nations (ASEAN) and China were the first developing areas in which the mechanics of the second unbundling were aggressively utilized.

Thanks to this new type of international division of labor, East Asian

countries have experienced a drastic income convergence between developed and developing countries. Indeed, ASEAN and China have presented a very successful development model in which global value chains (GVCs) have been progressively explored.

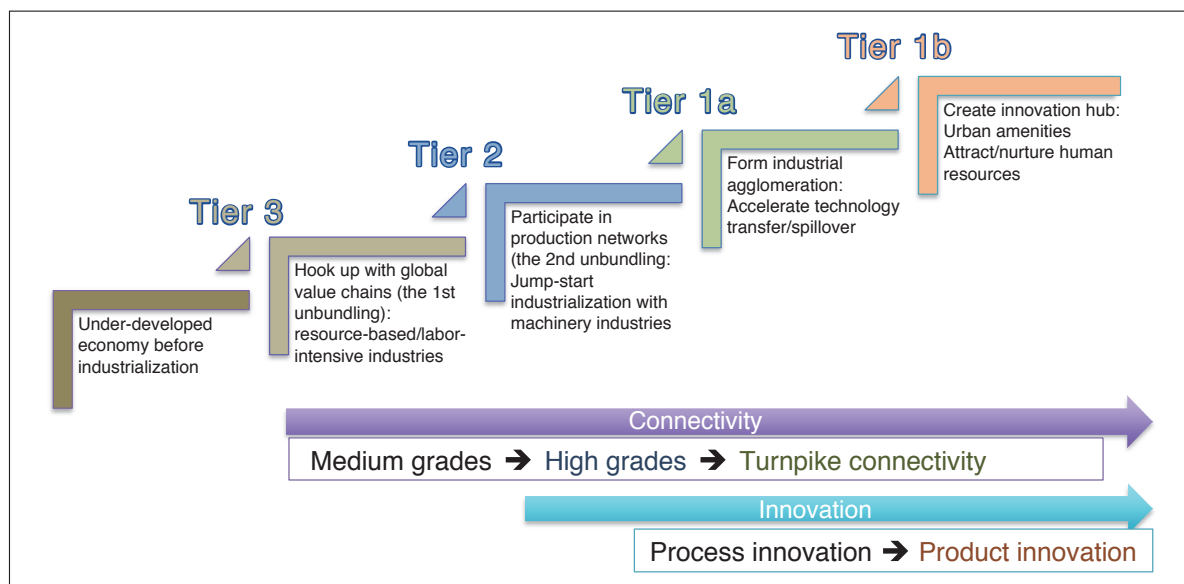
In the process, soft and hard infrastructure has played a very important role. However, as for infrastructure development, there are some notable differences between ASEAN and China. Particularly on infrastructure development, China has been, in a sense, an unusual country in its ways of securing a budget, compensating for commercially unviable portions, and implementing land acquisition. Although the Chinese model is certainly evaluated as a successful case, it is obvious that it cannot be directly transplanted to other less developed countries (LDCs). In the following, I will focus on the case of ASEAN as “usual” LDCs.

From Tier 3 to Tier 2: Production Networks

The *Chart* shows the tier structure in the utilization of GVCs which is presented in *The Comprehensive Asia Development Plan (CADP) 2.0*

CHART

Tier structure of the utilization of global value chains in ASEAN & East Asia



Source: ERIA (2015)

TABLE

Hard & soft infrastructure required in the tier structure

	Tier 3: Rural development for creating business	Tier 2: Participating in production networks	Tier 1a: Forming industrial agglomeration	Tier 1b: Creating innovation hubs
Hard infrastructure	Medium-grade connectivity - Food value chains, mining, labor-intensive industries, tourism	High-grade connectivity - Dual-modal (cargo, passenger) Special economic zones - Capital city, border area	Turnpike connectivity with other industrial agglomerations - Full-scale port with container yard, full-scale airport - Multi-modal (cargo, passenger) Urban/suburban development - Logistics (Highway system) - Mass economic infrastructure services (industrial estates, electricity, energy, water)	Metropolitan development and urban amenities - Urban transport (LRT, subway, airport access) - Residential environment (education, medical services, safety) - Other urban amenities
Soft infrastructure	Trade liberalization - GSP	Trade liberalization and facilitation - Tariff removal for machinery parts - Customs clearance	Trade liberalization and facilitation - FTAs - Overall tariff removal - e-customs, TBT - Services and investment liberalization for GVCs	Trade liberalization - Modes 3 and 4 in services - Cross-border e-commerce Trade facilitation - SPS - Standards and conformance

Source: Compiled by the author

(2015) by the Economic Research Institute for ASEAN and East Asia (ERIA). Although people all over the world have recently been talking about GVCs, they perhaps have not yet well understood what sorts of GVCs are connecting the world and how individual countries hook up with them. Required hard and soft infrastructure heavily depends on the nature of GVCs (Table).

Tier 3 is a stage in which traditional sectors start connecting themselves with global or domestic value chains in the mechanics of the first unbundling. This type of GVC dominated the world from the 19th century up to the 1980s. Countries specialize in industries with comparative advantage, and international trade is mostly in raw materials and finished products. A reduction in trade costs for goods due to the development of mass transportation systems is the key for Tier 3.

Business operations in Tier 3 are relatively slow. Think of typical trade in agricultural products, mineral products, or light-industrial products such as garments and footwear. Transport costs in monetary terms are surely crucial, and we also consider tariffs as barriers to international trade. However, time sensitivity in international trade is relatively thin. It would not really matter even if a few days delay occurred due to inefficient cargo handling at a port or temporary road closure in bad weather. Hence, hard infrastructure must be reliable at the medium grade, but we may not need a delicate fine-tuning in logistics. Soft infrastructure, trade liberalization and facilitation, can also be minimal. Typically, a country depends only on the generalized system of preferences (GSP) that provide preferential treatments for LDCs.

Many developing countries in the world are still at the stage of Tier 3. Even in ASEAN, mountainous areas in Mekong and remote islands in Indonesia and the Philippines must develop Tier 3 type

infrastructure that connects isolated areas with regional value chains.

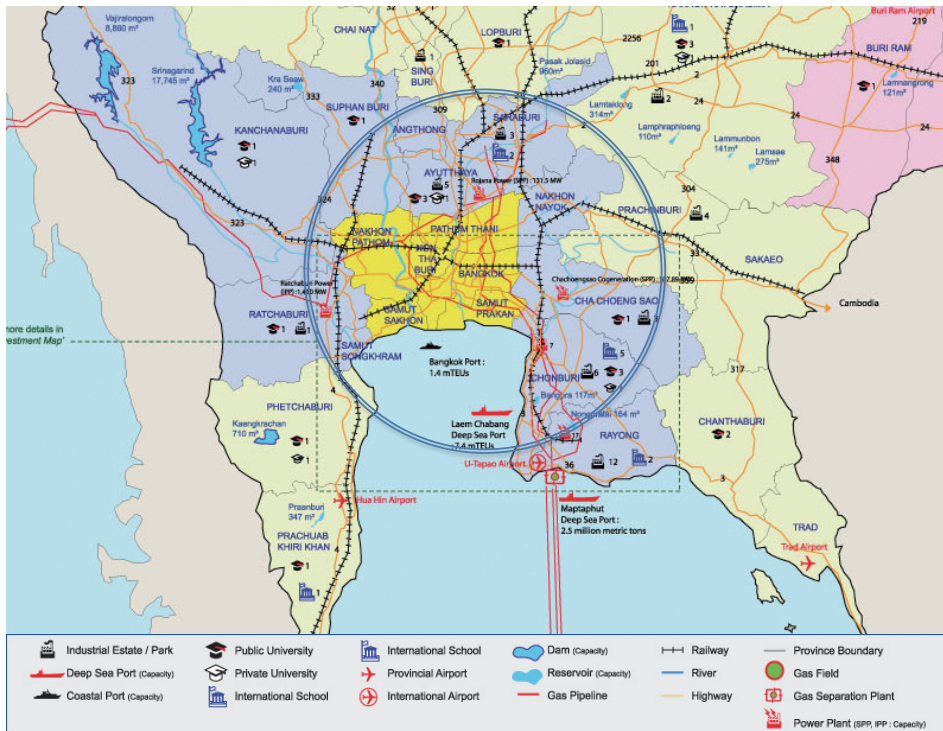
The main part of ASEAN has already started the second unbundling or Tier 2. Business operations in Tier 2 are more sophisticated and time sensitive. In particular, industries that use a variety of parts and components such as machinery industries require precise delivery timing. The concept of transport costs should thus be expanded to incorporate time costs as well as the reliability of logistics, in addition to monetary costs. Hard infrastructure such as ports, airports, and roads must be efficient and stable at a high grade, while soft infrastructure such as tariff removal for machinery parts and quick customs clearance should be promoted.

Furthermore, goods are not the only traded item across national borders anymore. Because corporate activities themselves are globalized through foreign direct investment (FDI) and offshoring, economic elements such as services, technology, managerial knowhow, and “ideas” also move across national borders. Thus, to offer opportunities for various business models, business environment and behind-the-border issues gain importance.

Only a limited number of developing countries have reached this tier. The champion of international production networks is machinery industries. If we use exports and imports of machinery parts and components as an indicator for the degree of participation in international production networks, successful participants are limited to the forerunners of ASEAN (Singapore, Malaysia, Thailand, Indonesia, the Philippines, and Vietnam), China, some Eastern European countries (Poland, the Czech Republic, Slovakia, and Hungary), and limited Latin American countries (Mexico and Costa Rica). The other parts of the developing world have not yet conducted the second unbundling in machinery industries. Insufficient soft and hard infrastructure is obviously one of the crucial reasons why they

MAP

Bangkok Metropolitan Area & location of industrial estates



Colors correspond to Zone 1, Zone 2, Zone 3(1), and Zone 3(2), in the order of closeness to Bangkok, which gives different investment incentives respectively. Such a zone system was abolished in January 2015, and investment incentives were reorganized in terms of the importance of industries and others. The circle in the center has a diameter of 100 kilometers, added by the author.

Source: webpage of the Board of Investment, Thailand

cannot come into Tier 2 yet.

In ASEAN, some cities and regions are trying to come into Tier 2. Cambodia, Laos, and Myanmar are now in the process of participating in international production networks, and Tier 2 type infrastructure, soft and hard, is an urgent need. Some rural cities in Indonesia and the Philippines such as Medan, Makassar, and Davao have one million or more people and may eventually require job creation by manufacturing activities. Not only purely labor-intensive slow operations such as garments and footwear, which is Tier 3, but also some labor-intensive production blocks in Tier 2 such as machinery industries should be invited once the region achieves political stability or acquires enough capabilities for local governance.

Tier 1a: Industrial Agglomeration

The second unbundling starts from relatively simplistic forms of international production networks such as operations in export processing zones (EPZs) in Malaysia and the Philippines and cross-border production sharing between Hong Kong and Shenzhen. A typical EPZ consists of 100%-import and 100%-export offshoring, with employment of unskilled labor on the side of LDCs. Up to the 1980s, LDCs wanted to keep the import substitution regime while

starting partial export promotion. Domestic industries were thus carefully insulated from foreign competition by a high fence. However, this model does not go further. Business models suited to such a pure export platform are limited. Because the interface between multinationals and local firms is here minimal, technology transfer or spillover from multinationals to local firms barely occurs. Eventually, LDCs should think of giving up the import substitution regime and try to form industrial agglomeration for local firms to participate in production networks.

Although Baldwin did not emphasize it, the formation of industrial agglomeration is crucial to utilizing GVCs effectively. This stage is called Tier 1a. Transactions in production networks consist of multiple types, some of which would involve long distances and low frequency of delivery, while others should involve short distances and high frequency. Transactions with high transport costs and those between unrelated firms, particularly in which one side of the transaction is a small or medium enterprise or local firm in LDCs, tend to be short distance and high frequency. Once efficient industrial agglomeration is established in LDCs, it can cater to a wide range of economic activities with international production networks.

Successful examples of such industrial agglomeration are still limited. The Bangkok Metropolitan Area is one of them (*Map*).

Although the city of Bangkok itself is still plagued with serious traffic jams despite the recent development of urban transport, the metropolitan area has successfully completed a spacious industrial agglomeration. The circle at the center of the [Map](#) has a diameter of 100 kilometers, which roughly shows an area similar in size to the Kanto Plain in Japan or the Pearl River Delta in China. In this area, about 40 industrial estates are situated, and the just-in-time system of delivering parts and components within two or two-and-a-half hours has been extended.

Infrastructure of high quality is essential to support such industrial agglomeration. A highway system to cover the whole agglomeration is needed. The provision of mass infrastructure services such as electricity, energy, and water should not be a bottleneck. A large-scale container port and airport are essential to thick connectivity with other industrial agglomerations. Indeed, ASEAN is the most advanced region, together with China, in containerization and active air cargo transportation. In addition, soft infrastructure such as overall tariff removal as well as various trade facilitations becomes more important, which is often achieved by free trade agreements (FTAs). E-customs and other measures for quick customs clearance become necessary. In the case of Thailand, customs clearance and cargo handling at Laem Chabang Port ([Photo](#)) and Suvarnabhumi Airport are indeed fast and reliable. To support GVCs, services and investment liberalization should be promoted.

Particularly in a case of industrial agglomeration in machinery industries, a certain space is required. In the Bangkok Metropolitan Area, industrial estates and factories are scattered around, and thus labor can live without much concentration. This makes the hike of land prices and living costs slow, and thus workers' wages can be kept relatively low to make manufacturing activities competitive. In this sense, Jakarta and Manila, for example, still have problems to be solved. Industrial agglomerations are formed in relatively small geographical areas so that congestion effects such as traffic jams, land price surges, and wage hikes seem to be worsened. Ho Chi Minh City and Hanoi also require forward-looking planning for industrial agglomerations.

Once efficient industrial agglomeration forms, local firms have chances to participate in production networks extended by multinationals. Of course, local firms should be competitive enough to get transactions with multinationals. However, if locals can improve non-price competitiveness such as the stability of quality and the precision of delivery timing, they tend to have price competitiveness. Vertical transactions with multinationals are actually important channels of technology transfer and spillover for local firms. In Malaysia and Thailand, a number of local firms enhance productivity and acquire the ability of process innovation through transactions within industrial agglomeration. International production networks tend to be operated by multinationals, but local firms can narrow their technological gaps by participating in short-distance transactions. Massive job creation in the manufacturing sector and related services moves labor from rural to suburban and from informal to formal sectors, ending up with rapid poverty alleviation. Smooth labor movements are still at issue in the developing world other than ASEAN



Laem Chabang Port in Thailand in October 2014

and China.

Industrial agglomeration with thick connection to international production networks is so far observed almost only in ASEAN and China. Eastern Europe has relatively low population density and may not form a substantial size of industrial agglomeration. The Central Plateau of Mexico may have the potential to develop one.

Steps for Tier 1b: Urban Amenities

Although infrastructure for Tiers 3, 2, and 1a is still needed in most of the countries and regions in ASEAN and East Asia, some advanced areas, particularly cities, have begun facing a new challenge.

The development strategy applied by ASEAN effectively utilizes GVCs and successfully accelerates economic growth. From our experience in Singapore, Malaysia, and Thailand, we are pretty confident that this development strategy can pull a country's income level up to upper-middle income. Then the next issue is how to step up to the high-income level.

In the old days before the second unbundling, countries such as Japan, South Korea, and Taiwan nurtured their own industries and national champions, and ample time and policy space were given to do it. Therefore, when reaching the upper middle-income level, these countries already had certain amounts of human capital and some accumulation of research and development (R&D). On the other hand, ASEAN forerunners fully utilized GVCs and sped up their economic growth. Because of this, the manufacturing sector, particularly machinery industries, is largely dominated by multinationals, and the indigenous basis of innovation remains thin. How to step up to high income is a new challenge.

Learning from China and Singapore, countries including Malaysia, Thailand, and other ASEAN countries must eventually prepare a national innovation system where the government, academics, and private sector interact for innovation. Nurturing human capital is another task to fulfill. The R&D expenditure by both the government and private sector should be enlarged. These efforts are costly and

take time to bear fruit.

However, globalization may change the nature of innovation in the near future. As Baldwin suggested, information technology might generate worldwide agglomeration forces for cutting-edge innovation, while communication technology would lead to dispersion by reducing transport costs and face-to-face communication. If a country can prepare an open window for innovation networking, it may enjoy a substantial amount of trickle-downs. The key may be to attract a critical mass of highly educated people for digesting innovation.

An article by Edward L. Glaeser, Jed Kolko and Albert Saiz titled “Consumer City” in the *Journal of Economic Geography* (January 2001) is a seminal paper that proposed the concept of urban amenities for attracting highly educated people. The authors presented four elements of urban amenities: (i) the presence of a rich variety of services and consumer goods, (ii) aesthetics and physical setting, (iii) good public services, and (iv) speed. Cities in the United States have for long competed with each other in attracting good people by providing urban amenities. In the globalization era, human beings, particularly highly educated people, are increasingly mobile and have a lot of choices for the location of their work and living across national borders. Therefore, ASEAN countries are soon likely to face severe competition among cities in attracting highly educated people; some of them will be their own people who have studied abroad, and others may be foreigners. If so, urban amenities will certainly become important.

Regarding (i), we start thinking of infrastructure not only for production but also consumption. A rich variety of services and consumer goods is essential for a cultural and entertaining life. When a country is poor, the promotion of luxury consumption is rather suppressed. However, at the stage of attracting good people, we must take consumption seriously. Although e-commerce may drastically change the way of receiving consumer goods in the near future, most of the services will still be provided over a short distance or on the spot.

Soft infrastructure will become crucial. SPS (sanitary and phytosanitary) regulations and procedures should be made efficient, and standards and conformance must be promoted. Services liberalization, particularly in Mode 3 (commercial presence) and Mode 4 (movement of natural persons), should be aggressively pursued. Cross-border e-commerce has to be promoted with proper safety regulations and consumer protection.

Item (ii) may need to be promoted over a longer period, but (iii) is urgent. Highly educated people care about their children’s education. Local medical care is also a key element in the quality of living. Safety in cities is essential. These are also important elements of soft infrastructure in Tier 1b.

Then (iv). Large cities face a trade-off. Size provides positive economies of scale in utilizing innovation networking. On the other hand, it causes congestion in the form of traffic jams, land price hikes, pollution, etc. Some smaller cities seem to achieve a good balance in this trade-off in developed countries. However, in cases of newly developed economies in ASEAN, a certain population size is necessary to become an innovation hub, so it is important to overcome congestion somehow. Speed in cities is particularly a challenge. The development of urban transport such as light rail transits (LRT) and

subways is essential hard infrastructure for large cities in Tier 1b. Quick and comfortable airport access is also important to get around, while access to suburban resorts over weekends would be an extra attraction.

It is obvious that cities in ASEAN have some missing elements when it comes to urban amenities: think of Jakarta, Manila, or even Bangkok. These cities will soon start competing with each other to attract good people by enhancing their urban amenities.

Connectivity & Economic Integration

ASEAN has explicitly combined the connectivity issue with economic integration for a decade. In parallel with the effort toward the ASEAN Economic Community (AEC), ASEAN advocated the importance of connectivity and publicized a Master Plan on ASEAN Connectivity (MPAC) in 2010 and 2015. ASEAN recognizes that effective and efficient usage of GVCs is at the core of its economic development and combines economic integration, which takes care of soft infrastructure, with a development agenda, which promotes hard infrastructure. This is a novel model of economic development.

The AEC and MPAC up to 2015 have taken care of soft and hard infrastructure for business operations in Tier 2 and partially Tier 1a. From now on, more emphasis should be placed on Tier 1a and a new topic, Tier 1b. In the AEC, more serious efforts for services and investment liberalization as well as trade facilitation must be made. In connectivity, links with innovation and digital economy should be at the core, and the concept of urban amenities has to be explicitly introduced.

It is also essential that ASEAN should be connected to surrounding East Asia. Trade within ASEAN has been growing, but the proportion of intra-ASEAN trade to total ASEAN trade has stayed at around 25%. On the other hand, the proportion of intra-East Asian trade, including ASEAN+6, which includes the 10 ASEAN member countries plus China, Japan, South Korea, Australia, New Zealand, and India, to total East Asian trade has almost reached 60%. This means that the whole of East Asia, not ASEAN alone, has developed “regional” value chains. Therefore, soft and hard infrastructure to connect ASEAN and the surrounding East Asian countries is also important.

The Regional Comprehensive Economic Partnership (RCEP), currently being negotiated by ASEAN+6, should take care of the soft side of infrastructure for regional connectivity. As for hard infrastructure, expectations for the “One Belt, One Road” initiative have grown. From the viewpoint of ASEAN, together with traditional channels of economic cooperation by the Asian Development Bank and Japanese cooperation, this initiative could provide good opportunities. However, ASEAN should establish ownership and ASEAN centrality of infrastructure projects by adding a regional perspective, which is relatively thin in “One Belt, One Road”, and by fitting projects into its GVC-utilizing strategy.

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