Technology Cooperation and Industrial Growth: Leveraging the ASEAN Opportunity

Debashis Bandyopadhyay
Senior Principal Scientist and Head, Business Development and International S&T Affairs, CSIR-Central Glass & Ceramic Research Institute, Kolkata, India
E-mail: debashisb@cgcri.res.in

Introduction

South and South-East Asia constitute an important geopolitical realm in the present world order and have the potential to become a global fulcrum of south-south collaboration. India's Act East policy is envisaged to leverage trade and strategic partnerships with the countries of South-East Asia. Over the years, the ambit of this partnership has expanded into wider areas that include, among others, cultural, scientific and technological cooperation.

The industrially diverse ASEAN countries hold ample opportunities for India and vice-versa. This, coupled with geographic proximity, has led to a continuous consolidation of partnerships. Nevertheless, the volume of trade or technical cooperation between India and the ASEAN continues to remain low. Other than the OECD economies, China exercises almost complete dominance in such partnerships.

Industrial cooperation and associated transfer of technology is the key to leverage India's linkages with the ASEAN, and in the process, position India as a major competitor to China and the west. Fortunately, the industrial structure in India and ASEAN shows some degree of similarity, in the fact that both are dominated by micro, small and medium enterprises. 96% of ASEAN manufacturing industries fall within the SME category and therefore constitute a key driver in the ASEAN economy. Correspondingly, MSMEs contribute more than 30% to India's GDP with a scope of further enhancement.

Indo-ASEAN Complementarities

Economically and technologically, ASEAN exhibits a lot of diversity. Among the ASEAN countries, Cambodia, Brunei, Laos, and Myanmar are predominantly agrarian; Singapore, Thailand, Indonesia, and Malaysia are relatively industrially progressive; while Vietnam and the Philippines are located somewhat midway. Synergy and complementarities with India exist in almost all countries.[1]

Given the preponderance of small and medium enterprises in the economic fabric of both India and the ASEAN countries, the industrial ecosystems of the future in both regions are likely to be built around them. The distribution of such industries is diverse and disparate, and they exist at various levels of maturity. Agglomeration and formation of clusters typify the scene. Significant synergy has been noticed among the SME clusters in India and various ASEAN countries. The upgradation needs of the above clusters focus on product innovation and the need for advanced technology; access to finance; direct market access;

improvement in regulatory and work environment; access to raw materials; and skill development & capacity building.

Table 1 gives a snapshot of some representative clusters focusing on commonly used products that were mapped during a pilot study involving the Indian (state of West Bengal) and ASEAN counterparts.[2] All of them have product innovation requirements, relying on technology. The mapping, despite its limited coverage, has been seen to be reasonably similar across India.

Table – 1

India	Indonesia	Singapore	Cambodia	Laos	Thailand	Vietnam	Philippines	Myanmar	Brunei	Malaysia
Clay & Ceramics										
Lac products								√		
Horn products										
Dye and bleaching										
Plastic products			√		√					√
Brass and Bell metals										
Metal fabrication								√		√
Gems and Jewellery	√	√								
Food products	√		√	√		√	√		√	
Jute, Bamboo	√	√	√							√
Readymade garments			√	√		√	√			√
Woollen garments										√
Machinery and Spares				√		√			√	√
Wooden furniture			√						√	√
Leather			√			√				√
Shuttle cock	√									
Rubber products	√	√	√		√		√			√

Technologically, the Council of Scientific and Industrial Research-India (CSIR) is poised to become a strong player in India-ASEAN relations; primarily because the portfolio of CSIR encompasses a broad gamut that covers virtually all industrial domains; and, the existing scientific cooperation that already exists among CSIR laboratories and institutions of ASEAN countries. Thus, a CSIR-India led collaborative ecosystem is likely to be benefitted both from the technology end-user as well as the technology provider perspective.

As evident from the above table, many of the clusters are found in both India and various ASEAN member countries. Almost all the domains listed could have CSIR laboratories as technology/innovation providers to address their needs. These could include (but are not restricted to) CSIR-CGCRI for clay and ceramics; CSIR-NCL/CSIR-IICT for dye and bleaching; CSIR-NML for brass & bell metal/metal fabrication; CSIR-CMERI for metal fabrication/machinery and spares; CSIR-CFTRI on food products; CSIR-CLRI on leather and so on. Several technological elements could map onto multiple laboratories.

Evolving Policy Models for SME Growth

Mechanisms of cluster engagement within the SME sector could be diverse. It might either occur through the upfront transfer of technology (from relevant technology providers); or by capacity building through

training/ mentoring from technology providers. Usually, both the above processes necessitate the key role of technology institutions or academia. Yet another relatively less prevalent way could be cluster twinning – that is envisaged to involve two clusters, each of them mutually complementing the other's needs. Twinning could be an excellent model for engagement among Indian and ASEAN clusters. R&D institutions and academia in both regions would serve as key drivers in the success of the twinning process. There are some examples of twinning among Indian and Indonesian clusters; Indian and Malaysian clusters, etc.

Digital connectivity and e-commerce have also emerged as key drivers to connect SMEs of developing countries and to make them technologically compliant with Industry 4.0 (4IR). Studies have shown that the adoption of 4IR technologies would enable SMEs in India and ASEAN to diversify their clientele at lower costs while providing customers with a wider range of products. New policies, therefore, tend to focus increasingly on upgrading the constituent SMEs in both regions with appropriate 4IR. The ASEAN Digital Integration Framework (2019–2025) and the Master Plan of ASEAN Connectivity 2025 are focused on leveraging the collaborative strengths of regional players including India. A recent working paper on "Innovation, Transfer and Diffusion of 4IR Technologies to catalyse Sustainable Development in Asia-Pacific" published by ESCAP has further highlighted the role of collaboration and capacity building in evolving sustainable technology ecosystems.[3-5]

While countries such as Singapore and Thailand are leaders in the adoption of 4IR, many others like Myanmar or Cambodia lag substantially. There is also a noticeable diversity in the application domain. Thailand, for example, focuses its IoT (Internet of Things) spending more on leveraging the manufacturing sector; Vietnam on intelligent transport systems, environmental monitoring, etc.; Cambodia envisages harnessing IoT for farm management and water management.[3]

India has managed to develop a reasonable digital infrastructure through its Digital India Mission and its start-up policies. A large section of its industrial and financial base is gearing up for nurturing and sustaining the 4IR. While it can adopt technologies from countries like Singapore, it can effectively provide technologies and capacity to most of the least developed countries in ASEAN.

Technology institutions in India undoubtedly have a significant role to play in such capacity-strengthening and resource-mobilisation processes. CSIR took a lead during India's 12th Five Year Plan (2012-2017) to develop an R&D capacity for promoting big data analysis by establishing the Fourth Paradigm Institute. This can be an appropriate platform along with others for building India's ASEAN outreach in 4IR.

Barriers to Technology Cooperation

Notwithstanding the various initiatives and interventions, technology cooperation between India and ASEAN exhibits several barriers that need to be overcome primarily at the policy level. While several parameters have been identified, it is felt that the following four elements could be starting points in addressing the gap:

- ***Disparity in IPR regimes:*** The IP regimes of various countries of the ASEAN among themselves vis-à-vis India shows marked disparity, although most of them are signatories to the TRIPS. This is a major impediment to the free movement of technology and knowledge. It is important to develop a more seamless regime conducive to the specific needs of the region.

- ***Low collaborative R&D:*** Research collaboration among the technology providers is of primal importance in achieving effective capacity building and transfer of knowledge. India and ASEAN have a low degree of collaboration, including co-publications, MoUs, institutional HR exchanges and so on. While initiatives such as the ASEAN-India Research Initiative of DST-India endeavour to address this gap, the quantum of collaboration is far from satisfactory. A greater and wider degree of collaboration is required to be espoused with more involvement of industries from both regions.

- ***Inadequate International Technology Transfer Policy:*** The policy for the international transfer

of technology is rather inadequate in India which impedes seamless exchange. This is true for institutions such as CSIR as well, which require a special focus.

- ***Low innovation among firms:*** The innovation capacity and innovation index among the various firms, especially the SMEs continues to remain low both in India and most of the ASEAN countries (with few exceptions in Singapore and Thailand). This serves as an impediment to adopting 4IR technologies to enhance their competitiveness. Cooperative models to leverage capacity could prove effective for both players.

Conclusion

The approaching SDG target of 2030 provides a major opportunity for India to enhance its technology outreach and trade partnerships. Such an endeavour is also poised to leverage the capabilities and output of our major technology institutions. Against such a backdrop, a deeper ASEAN connection holds out immense promise.

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