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WORKING PAPER

Harnessing the Potential of Sustainable Industrialization in South Asia: Some Policy Lessons for Advancing SDG-9

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Harnessing the Potential of Sustainable Industrialization in South Asia: Some Policy Lessons for Advancing SDG-9

*Nagesh Kumar and Shiladitya Chatterjee**

[Abstract: The South Asian countries (SACs) have not been able to fully harness the potential of industrialization, infrastructure, and innovation for their development covered under the Sustainable Development Goals (SDG-9). This paper argues that industrialization, infrastructure development and science, technology and innovation (STI) capabilities could help the subregion tap their potential for inclusive and sustainable development through the creation of decent jobs and incomes for people and drive the next phase of its transformation. The paper finds substantial opportunities for mutual cooperation in fostering industrialization through harnessing the potential of regional value chains (RVCs) that have emerged as the key drivers of manufacturing competitiveness and trade. It also reviews some promising proposals for regional transport connectivity and facilitation, cooperation in renewable energy such as hydropower, and opportunities for strengthening their STI capability including in harnessing the fruits of the digital revolution.]

The Context

The process of economic development is underpinned by the structural transformation of economies which involves the progressive movement of workers from low-productivity sectors such as agriculture to higher-productivity sectors such as industry and services, attributed to Economist Arthur Lewis (1954). History corroborates that few countries if at all have attained prosperity without industrialization (Kaldor 1967). The East Asian newly industrializing countries including the Republic of Korea, Taiwan, Malaysia, and Thailand followed by China and Vietnam have seen the rapid transformation of their economies, prosperity, and poverty elimination through harnessing the potential of industrialization

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for the creation of decent jobs (Nayyar 2019). South Asian countries (SACs) have generally lagged in their structural transformation and industrialization (Kumar 2022 for India). However, Bangladesh is emerging as a good example of productivity-enhancing structural transformation, relying on the export-oriented apparel industry to forge rapid growth and large-scale employment generation. Within the industry, manufacturing and construction have greater potential to accelerate job creation, as do smaller enterprises.

In this context, the United Nations' 17 Sustainable Development Goals (SDGs), particularly SDG 9 on Industry, Innovation, and Infrastructure are of particular interest to SACs that have not been able to fully harness the potential of industrialization, infrastructure, and innovation for their development. The industry-led development strategy emphasized by SDG 9.2 can help SACs achieve their development goals by creating greater decent employment opportunities and poverty reduction. Simulations conducted within the framework of the UNESCAP-SANEM CGE Model demonstrated that an additional 71 million people could be lifted out of extreme poverty and additional 56 million jobs could be created by 2030 in Bangladesh, India, Nepal, Pakistan, and Sri Lanka if industry share in GDP was doubled, in tune with SDG 9.2 target. This industry-led strategy would also boost SACs GDPs and exports by about 22% compared with a business-as-usual scenario (UNESCAP-SSWA 2018a).

Industrialization requires considerable public effort and strategic interventions in terms of providing the necessary environment for private enterprises to establish and grow, collectively termed as industrial policy. Both physical and human capital development are necessary. Without physical infrastructure such as roads, suitable land for building factories, and electricity for running machinery, no enterprise can get off the ground and survive. Similarly, without skilled workers, productivity enhancements cannot be achieved. Also needed are appropriate policies to encourage setting up enterprises and nurturing their development, including fostering a climate of innovation to reduce costs, enhance productivity, and develop products that can compete in the domestic and international markets. It is for this reason that SDG-9 combines industrialization, infrastructure and innovation together.

Finally, as SACs seek to harness the opportunities for industrialization, they should avoid the conventional paths of industrializing first and cleaning up later. Such paths, apart from the harm they cause to the environment are also likely to be unsustainable. It is possible to exploit the potential of green industrialization by combining the objectives of industrialization as well as sustainable development (ISID 2022). This would involve a policy shift towards the adoption of cleaner technologies as well as strategic interventions that help to harmonize the requirements of productivity-enhancing structural change with environmental objectives and align national interests with the protection of global commons. For instance, the policies that incentivize the development and use of green technologies such as wind, solar, bioenergy, geothermal, hydrogen, and fuel-cell technologies, or those that help save other natural resources need to be adopted. In this

context, the role of innovative activity becomes critical in driving the agenda of inclusive and sustainable industrialization.

Against that backdrop, this essay reviews the status of achievement of specific targets under SDG 9 in the South Asia region and identifies the key gaps across the countries; it also identifies the key challenges faced by the countries in the subregion in achieving SDG 9 targets (including those created by the Covid-19 pandemic and the geopolitical developments such as the Ukraine-Russian War or the Middle East Conflict). It reviews the policy measures and key means of implementation needed for achieving the targets; and identifies the major issues and challenges for regional partnerships towards accelerating the progress in respect of SDG 9. Finally, it makes some concluding remarks and summarizes the policy lessons for national, subregional, and international actions.

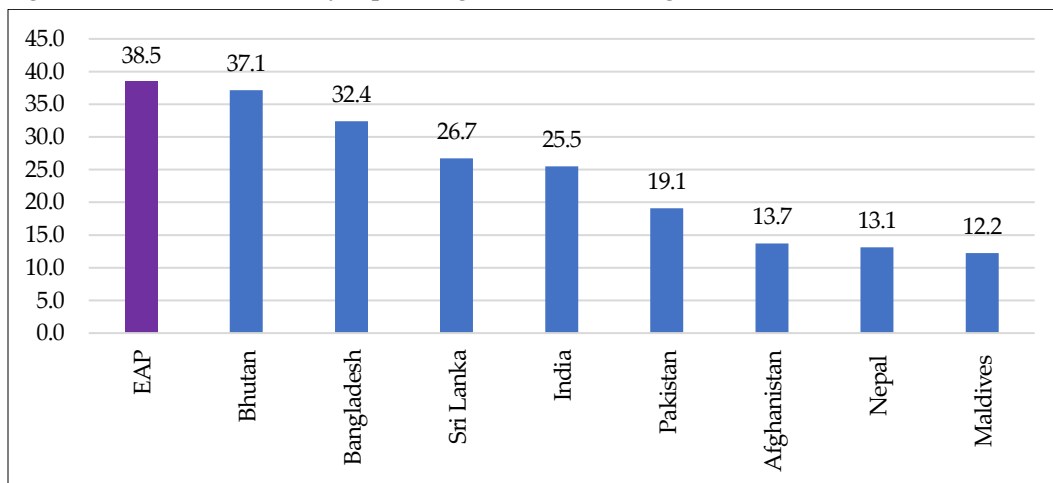
Status of Achievement of Specific Targets under SDG 9 in the Subregion

SDG Goal 9 enjoins countries to “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.” The key targets under this Goal are to develop quality, reliable, sustainable, and resilient infrastructure, including regional and trans-border infrastructure (9.1); by 2030, significantly raise the industry’s share of employment and gross domestic product, in line with national circumstances, and double its share in the least developed countries (9.2); increase the access of small-scale industrial and other enterprises, to financial services, including affordable credit, and their integration into value chains and markets (9.3); by 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes (9.4); and enhance scientific research, and upgrade the technological capabilities of industrial sectors (9.5).

Unfortunately, not all indicators to measure these targets are yet available for all countries. In this section and the next, this paper focuses therefore on the most crucial ones namely (i) share of industry and particularly manufacturing in GDP (Target 9.2); (ii) share of industry in employment (Target 9.2); (iii) infrastructure indicators namely access to roads and electricity (target 9.1); (iv) innovation indicator given by share of R&D expenditure in GDP (Target 9.5); (v) other critical indicators to facilitate industrialization namely basic education and time to start the business (Target 4.3). Discussion of MSMEs is also undertaken to address the issue of equity in industrial development (Target 9.3).

It is well known that SACs have fallen behind East Asia in leveraging industry, particularly the manufacturing sector for their development. This is apparent from Figures 1, 2, and 3 below.

Figure 1. Value added in industry as percentage of GDP (%), average 2018-19



Source: Authors, based on World Development Indicators, 2022, accessed 15 Oct 2022, Website: <https://data.worldbank.org/indicator/NV.IND.TOTL.ZS>

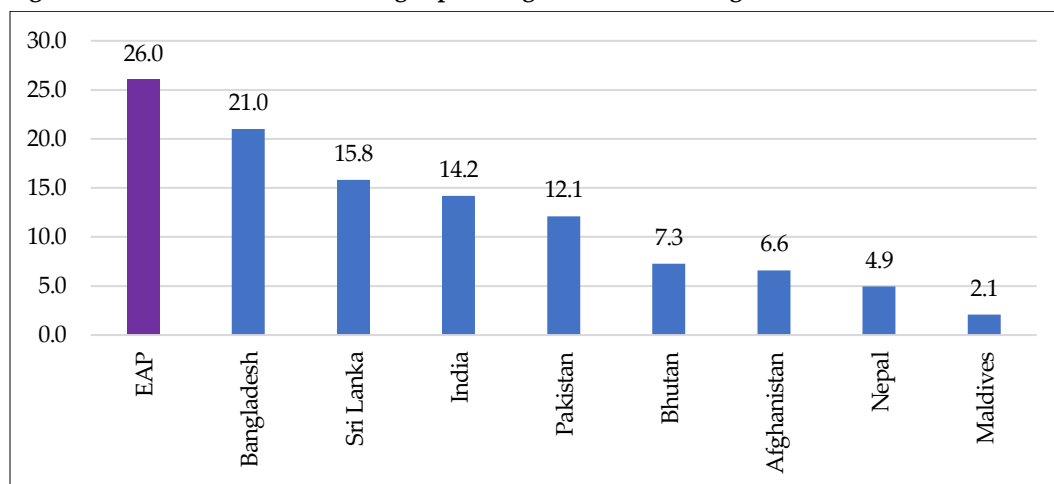
Figure 1 compares developing East Asia and Pacific (EAP) average of value added in the industry as a percentage of GDP with the SACs. All countries, barring Bhutan whose hydropower industry dominates its industrial profile, lag well behind the EAP industry average. Despite tremendous efforts to accelerate industrial development, SACs have generally failed to do so with the exception of Bangladesh, whose textiles and garments sector, supported initially by favourable import quotas in developed countries were able to grasp to forge ahead, and later maintained through low wages, supportive public policies and innovation (*Textile Today* 2022).

Within the industry the manufacturing subsector is the largest component. The comparative picture for EAP and SACs is shown in Figure 2. The SACs lag significantly behind the EAP average, and even more than in the case of the industry as a whole. Among SACs, Bangladesh leads the subregion, mainly due its remarkable performance in ready-made garments exports which continued to grow despite the withdrawal of MFA quotas since 2005, as alluded to above, and comprise over 80% of its total exports currently compared to 75% at the end of MFA in 2005 (BGMEA website 2022). Other SACs have shown lackluster performance. India, in particular, has not only lagged behind with MVA share nearly half of the EAP average but has also witnessed some premature deindustrialization (Kumar 2018).

Figure 3 shows the comparative position between EAP countries and SACs regarding the share of industry in total employment. As in the case of share in GDP, the SACs (barring Sri Lanka) are lagging on this industry indicator too. Employment being a major objective of industrial development, the fact that there is insufficient job creation in the industry given the lower-than-needed share of industry in employment implies that agriculture and allied activities – with generally lower productivity and wages than industry - will

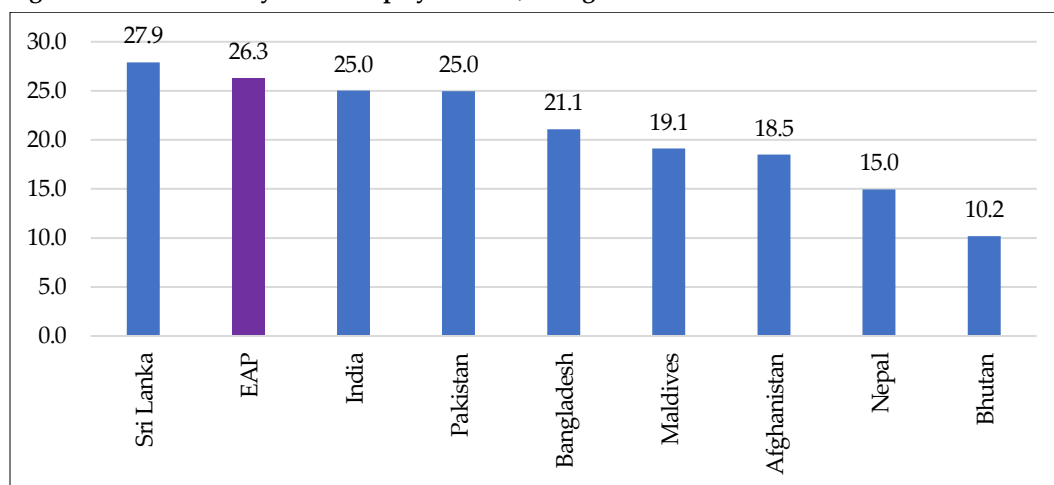
continue to bear the burden of providing a living for the residents of these countries, and make further poverty reduction in South Asia an uphill task.

Figure 2. Value added in manufacturing as percentage of GDP (%), average 2018-19



Source: Authors, based on data from World Development Indicators, 2022 accessed on 15 October 2022, available at <https://data.worldbank.org/indicator/NV.IND.MANF.ZS>

Figure 3. Share of industry in total employment (%), average 2018-19



Source: Authors, based on data from World Development Indicators, 2022 accessed on 15 October 2022, available at <https://data.worldbank.org/indicator/SL.IND.EMPL.ZS?locations=IN>

Goal 9 has additional targets regarding LDCs, namely that by 2030 they must double the industry's share in GDP as well as in total employment. Figures 4 and 5 show the current trends in these indicators for the four LDCs in SACs. The share in GDP indicator shows declining trends for all except Bangladesh. The share in employment shows upward trends but at a slow pace. It is evident that except for Bangladesh, none of the other SACs LDCs

are on track to achieve the SDG-9 target of doubling the share of industry in GDP between 2015 and 2030.

Figure 4. Trends in the share of industry in GDP in the LDCs

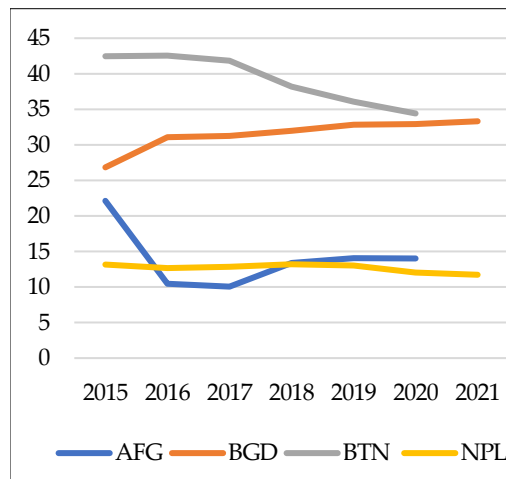
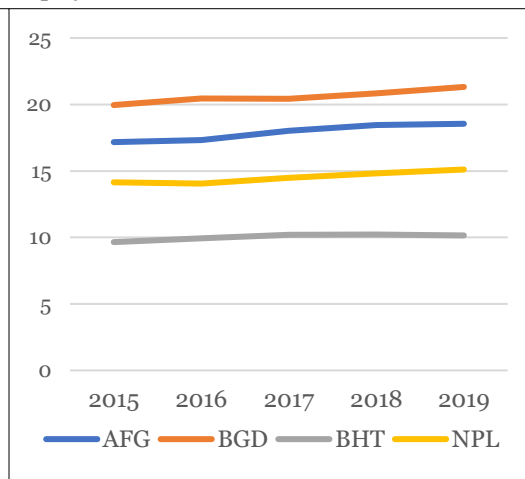


Figure 5. Trends in share of industry in total employment (%) in the LDCs in SACs



Source. Authors, based on Authors' compilation based on World Development Indicators, accessed September 2022, <https://databank.worldbank.org/source/world-development-indicators>

MSMEs play a pivotal role in the industrial performance of SACs (see Table 1). In Sri Lanka, for instance, MSMEs contribute 52% to the GDP, 35% of total employment and 20% of exports. India has 63.38 million MSMEs employing 111 million workers (21% of the total employment) and contributed 48% of exports of the country in 2018-19. MSMEs are highly scattered, labour-intensive and most of them are in the unorganised sector with the bulk of the employment being informal in nature and suffer from many other challenges, as summarized with the India as an example in Box 1. Thus the aggregate employment numbers mask wide variations in the quality of employment depending upon whether they are employed in the organized or unorganized sector. Given their potential to generate employment, MSME promotion remains a key priority of industrial policy in all the countries, as observed later.

Table 1: MSMEs Contribution to GDP, Employment and Exports in SACs (in %)

Country	GDP	Employment	Exports
Afghanistan ^a	50	33	NA
Bangladesh ^a	22.5	40	11.3
India ^b	28.9	21	48.1
Nepal ^a	22	23	NA
Pakistan ^b	30	70	25
Sri Lanka ^b	52	35	20

Source: UNESCAP-SSWA (2020), based on different national sources
Note: a=2014; b=2018

Box 1: The MSME sector in India and its Challenges

In India, the manufacturing sector is dominated by the micro, small and medium enterprises (MSMEs). Categorization of MSMEs is based on investment in plant and machinery for manufacturing enterprises and till recently, microenterprises were defined as investing up to Rs 2.5 million (USD 30,500); small above Rs 2.5 million (USD 30,500) to Rs 50 million (USD 609,650); and medium above Rs 50 million (USD 609,650) up to Rs 100 million (USD 1.2 million). Large enterprises are those who invest beyond these limits. The definition has been changed in 2020 but the data presented here relates to the previous definition. The MSMEs are dominated by micro enterprises that account for over 99% of the more than 63 million MSMEs.

MSMEs constituted around 70% of total manufacturing employment in India but their share of manufacturing value added was 52%. It shows that MSMEs provide the bulk of employment and also a major part of output of manufacturing and also that MSMEs have much lower labour productivity than large enterprises.

The key to India's manufacturing growth therefore rests largely on MSMEs whose problems need speedy resolution. The MSMEs face major hurdles in their operations. The six most pressing problems according to them were (i) erratic demand; (ii) inability to recover financial dues from creditors; (iii) lack of access to finance or high cost of credit; (iv) erratic power supply; (v) shortage of raw material; and (vi) availability of labour including skilled labour.¹ While issues relating to demand for outputs and access to raw material and labour are basically enterprise level issues which they are supposed to tackle themselves as part of the entrepreneurial function, the other problems such as recovery of dues, access to credit, and availability of infrastructure may need state policy and other facilitation interventions. For example, as most MSMEs are unincorporated enterprises in the informal sector, they are unable to access the formal credit system. The Covid-19 pandemic has given another blow further weakening this sector. They also lacked sufficiently skilled entrepreneurs.

Source: Chatterjee (2022).

To sum up, SACs have a lot of potential for industrialization yet to be tapped. Industrialization especially manufacturing could be the next engine of growth for the subregion driving inclusive and sustainable development through the creation of decent jobs with green industrialization strategies. The SACs will not only have to strive to achieve larger shares of industry in GDP and employment, but also try and secure an increase in the share of formal sector employment within the industry through the encouragement of the MSMEs to graduate to more productive employment with better working conditions for workers in the organized sector.

Government Policies for Fostering Industrialization, Infrastructure Development, and Innovation

Governments in the subregion are taking steps to foster industrialization by enhancing the ease of doing business, incentivizing industrial investments, public funding, and private-public partnerships (PPPs) for infrastructure investments to close the gaps in access to infrastructure, including digital infrastructure; developing basic education and skills

¹ Government of India, Ministry of Statistics and Programme Implementation (2018).

development; and incentivizing innovation. They are also leveraging digital technology for inclusive development including through promoting start-ups. Green industrialization also opens up new vistas for industrialization and sustainable development.

Each one of these measures is critical for advancing industrialization. Chatterjee (2022) for example found in a comparative study of Indian states that those which had developed infrastructure, and basic education, and attempted to develop a conducive environment for the industry had done better than others.

Table 2 presents three key industry indicators (share of industry in GDP, share of manufacturing in GDP, and share of industry in total employment) with the latest values of some major factors influencing them namely infrastructure indicators (road density and electricity consumption per capita); human development and basic skills (mean years of schooling); innovation (share of R&D expenditures in GDP); and creating an environment favourable to business (time to start a business). The table shows the values of SACs in an EAP comparative perspective.

Table 2. Key Industry, Infrastructure and Innovation Indicators, SACs in a comparative perspective

	<i>Value added in industry as % of GDP*</i>	<i>Value Added in Manufacturing as % of GDP*</i>	<i>Share of industry in total employment (%)*</i>	<i>Density of all roads per 100 sq km</i>	<i>Per capita electricity consumption KwH 2009-14</i>	<i>Mean years of schooling 2022</i>	<i>Time of start business (days)**</i>	<i>R&D exp. as % of GDP#</i>
Afghanistan	13.7	6.6	18.5	13.3		2.9	8.2	
Bangladesh	32.4	21.0	21.1	16.9	274.1	7.4	19.8	
Bhutan	37.1	7.3	10.2	5.0		5.2	15.9	
India	25.5	14.2	25.0	11.4	704.6	6.8	27.1	0.66
Maldives	12.2	2.1	19.1	0.0		7.3	12.0	
Nepal	13.1	4.9	15.0	9.1	119.9	5.2	18.2	0.28
Pakistan	19.1	12.1	25.0	20.8	440.8	4.5	18.9	0.22
Sri Lanka	26.7	15.8	27.9	27.5	494.7	10.8	9.6	0.13
EAP	38.5	26.0	26.3		2610.9	7.8	34.0	2.14

Source: Authors' compilation based on HDR 2022 for mean years of schooling, Columbia University

(<https://sedac.ciesin.columbia.edu/docs/groads>), World Bank Global Finance and Development Database for access to finance, and World Development Indicators for all other indicators

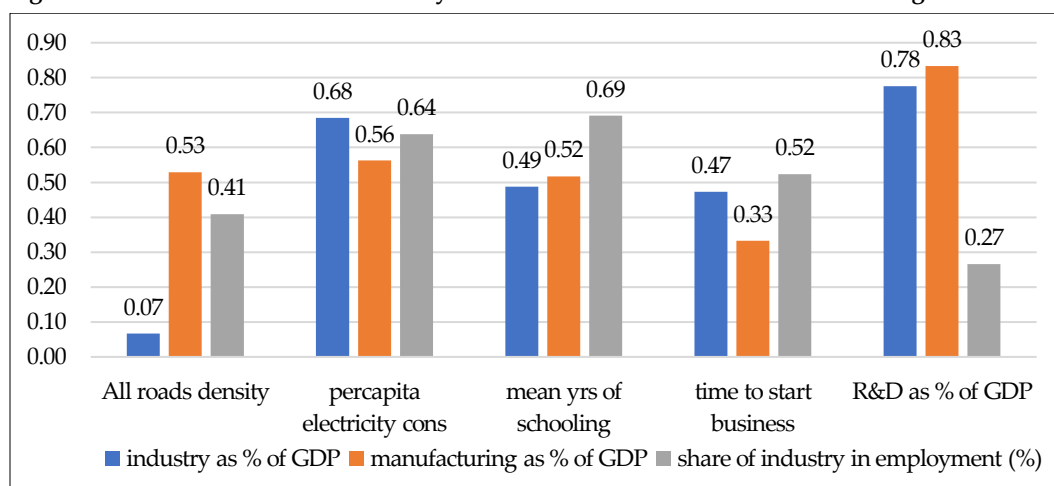
Notes: * Average 2018-19; ** Average of 2013-19; *** latest years in period 2013-15; #average last two observations

As in the case of the industry outcome indicators, the EAP averages are generally more favourable than those for SACs. Data on EAP countries average is available for only 4 of the 5 indicators cited above. But even through this limited data set the EAP advantage is clear: its R&D expenditures is far higher than all SACs; the per capita electricity consumption is significantly higher than all SACs, as is mean years of schooling, except Sri Lanka which has historically led in this area (along with the state of Kerala in India). The

EAP figure for time to start a business, however, is much higher for EAP – which is surprising and seems to buck the trend.²

Another convenient way to appreciate the importance these contributory factors that Governments need to stress on is to consider the close association of these factors with industrial development outcomes. To do so, correlation coefficients can be constructed. The results are displayed in Figure 6 below.

Figure 6. Correlation coefficients of industry indicators with some critical factors influencing them



Source. Authors' calculation with data from WDI and HDR 2022

Despite paucity of data, this figure still reveals that all these factors are closely associated with industrialization with significant correlation coefficients, in most cases, with values greater than 0.5. Most closely related is R&D expenditures indicating innovation plays a very significant role in industrial development. Also important is human development – represented here by mean years to schooling. Without solid basic education, skills for industry would not be available. It is also revealing that schooling is seen to have greater influence on the share of industry in employment indicator, which possibly indicates that structural change from primary to secondary sectors requiring massive migration from farm-based activities to secondary avocations in urban and peri-urban can be vastly aided by education. Of the infrastructure indicators, electricity is seen to be very crucial given the positive and high correlations with all the industry indicators. Insofar as roads is concerned, it appears to influence manufacturing more than industry as a whole as well as employment in industry – possibly by making migration easier. The time to start business indicator indicates the extent of willingness by authorities to actively promote business

² The authors' personal interactions on this issue with Chinese authorities indicates that while China may take longer to provide all clearances, once it is given all departments and agencies cooperate seamlessly to ensure that the business functions without a hitch.

enterprises and correlation coefficients are all positive, although not as high as would have been expected.

To forge ahead with industrialization, SACs must pay heed to all these important factors and prioritize action on them. Their governments must also delve down from the macro picture and look into the constituent subsectors and their characteristics as each would have differing requirements. The Box 1 has also indicated the challenges faced by MSMEs which form the backbones of SACs economies that need to be addressed.

Preserving and Accelerating SDG-9 Achievement in the Aftermath of the Covid-19 Pandemic and the Geopolitical Risks: Short-term Policy Measures

The Covid-19 pandemic that started in 2020 has adversely affected progress towards SDGs, including Goal-9, in a significant manner in the subregion with some of the impacts like supply chain disruptions and rising food and energy prices getting accentuated further by the geopolitical issues linked to the Ukraine War from early 2022 and the Middle East Conflict that erupted in October 2023. The Governments of the subregion imposed stringent measures like lockdowns and border closures to contain the spread of Covid-19. Starting initially as a health crisis the pandemic quickly transformed into an economic crisis with supply chain disruptions, collapse of demand in several industries, closure of businesses and return of migrant workers.

Industrial activity was affected in all countries especially the MSMEs. As observed earlier, MSMEs play a pivotal role in the economic performance of SACs and serve as the backbones supporting livelihood of bulk of industrial workforce (Table 1). MSMEs were the worst affected from the lockdowns as most of them are in the unorganised sector with the bulk of the employment being informal in nature. Surveys conducted by different organizations during 2020 and in 2021 when the pandemic was at its peak, have all found that MSMEs in the SACs have been hit badly by liquidity crunch, supply chain disruptions, labour shortages, demand collapse, losing more than half of their output, making it difficult for them to re-activate their businesses (UNESCAP-SSWA 2020, ILO 2021, and UNICEF-ROSA 2021). Sectors dependent on high imports of raw material or intermediates such as electronics, consumer durables, pharmaceuticals, textiles, clothing, footwear, and carpets faced supply chain bottlenecks while export-focused sectors suffered from a major drop in demand globally.

Support Measures Adopted by the Governments

The governments of SACs have adopted extensive policy interventions to address the challenges to protect the lives, livelihoods and enterprises in the SACs subregion that faced

the first contraction of GDP in four decades.³ The key policy measures adopted, as summarized by IMF (2023), include health care and vaccinations, income transfers, and rations provided to workers rendered jobless due to the lockdowns of businesses (among other vulnerable people), postponement of taxes, stimulus measures through enhanced capital expenditure on infrastructure development to create jobs and demand to revive the economies. In addition, businesses especially the MSMEs, were assisted through enhanced liquidity support including through collateral-free loans, government guarantees, debt relief or interest subvention and equity infusion, easing and postponing the tax burden, and postponing the insolvency proceedings against loan defaults. To boost local manufacturing and create jobs, India also launched the production-linked incentives (PLI) scheme in 14 sectors under the *Aatmnirbhar Bharat* package. The Central banks of SACs have also intervened in the foreign exchange markets to prevent exchange rate volatilities.

Although the Covid-19 pandemic may have receded in 2023 with WHO declaring it to be officially over, trends such as supply chain disruptions and rising food and energy prices have continued and have actually been accentuated by the Ukraine-Russia conflict that started in 2022. The supply chain disruptions are leading to a trend of global companies de-risking their supply chains by reshoring them on a China+1 basis which may provide an opportunity to SACs to enhance their integration with the global value chains.⁴

Policy Lessons for Accelerating the SDG-9 Achievement

1. Sustaining the recovery from the downturn especially of MSMEs: While the SAC economies have recovered from the pandemic (except for the economies of Sri Lanka and Pakistan, which are facing challenges of debt crisis), the recovery is believed to be uneven and sometimes described as a K-shaped recovery with some parts (e.g. larger enterprises) recovering robustly but the vulnerable parts like MSMEs continuing to face challenges. Hence, the assistance programmes need to be continued until the recovery becomes broad-based and inclusive. Keeping in mind the recessionary trends in the Western world due to tight money policies adopted to deal with inflation, the SAC governments may also continue with the stimulus programmes focusing on enhanced levels of capital expenditure to sustain the pace of recovery especially of MSMEs. Apart from supporting MSMEs, the fiscal stimulus could also assist in generating demand including through closing the infrastructure gaps especially by building large scale sustainable and resilient infrastructure. This will help in reviving aggregate demand while also strengthening the longer-term sustainable basis of their economies. The other important priority would be to close any gaps in the digital connectivity and broadband networks to ensure that all sections of society including school children have access to online learning tools.

³ UNESCAP-SSWA 2020.

⁴ The rise of the digital revolution or IR4.0 is also facilitating the reshoring of supply chains. See Kumar (2023).

2. Enhanced social protection for livelihood security: The pandemic crisis has also exposed gaps in scope and coverage of social protection in South Asia. Except for Sri Lanka, SACs spend much smaller proportion of their GDP on social protection compared to the global or the Asia-Pacific average. Because of lack of universal social protection, hundreds of millions of migrant laborers, daily wage earners and informal sector workers faced starvation in the subregion, following the lockdowns and other containment measures, hence creating the need to provide rations and income support measures. Given that universal social protection systems play the role of automatic stabilizers in the event of any crisis or threat to the livelihoods, by providing basic income security helping to reduce the prevalence of multidimensional poverty, SACs may strengthen their social protection systems to support vulnerable populations and enhance people's capacity to manage and overcome shocks and mitigate negative impacts on welfare. Another issue is to develop a framework of social protection to the gig economy workers or platform workers e.g. Uber drivers or delivery agents of Amazon.com, who are technically not workers but are considered as partners in the new economy enterprises. They are expanding rapidly in numbers and salience in the aftermath of the pandemic and need a new framework for social protection that covers them for shocks besides the usual needs of health and life insurance.
3. Empowering the MSMEs through Digital Commerce: Digital platforms have been proven to be saviors during the pandemic as large enterprises, as well as MSMEs, have significantly increased the use of digital platforms for their business activities. There is a sharp increase in the use of social media like Facebook and Instagram and other marketing platforms to promote and sell products. The digital transformation of MSMEs including those run by women entrepreneurs has become critical for reviving and reigniting their businesses in the post-pandemic scenario. Online shopping via websites, mobile apps, live chat platforms and online marketplaces that promote business-to-consumer, consumer-to-consumer, business-to-business buying and selling, online marketing, and online financial exchange are rapidly emerging as the new normal. Digitalization of commerce has the potential to democratize entrepreneurial activities and market space by allowing large as well as small entrepreneurs to sell on the same online platform. Governments may support capacity-building of MSMEs especially microenterprises to harness digital commerce. Some organizations like UNESCAP have been operating capacity-building programmes for women entrepreneurs in e-commerce. A good practice in promoting MSMEs through e-Commerce, worth emulating by other SACs is Indian Government's e-procurement and newly launched Open Network for Digital Commerce (ONDC) that seeks to evolve into an open platform like those run by global e-Commerce giants like Amazon.Com (Box 2).

Box 2: Indian Initiatives for Empowering MSMEs through e-Procurement and e-Commerce

In order to promote the democratization of government procurement and bring in transparency, efficiency, and social inclusion by allowing all types of entrepreneurs, big corporate houses as well as MSMEs including artisans, to bid for the same tender, the Indian Government started the Government-e-Marketplace (GeM) in 2017, is an online marketplace for all government procurement. All government agencies are required to procure common goods from this platform as mandated by Rule 149 of the General Financial Rules (GFRs). As of now, there are over 69000 buyers and around 6.4 million sellers or service providers registered on this platform of which 824000 are MSMEs. As many as 15.7 million orders worth around \$51 billion have been fulfilled on the platform during the last six years, of which 52% were by MSMEs. Other segments of entrepreneurs include artisans, physically challenged persons, self-help groups, and women in rural areas who have also registered on this platform. Separate categories and market filters have been created for women entrepreneurs on the platform. It also facilitates women entrepreneurs and MSMEs in accessing finance through invoice-based financing using mobile applications. The shift from collateral-based financing to invoice-based financing has significantly decreased the risks of participating in public procurement. Around 15-20% of GDP is dedicated to procurement from this platform by various government agencies.

As a part of Digital India Mission, the Indian Government has also initiated in December 2022 the Open Network for Digital Commerce (ONDC) to provide an e-Commerce marketplace for enterprises small and large, through an open protocol based on open-source specifications. This initiative builds on highly successful Indian initiatives in creating digital public infrastructure including *Aadhar*, the universal identity, and UPI a digital payments gateway. The initiative will not only facilitate the rapid adoption of e-commerce but also boost and strengthen the growth of MSMEs and Start-Ups in India. By facilitating scalable and cost-effective e-commerce through the open protocol, ONDC will empower Start-Ups to grow collaboratively. Of more than 12 million sellers earn their livelihood by selling or reselling products and services in the country, only 15,000 (0.125% of the total) have enabled e-commerce. E-retail has been out of reach for most sellers, especially from small towns and rural areas. ONDC seeks to increase e-retail penetration from the existing 4.3% to its maximum potential in India. Its mission is to dramatically increase e-commerce penetration in the country by enabling population-scale inclusion of all types and sizes of sellers.

Source: Authors' compilation from <https://gem.gov.in/aboutus>; <https://ondc.org/about-ondc/>, ISID (2023), and Kumar (2023).

4. Fostering the Start-Up culture: Start-Ups have emerged as important means of harnessing the potential of youth in entrepreneurship, especially in the new technologies. Hence, governments in different countries promote them through venture capital, infrastructure facilities and through incubation centres established at the higher education centres. Recognizing their potential, the Indian Government launched in 2016 the Start-Up India mission that provides facilities to recognized start-ups. The Indian start-up ecosystem is considered to be the third largest in the world after the US and China, having produced over 100,000 registered start-ups and more than 100 unicorns over the past 5-6 years (Kumar 2023).
5. Harnessing new opportunities through re-skilling of the workforce: While the pandemic is leading to massive job losses and has particularly affected certain sectors like tourism and hospitality much more adversely, it has also created new job opportunities in sectors such as e-commerce, robotics, health services and IT and IT

enabled services (ITES). As SACs emerge from the pandemic, governments need to make a comprehensive and granular analysis of the skills and professions that are at risk of redundancy and move rapidly to re-skill their workforce with investments in digital literacy and skilling towards future growth sectors. It has been shown that an estimated 54% of South Asian youth do not have the requisite skills needed for employment in modern workplaces requiring digital and soft skills. With nearly 50% of South Asia's population being below the age of 24, South Asia will have the largest youth labour force in the world till 2040, led by India, Pakistan and Bangladesh. A massive programme of reskilling and skill development of South Asia's youthful workforce beginning with more attention to improving the quality of basic and vocational education and through a fit-for-purpose education system, including through a large programme of government-funded internships in companies, would pay rich dividends for accelerating their own structural transformation in the incipient 4th Industrial Revolution (IR4.0).⁵

6. Tapping Opportunities for De-risking Supply Chains: The pandemic and the Ukraine Conflict have also exposed the risks of heavy dependence on a few countries for global supply chains of key products. As the Western and Japanese multinational enterprises (MNEs) reconfigure their value chains as a part of their de-risking and diversification strategies on a China+1 basis, SACs could offer themselves as potential venues for new offshore locations, which could also assist them to deepen their links with global value chains and diversify products and markets of their exports. For this, however, they will need to create a conducive investment climate with appropriate policy incentives, improved infrastructure, skilled manpower base, and strengthened transport connectivity for efficient production and reduced cost of trade within and beyond the subregion, as discussed in the following section.

The acceleration of SDG-9 in the SAC region also requires some policy measures to harness the potential of regional cooperation that are of essentially medium-term nature but have become more critical in the aftermath of the Covid-19 pandemic and the geopolitical challenges, as summarized in the following section.

Regional Cooperation for Accelerating the Achievement of SDG-9

The global partnership targets defined under SDG-9 include facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support (9.a); support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities (9.b); and significantly increase access to information and communications technology (ICT) and strive to provide universal and affordable access to the internet (9.c). While these partnership targets place responsibility primarily on developed countries to support

⁵ see Kumar (2023) for a discussion on the potential in India's case.

developing countries and particularly the least developed countries, there is considerable scope for SACs to support mutually beneficial cooperation, which would also help the four least developed countries, the two landlocked countries (Afghanistan and Nepal which are also LDCs) and the small island state (Maldives). Three of the LDCs of South Asia namely, Bangladesh, Bhutan and Nepal are graduating from their LDC status over the next 3-4 years having qualified the criteria for graduation.

Regional cooperation among SACs can be particularly conducive to fostering industrialization through enhancing their participation in the regional value chains (RVCs) that have become key drivers of manufacturing competitiveness and international trade. Against the backdrop of a subdued performance of global trade with rising protectionism, trade wars and the recessionary trends in the industrialized world in the aftermath of the COVID-pandemic and the geopolitical tensions related to the Ukraine-Russia War, regional cooperation has assumed new salience. The instruments of regional cooperation with significant potential that can advance industrialization and growth among the member states are as follows:

a. Harnessing the potential of intra-regional trade and regional value chains

Global trade has suffered a major blow over the past few years, first due to border closures in the aftermath of the Covid pandemic followed by the Ukraine-Russia war. The threat of recession looming large on the Western world as a result of tight money policies followed in the US and the EU to curb inflation is also affecting demand for exports of South Asian products. In that context, the subregion could look to tap the unexploited potential of intra-regional trade.

Table 3 shows average exports of SACs as a proportion of GDP for the period 2015-2019. Several countries in the South Asia subregion are not participating in external trade sufficiently enough such as Afghanistan, Nepal and Pakistan. On the whole, the SACs export far less than East Asia and the Pacific. One reason for South Asia's sub-par performance is the poor levels of subregional trade integration in South Asia that is often described as the least integrated region in the world in terms of trade.

The share of intra-subregional trade in South Asia is at just around 5% of its overall trade which remains the lowest among other sub-regions of Asia.⁶ SACs have immense scope for further enhancing trade-led development by harnessing the unutilized potential of trade with each other. In terms of intra-regional trade in goods alone, UNESCAP estimates

Table 3. Exports as % of GDP

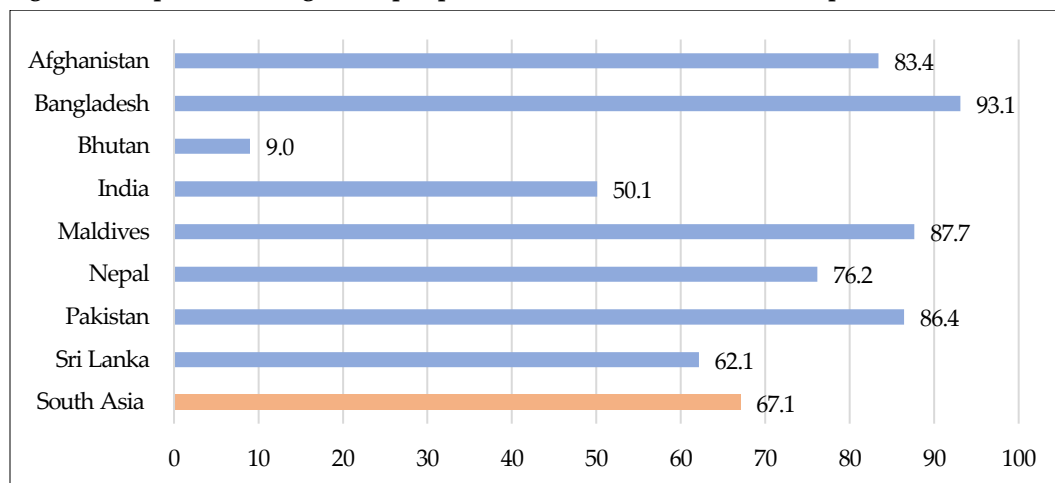
	Average 2015-19
Afghanistan	12.5*
Bangladesh	14.0
Bhutan	31.8
India	19.3
Maldives	72.4
Nepal	8.4
Pakistan	9.1
Sri Lanka	22.0
South Asia	17.8
East Asia & Pacific	23.3

Source: WDI. NB * data for 1974-78

⁶ UNESCAP SSWA (2018b).

that its current levels at around US\$ 26 billion could potentially be at least three times the actual figure, which is validated by other similar studies.⁷ This implies that about 67% of the estimated potential for trade between the subregional countries remains unexploited (Figure 7). Enhanced intraregional trade could help the subregion exploit its potential for industrialization through formation of RVCs especially in textiles and clothing, automobiles, metal products among other sectors and also leading to patterns of inter- as well as – intra-industry specialization (Kumar and Joseph 2020).

Figure 7: Unexploited intra-regional export potential of SACs (% of total estimated potential)



Source: Kumar and Joseph (2021) based on the UNESCAP-SSWA (2018b)

Note: Express as % of estimated intra-regional export potential.

Poor supply capabilities pose another problem hampering intra-regional trade. This requires efficiency-seeking industrial restructuring, facilitated through intraregional investments. Such industrial restructuring usually succeeds trade liberalization, provided investment facilitation and efficient logistical services help create RVCs, such as after the India-Sri Lanka bilateral FTA. The FTA has facilitated the creation of integrated supply chains in the textiles and clothing industries with two-way flows of FDI between the two countries.

Textiles and clothing are likely to play a major role in intraregional trade with Bangladesh and India acting as growth poles in the region. Since 2005, for example, India has expanded in textiles, although not in the clothing market. However, generally all SACs (barring Bangladesh helped by its low labour costs and trade preferences enjoyed in major markets), still operate at the low end of the value chain. In future with big players such as China and Thailand facing decreased competitiveness due to rising wages, a unique opportunity for SACs to move up the value chain will arise. However, several measures will be needed. Trade liberalization and facilitation and intra-regional investment facilitation are essential for creating sub-regional value chains.

⁷ See UNESCAP SSWA (2018b). Also see World Bank (2018) for similar findings.

b. Cross-border infrastructure and facilitation as a catalyst for regional value chains

Poorly developed surface transport links and facilitation of trade at the borders between the SACs do not allow them to exploit the benefits of geographical proximity and border trade for formation of RVCs. For instance, although Bangladesh and India share a long land border, the bulk of their bilateral trade takes place by sea.

Integrating important rail transport corridors of SACs, UNESCAP has developed layouts of ‘hub and spoke’ corridor proposals linking inland industrial clusters to form an effective network. The main proposal, namely the Istanbul-Tehran-Islamabad-Delhi-Kolkata-Yangon (ITI-DKD-Y) Container Rail Corridor including possibilities of linking it with the Chabahar port in Iran through west Indian ports, forms the blueprint of an extended multimodal land transport system for South Asia.⁸ The broader Asian Highway (AH) and Trans-Asian Railway (TAR) networks promoted by UNESCAP offer firm basis for this sub regional network. For addressing operational issues, UNESCAP also offers policy tools for transport facilitation, frameworks for modernization and application of advanced technologies, transport facilitation models such as the Secure Cross Border Transport Model (SCBM) and the Efficient Cross-Border Transport Models (ECBTM), and model regional transport facilitation agreements.⁹ Besides utilising such technical support, given the highly capital-intensive nature of transport corridor development, the subregion must also collectively find sources of financing with greater involvement of the private sector and multinational donor agencies.¹⁰ A new economic and transport corridor namely India-Middle East-Europe Economic Corridor (IMEC) was signed on the sidelines of the G20. The IMEC Corridor has the potential to be a game-changer in providing seamless connectivity to India’s trade with the Middle East and European countries. It can be extended to other SACs through the Indian transport network extending it especially to Bangladesh, Nepal and Bhutan.

Bringing down Cost of trade with improved trade facilitation at the borders: Due to poor facilitation of trade at the borders, the average *ad valorem* cost of doing trade between SACs is found to be more than double that of East Asia and about 40 percentage points higher than that of South-East Asia (Figure 8).¹¹ Even though the subregion is steadily improving on trade facilitation implementation rate, in terms of overall implementation rate South Asia falls below other subregions of the Asia-Pacific region (Figure 9). Research in the context of SAFTA finds that the gains for all participating countries are substantially improved when trade facilitation

⁸ For details of the TIPI-BM and ITI-DKD-Y corridors, see UNESCAP SSWA (2018b). These trunk routes have direct inland sub-links at various points to most of the industrial hubs located across the geographical spread of South Asia. With several completed and operational segments, facilitation of uninterrupted container traffic along these corridors is faced with issues of transport facilitation rather than investments.

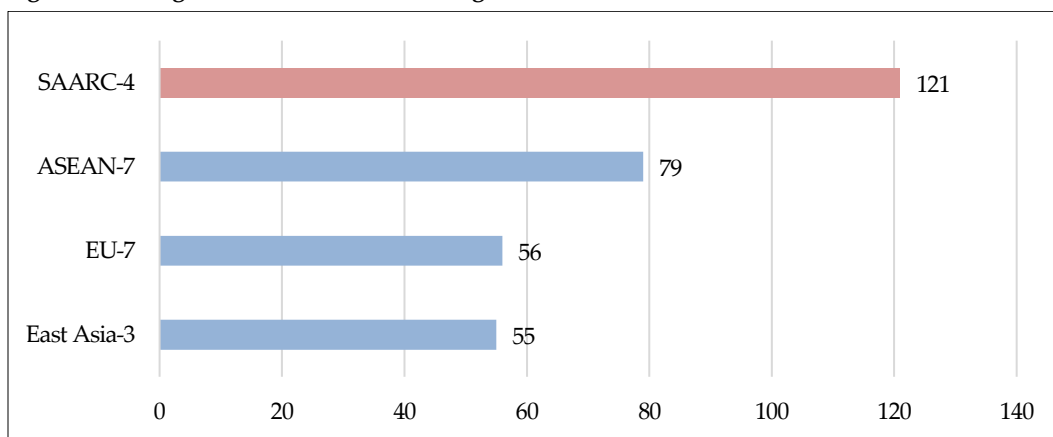
⁹ UNESCAP SSWA (2018b).

¹⁰ Also see Kumar and Joseph 2021.

¹¹ Ibid.

and non-tariff reforms complements tariff liberalization, with well more than 60% of overall gains accruing from trade facilitation measures.¹²

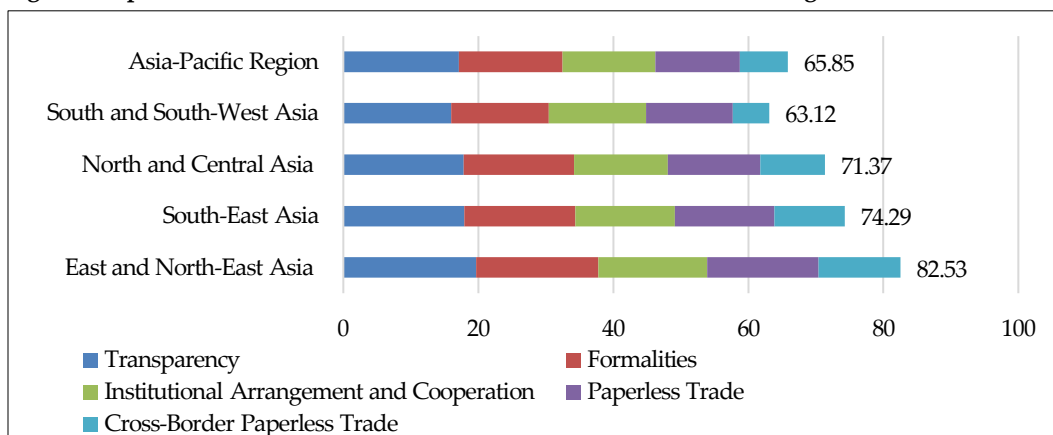
Figure 8: Intra-regional Trade Costs of Select regions (%)



Source: Kumar and Joseph (2021) based on the UNESCAP-World Bank Trade Cost Database

Note: Figures for latest available years. SAARC-4: Bangladesh, India, Pakistan, Sri Lanka; ASEAN-7: Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Vietnam; EU-7: Austria, Belgium, France, Germany, the Netherlands, Spain, United Kingdom; East Asia-3: China, Japan, Republic of Korea

Figure 9: Implementation rate of trade facilitation measures in Asia-Pacific subregions (%)



Source: Kumar and Joseph (2021) based on the UN Global Survey on Digital and Sustainable Trade Facilitation 2021

c. Subregional Cooperation for expediting the clean energy transition

The rising oil prices following the Ukraine Conflict have affected the balance of payments positions of heavily import dependent SACs and has served as a reminder of the critical

¹² Simulations conducted within the framework of the UNESCAP-SANEM South Asia Model suggest that a 40% reduction in trade costs (to make it comparable to ASEAN levels) would yield an increase of up to nearly 11% in exports and a nearly 3% increase in GDP (UNESCAP SSWA 2018b)).

need to expedite their clean energy transitions. The single most important opportunity for South Asia to make its energy transition is to harvest its large renewable energy potential and share it through an integrated regional power grid, forming a subregional delivery system for low carbon energy. Besides direct benefits, a fully integrated regional power trading system will have a definite bearing on the subregion’s efforts to achieve the SDGs.

Cross-border cooperation in developing energy including renewable energy infrastructure has huge potential. In South Asia, tapping the potential of Himalayan River systems for developing hydroelectricity sources in Nepal and Bhutan for domestic as well as cross border sale, for example, could benefit these LDCs as well as India. It has been estimated that Nepal and Bhutan alone have a potential of over 110 GW of hydroelectricity generation capacity (Singh et al 2013). Apart from developing the necessary infrastructure for these energy projects, the institutional structure for establishing efficient trade in electricity across borders is also necessary and has to be built up. While Bhutan and India have cooperated in harnessing hydropower through subregional cooperation for long time, Nepal and India have begun tapping the potential of Nepal’s immense hydropower resources with a potential destination of Bangladesh that has expressed interest in importing hydropower from Nepal through India through a trilateral agreement.

In the area of energy cooperation another sector with significant potential is natural gas. Cross border linkages of gas pipelines between Bangladesh and India, for example, can help the economies of both these countries significantly. Gas pipeline projects involving third countries (such as from Iran through Pakistan to India; and from Turkmenistan, to Afghanistan, Pakistan and India (TAPI) which are under consideration can also be of immense mutual benefit.

d. Subregional cooperation for ICT infrastructure

The growing importance of ICT in aiding growth and industrialization makes it a key infrastructure in the 21st century. However, there is a continuing “digital divide” as Table 4 demonstrates. Countries such as Afghanistan, Bangladesh, Pakistan and Sri Lanka have 35% or less of their populations with access to the internet considerably lower than the EAP average at 66.6%.

COVID-19 has brought into focus the importance of bridging the digital divide by imposing increasing reliance on virtual interfaces, digital payments, virtual learning and a host of services delivered through ICT platforms and networks. By participating in initiatives such as the Asia-Pacific Information Superhighway (AP-IS) promoted by

Table 4. Proportion of population using the internet (%), 2020

Afghanistan	18.4
Bangladesh	24.8
Bhutan	53.5
India	43.0
Maldives	62.9
Nepal	37.7
Pakistan	25.0
Sri Lanka	35.0
EAP	66.6

Source. Authors’ compilation based on World Development Indicators, accessed September 2022, <https://databank.worldbank.org/source/world-development-indicators> and weblink

UNESCAP,¹³ that aims to increase the availability and affordability of broadband technologies by strengthening the underlying infrastructure, South Asia can adopt collective actions at the regional level. There are also avenues for broadening regional ICT networks through co-deployment of fiber-optic cables along other passive infrastructure networks such as highways, roads, and railways. By doing so, South Asia can build more internet exchange points resulting in better intra-regional data exchange, and efficient delivery of and access to digital services.

e. Cooperation for building science, technology and innovation (STI) capabilities

South Asia lags behind in terms of science and technology capacities and innovation capabilities, a key enabler for most of the SDGs. Besides being a critical Goal (SDG 9 Industry, Innovation and Infrastructure), STI has been identified as one of means of implementation, finding its reference in many targets. Investment in research and development (R&D) has been comparatively lower in South Asia among developing regions of the world. Though India is an exception with demonstrated leadership in several STI fields and driving the South Asian average in R&D investment rates, India's figure is also lower than the average for developing countries. Reflecting the lower priority given to R&D expenditure, SACs rank poorly in global innovation rankings, although India has improved its rankings from 81 to 40 over the past seven years.¹⁴

Cooperation between R&D institutions can help to enhance the ability of all participating countries, particularly LDCs of the subregion, to absorb new and advanced technologies. Besides financing, success in acquiring STI strengths needs broad-based collaborations and long-term institutional build-up. Countries in the region with stronger capacities than others such as India can take a lead in promoting STI capacity development, training, and R&D activities including through common facilities, incentives and support. Industrial cooperation through FDI flows can also promote acquisition and absorption of green technologies through joint ventures. Frugal and "green" engineering capabilities of the subregion can be instrumental for developing low carbon pathways. India possesses strengths in 'frugal engineering and innovation' (such as in affordable generic medicines, low-cost automobile production, and space program). Reviving the Expert Group on Technology/Knowledge Sharing formed under SAARC with a firm and broader terms of reference can be helpful for regional cooperation for STI.¹⁵

Digital technologies can be a critical lever for accelerating the 2030 Agenda and leaving no one behind. Deep-rooted 'digital divide' in the subregion, and its crippling effects, was exposed during the COVID-19 outbreak. From technologies such as fintech driving

¹³ UNESCAP SSWA (2018b). The UNESCAP-led initiative for the Asia-Pacific Information Superhighway (AP-IS) aims to increase the availability and affordability of broadband internet across the region by strengthening the underlying internet infrastructure in the region.

¹⁴ WIPO (2022)

¹⁵ The Expert Group on Technology, Knowledge Sharing (including energy efficiency, coal etc.) finalized its Terms of Reference and Work Plan in 2012.

financial inclusion and rapid growth of access to financial services, access to internet for online learning, e-commerce platforms to frontier technologies like artificial intelligence (AI), digital technologies can promote delivery of a wide array of services, improve efficiency, and be an enabler for resilient growth, decarbonization, and resource and energy efficiency. For instance, the government of Bangladesh has established the a2i Programme which includes one-stop information and service delivery outlets for decentralized delivery of public services.¹⁶ However, access to digital technologies remains very uneven with wide gender and income gaps. COVID-19 has also accelerated the digital transformation that was underway globally through increasing reliance on virtual meetings during work from home, online shopping, contactless deliveries, virtual interfaces, digital payments, virtual learning, remote delivery of health services through telemedicine, online entertainment and so on. The South Asian governments also turned to digital technologies in their response to the crisis through use of online portals, social media, dashboards etc. for real-time information sharing, direct benefit transfers, providing health services through “virtual doctors,” use of drones for sanitation, deploying facial recognition and thermal scanners to identify potentially infected people, management of Covid-vaccination etc. Sharing of good practices in virtual governance or e-governance between the SACs could be fruitful.

f. Cooperation for sustainable infrastructure financing

Closing the gaps in quality, reliable, sustainable and resilient infrastructure including regional and transborder infrastructure in SACs subregion would require staggering amount of resources adding up to trillions of dollars.

Pooling the resources of various currently disjointed groupings to facilitate financing of the enormous regional infrastructure needs is one way. Regional groupings such as Economic Cooperation Organization (ECO), South Asia Association for Regional Cooperation (SAARC), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) need to optimize network effects by pooling regional resources efficiently. ESCAP has proposed, for example, the integration of some corridors such as the ECO-SAARC-BIMSTEC transport corridor; and developing the Istanbul-Teheran-Islamabad-Pakistan-India railway cargo corridor.

However, national and sub-regional resources may not be sufficient and external borrowing from multilateral development banks on longer-terms may have to be resorted to, especially in view of debt crisis in some of the SACs including Sri Lanka and Pakistan. Both the World Bank and the Asian Development Bank are willing to finance such infrastructure as are the newer lending institutions which have entered the field given Asia’s vast needs such as the New Development Bank (BRICS Bank), and the Asian Infrastructure Investment Bank (AIIB). Cognizant of the need to step up funding of its

¹⁶ a2i (‘Access to Information’, also referred to as ‘Aspire to Innovate’) was introduced as the flagship programme of the Digital Bangladesh agenda.

projects, SAARC has also recently decided to convert its fledgling SAARC Development Fund (SDF) into a full-fledged international development bank by expanding its portfolio of projects in the next few years to \$300 million.

Diversifying and deepening of development financing is another common challenge for SACs which can be addressed to a large extent through regional cooperation. There are substantial gaps in the subregional countries in terms of projected investment requirements for the implementation of SDGs and expected financial resource outlays. The estimated SDG investment needs in most of the subregional countries exceeds 15% of GDP, with the corresponding figures for Afghanistan, Bangladesh and India found to be above 25%, while the average projected financial inflows under optimistic scenarios is only about 5% of GDP for these countries. Moreover, the fiscal space is being severely constrained due to the COVID-19 outbreak, imposing more spending commitments while shrinking revenue receipts. The G20 Indian Presidency has reviewed options for providing financing for sustainable development at scale and terms needed by developing countries such as those in South Asia (see ISID 2023).

It is critical that the countries improve their fiscal space, while reprioritizing spending related to SDGs in lines with the demands of economic recovery. There are many viable ways to enhance the fiscal space by exploring multiple policy options such as phasing out of untargeted subsidies, lowering defence spending, widening tax bases, improving tax administration and increasing tax progressivity, relaxing fiscal rules and consider innovative financial instruments like SDG-bonds, improving public debt management and reducing illicit financial flows. In the current context, South Asia must utilise available instruments for regional financial cooperation to the extent possible, to sustain and improve development financing in the subregion.

A number of ongoing reform initiatives in the area of finance and trade payments have been taken up by various regional forums constituted under SAARC, along with policy proposals for greater flow of financial capital and intra-regional long-term investments. Among these, cooperation in the area of banking under the regional body of central banks (SAARC Finance), holds immense promise because of the vital role of banking reforms. Member States could expedite the liberalization of banking and financial linkages by providing national treatment to designated banks originating in the subregion on a reciprocal basis. The ongoing work of the Inter-Governmental Expert Group (IGEG) on Financial Issues may give special focus to facilitation of cross-border operations of native banking institutions. To overcome limited access to international capital markets, especially in the LDCs of the subregion, UNESCAP suggests permission of enterprises from South Asian LDCs to list and raise capital in more developed capital markets in the subregion such as in India, Pakistan and Sri Lanka. The cross-listing of securities in the subregion's stock exchanges can also be beneficial in this regard.¹⁷

¹⁷ UNESCAP SSWA (2018b)

Concluding Remarks

The South Asian countries, have not been able to fully harness the potential of industrialization, infrastructure, and innovation for their development. This paper has shown that industrialization, infrastructure development and STI capabilities could help the subregion tap their potential for inclusive and sustainable development through creation of decent jobs and incomes for people. The paper has argued that the governments of the South Asian countries should focus on green industrialization, sustainable infrastructure development and innovation to drive the next phase of their transformation especially in the post-Covid era.

The paper has summarized a number of short-term policy lessons that can be adopted to not only reverse the damage suffered by the countries in respect of their progress towards SDG-9 achievement but also accelerate it. The paper also finds substantial opportunities of subregional cooperation in fostering industrialization through harnessing the potential of RVCs that have emerged as the key drivers of manufacturing competitiveness and trade, especially in the context of subdued performance of global trade, protectionism and global recession. Given that the bulk of the intra-regional trade potential remains to be exploited, policy should focus on reducing the cost of intra-trade by strengthening the surface transport corridors and facilitation of trade at the borders. A number of promising proposals for regional transport connectivity and facilitation have been developed over the past decade have been summarized which may be considered for implementation.

The paper has also identified important opportunities for the development of cross-border energy infrastructure to facilitate trade in renewable energy such as hydropower. There are also significant opportunities for strengthening their STI capability including in harnessing the fruits of the digital revolution and ICT connectivity including through the sharing of experiences in e-governance.

To conclude, by harnessing the potential of green industrialization, sustainable infrastructure development, and harnessing the fruits of new technologies through national actions and strengthened regional and global partnerships, the South Asia subregion can achieve its development aspirations of inclusive and sustainable prosperity of all its people.

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