I. SUMMARY

The challenges of the COVID-19 pandemic and building back better highlight the importance of a long-term strategy for industrialization, innovation, digitalization and the creation of resilient infrastructure. This strategy is vital to achieving all 2030 Agenda Goals. Economies with a diversified industrial sector and strong infrastructure better weathered the economic impacts of COVID-19 and recovered faster than other economies.

The effects of the pandemic were highly heterogeneous across sectors, firms and workers, both globally and in Asia and the Pacific. The most vulnerable were small and medium enterprises, sectors highly integrated into global or regional value chains, and firms and workers in the informal economy. Women, youth and low-skilled workers suffered the most severe losses.

Although economic activity in the region has quickly recovered, reaching its highest growth rate since 2010 in 2021, recovery remains incomplete and uneven, impacting
progress towards SDG 9. Except for significant advances in two targets (9.a and 9.c), other areas are lagging. Countries in Asia and the Pacific must implement actions to accelerate progress on these targets, particularly those relating to manufacturing employment, transition to higher-technology industrial sectors and research and development (R&D) activity (9.2, 9.5, 9.b). Better and more disaggregated data are also needed to guide and monitor policies to improve infrastructure, promote innovation and enhance green and inclusive industrialization.

II. CURRENT STATUS

The year 2022 marks the mid-point of implementing the 2030 Agenda for Sustainable Development. Countries should have already made considerable progress toward achieving Goal 9. While progress along SDG 9 targets has been diverse (Figure 1), it is generally insufficient in Asia and the Pacific. Only two targets (9.a and 9.c) have advanced sufficiently. Even then, target 9.a (investment in infrastructure) requires significant implementation improvement to contribute effectively to sustainable development objectives. The rest of this section will briefly summarize progress and the main areas requiring accelerated growth in the region.

![Figure 1: Progress on Goal 9 indicators toward the 2030 targets.](source: Asia and Pacific Progress Report 2023, ESCAP.1)
II. CURRENT STATUS

A. AREAS WHERE PROGRESS IS BEING MADE

9.2.1 MANUFACTURING VALUE ADDED

The manufacturing landscape has shifted over the past three decades, with global production gradually moving away from traditional industrialized economies and into Asia, which currently accounts for 54.1 per cent of world manufacturing. Strong global demand for Asian manufactured goods drove the region's rapid economic recovery from the COVID-19 crisis. The manufacturing value added (MVA) increased by 7.2 per cent in Asia and the Pacific in 2021 after the collapse observed in 2020. Stable growth continued into 2022, with an estimated growth rate of 4.5 per cent. Middle-income industrial economies have led the recovery.

Globally, the Asia and Pacific region has the highest share of MVA in GDP. The region expanded its share from 22.2 per cent in 2015 to 22.8 per cent in 2021. Among the main manufacturing producers were East and North-East Asia, with 26.3 per cent in 2021, followed by South-East Asia with 21.2 per cent in 2021. Except for the Pacific, all subregions registered an increasing manufacturing weight over the last few years (Figure 2).

Despite this fast expansion of the manufacturing sector, regional disparities remain. MVA per capita reached 1,647 USD (in constant 2015 prices) in 2021 in Asia and the Pacific, driven mostly by East and North-East Asia with 3,572 USD. This contrasts South and South-West Asia, which registered only 404 USD in the same year.

Figure 2: MVA as a share in GDP and per capita by sub-region.
II. CURRENT STATUS

9.4.1 CO₂ EMISSIONS PER UNIT OF MANUFACTURING VALUE ADDED

The Asia and the Pacific region is responsible for about three-quarters of global carbon dioxide (CO₂) emissions from fuel combustion produced by manufacturing industries. China and India are responsible for more than 70 per cent of regional manufacturing CO₂ emissions.¹

Since 2010, the region has made significant progress by sustaining absolute decoupling between growth and emissions in the manufacturing sector, primarily driven by decarbonization efforts in East and North-East Asia. The regional CO₂ manufacturing intensity declined from 0.90 kg/USD in 2000 to 0.62 kg/USD in 2019, induced by the fast growth of MVA and stable CO₂ emissions from manufacturing industries (Figure 3). In 2019, the highest CO₂ manufacturing intensity was registered in North and Central Asia, with 1.18 kg/USD, compared to South-East Asia, with 0.54 kg/USD. However, this still exceeded the global value of 0.43 kg/USD.

Asia and the Pacific’s transition from fossil fuels toward renewable sources has progressed slowly. Despite significant achievements, the region remains heavily dependent on coal as an energy source. For the transport sector, oil is also still the predominant energy source. Moving towards green energy and implementing net-zero carbon emissions strategies across all sectors in the region remains crucial for fighting climate change.²

![Figure 3: Development of CO₂ emissions from manufacturing industries, MVA and CO₂ manufacturing intensity.](image)

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I. CURRENT STATUS

9.5.1 RESEARCH AND DEVELOPMENT EXPENDITURE

When adopting the 2030 Agenda, countries committed to prioritizing their transition to digital and green economies. For developing countries, such a transition demands an integrated approach to long-term planning and substantial investment in resilient and sustainable infrastructure to accelerate structural transformation. To succeed in this dual transition, governments must integrate sustainable and resilient infrastructure planning and design, increase research and development (R&D) spending, and invest these funds strategically. These actions entail taking a long-term perspective and aligning their digital, infrastructure, environmental, industrial and other policies. Doing so will ensure that these are mutually reinforcing. Furthermore, the pandemic has demonstrated the value of science and digital technologies for resilience.³

Before the pandemic, global R&D spending was increasing significantly faster than GDP. However, almost 90 per cent of global research expenditure is concentrated in only three regions: East and North-East Asia, Northern America and the European Union (representing 31.4% of the global population in 2022⁴). Most economies in Asia-Pacific economies devote less than 1.0 per cent of GDP to research (Figure 4). Three countries, which invested more than the global estimate of 1.7 per cent in 2021, are the exception: the Republic of Korea (4.8 per cent in 2020), Japan (3.3 per cent in 2020) and China (2.4 per cent in 2020).

Figure 4: R&D expenditures as a share of GDP by country.

Note: Figure uses the most recent available country data, 2002–2021.
II. CURRENT STATUS

9.A.1 TOTAL OFFICIAL FLOWS FOR INFRASTRUCTURE

Official international support for infrastructure in Asia and the Pacific has increased significantly since 2000; however, it has stagnated in recent years at around 28 billion USD, in constant 2019 prices. Despite this indicator’s progress, it only refers to the total dollar value of official international support to infrastructure. Information is lacking regarding how sustainable or resilient the implemented infrastructure is and its effectiveness in supporting sustainable development.

Building infrastructure resilient to natural and anthropogenic hazards is paramount for development planning. Neglecting resilience during infrastructure development may turn natural events into disasters for communities, resulting in loss of lives, livelihoods, property and access to essential services due to inaccessibility. Interdependence of various infrastructures in terms of physical and functional factors often leads to cascading impacts, negatively affecting development pathways. Up to two-thirds of the total direct damages from disaster events are due to infrastructure failure.⁵ There is a need to strengthen the existing infrastructure system based on their level of vulnerability and degree of interconnectedness with other infrastructure systems and design for climate-resilient improved infrastructure. Climate-related events account for 90 per cent of global disasters; this situation is expected to deteriorate, particularly without prioritizing resilience in infrastructure development. Only half of the infrastructure needed by 2050 is currently in operation, a gap largely felt in Asia and the Pacific.⁶ How infrastructure is planned, designed, implemented, operated and maintained impacts whether it protects people during extreme weather events or exacerbates disasters.

9.C.1 POPULATION COVERED BY A MOBILE NETWORK

Lastly, an area of strong progress in the region is SDG Target 9.c (Figure 1). Access to internet connectivity has grown rapidly in all countries; many already have over 90 per cent of the population covered by a 4G mobile network. For example, in East and North-East Asia, 98.2 per cent of the population was covered by at least a 4G mobile network in 2019. However, the Pacific and North and Central Asia still face significant challenges with mobile coverage. While some least developed countries still have some way to go, notably Afghanistan and some Pacific Small Island Developing States (SIDS), overall, the region is on track to achieve close to 100 per cent connectivity by 2030 (Figure 5). This digital divide in connectivity needs further targeting to ensure no one is left behind.
II. CURRENT STATUS

Despite the significant progress made on indicator 9.c.1, additional effort is needed to develop a more responsive framework. Efforts should define targets around universality, technology and affordability to capture metrics to allow everyone to fully benefit from connectivity.\(^7\)

![Figure 5: Population covered by a mobile network by sub-region.](image)

B. AREAS REQUIRING ATTENTION AND ASSOCIATED KEY CHALLENGES

9.2.2 MANUFACTURING EMPLOYMENT

Global supply chains link millions of regional enterprises and workers to global consumer demand. An estimated 467 million jobs are linked to global manufacturing supply chains, both in the manufacturing sector and other sectors, such as agriculture and services. These contribute to manufacturing products consumed within the region or exported worldwide. Relative to total employment, the Asia and Pacific region has had the largest share of jobs linked to global supply chains impacted by the pandemic.\(^8\) This also reflects the region’s dominance in manufacturing production over the past decades.

However, as shown in Figure 1, the region has registered no progress on SDG Target 9.2 related to manufacturing employment. The share of manufacturing employment in total employment in the region has, in fact, decreased significantly, from 15.7 per cent in 2019 to 14.9 per cent in 2020. In 2020, the effects of the pandemic were
II. CURRENT STATUS

particularly pronounced in middle-income countries, which had leveraged participation in production chains as a source of employment and growth. Some of the most severe impacts were felt in garment supply chains, the largest manufacturing employer of women in Asia and the Pacific. Women, especially young women, were among the worst affected.

9.3.2 SMALL-SCALE INDUSTRIES WITH A LOAN OR LINE OF CREDIT

Small and medium enterprises (SMEs) in the region were impacted more strongly than large firms, regardless of their sector of economic activity. Moreover, many disadvantaged groups, such as women and informal workers, tend to be overrepresented in the labour force of SMEs. Small businesses operating in manufacturing and manufacturing-related services faced significant challenges due to ongoing demand and supply chain disruptions. Lack of finance might have reduced the adoption of new technologies and innovative processes. Policy support for these firms could include facilitated access to financial credit, among other instruments.

According to the most recent available data, only one in three small manufacturing enterprises had a loan or line of credit before the pandemic in the Asia and Pacific region. Access to credit seems to be more profound in the Pacific, with a share of 45.0 per cent of small firms in 2019.

Social entrepreneurship, a global phenomenon bringing innovative solutions to social problems, represents an opportunity for inclusive development and productivity improvement in the region. In lower-income economies in Asia and the Pacific, social entrepreneurship evolved as an innovative response to the inability of state and market institutions to effectively cater to the socio-economic needs of the poor and marginalized sectors of society. Social enterprises are mission-driven organizations that create and distribute wealth and value to the poor and marginalized, their primary stakeholders. In the context of the COVID-19 pandemic, social entrepreneurship is also showing a major pathway toward inclusive recovery and building back fairer.

9.B.1 MEDIUM AND HIGH-TECH INDUSTRY VALUE ADDED

Manufacturing industries with higher technological content performed better during the COVID-19 crisis and recovered faster (Figure 6). This is mainly attributable to

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Estimates based on the World Bank Enterprise Surveys database. Regional and global averages of indicators are computed by taking a simple average of country-level point estimates over 2006–2020. This computation uses only the latest available year of survey data for each economy.
II. CURRENT STATUS

electronics industries, e.g., those producing computers, etc., and the pharmaceutical industry, which benefited from increased demand. In comparison, some lower-technology industries, such as textiles and clothing or coke and refined petroleum products, remain below pre-pandemic production levels. However, manufacturing some basic consumer goods, such as food products, also benefited from sustained demand and maintained a stable growth trajectory with limited losses throughout the pandemic.

Figure 6: Growth index of manufacturing production in Asia and the Pacific by technology.

In 2019, Asia and the Pacific had an estimated share of 44.6 per cent in medium-high and high-technology (MHT) value added in total MVA. Nevertheless, in most countries, MHT manufacturing remains below the global average and performance among subregions is heterogeneous. While East and North-East Asia accounted for 47.0 per cent of MHT manufacturing in 2019, the share in North and Central Asia was only 24.2 per cent. High-technology production in Asia and the Pacific has been mostly driven by high-income economies such as Singapore (85.1 per cent), the Republic of Korea (63.8 per cent) and Japan (56.6 per cent) (Figure 7). Given the relevance of higher-technology industries for structural transformation and resilience, it is worrying that, in aggregate terms, Asia and the Pacific has registered no progress toward the target of increasing the share of these industries.

Alternatively, the pandemic brought to light weakness of economies that are too integrated into global manufacturing value chains. The pandemic also revealed some successful strategies owing to technological advancement in resource-based industries. Such leading sectors have generated intra-sectoral diversification and deepened value chains by adopting specific industrial policy measures. Such
II. CURRENT STATUS

measures have built productive and innovation capabilities through R&D support, fiscal incentives, export assistance and quality control.\(^\text{13}\)

\[\text{Figure 7: Medium-high and high-technology manufacturing value added in total value added by country, 2019.}\]

9.1.2 PASSENGER AND FREIGHT VOLUME

For transport infrastructure, resilience often refers to the ability of the system to maintain its services or to restore itself to that level of service in a specified timeframe.\(^\text{14}\) Greater resiliency in transport connectivity, including associated supply chain networks and cross-border freight transport, will also lead to higher levels of efficiency in the system, especially with the deployment of information and communication technology (ICT) and real-time data sharing across a supply chain in the long term, as well as increases in competitiveness in the region. Border crossings could also be made more seamless with appropriate measures and planned investment in infrastructure. For example, digitalized systems for the documentation of cross-border transport leaped forward during the COVID-19 pandemic, enabling paperless and contactless processes.\(^\text{15}\) Integrating sustainable and resilient transport measures is especially critical as passenger and freight transport demand has been projected to increase in Asia and the Pacific to as much as 150 per cent between 2015 and 2050.\(^\text{16}\) Different subregions are also growing differently, with South-East Asia growing the fastest in freight activity globally, with a projected increase of nearly 80 per cent between 2015 and 2030.\(^\text{17}\) South-East Asia’s freight activity is estimated to have nearly quadrupled by 2050, while total passenger-kilometers will increase by at least 250% between 2015 and 2050.\(^\text{18}\)
II. CURRENT STATUS

As transport infrastructure development merges with technology, the sector will also become heavily digitalized and automated, requiring new skills in the workforce to be developed for more sustainable, resilient and inclusive infrastructure systems.

C. AVAILABILITY OF DATA

Although overall data availability for SDG 9 is sufficient compared to other Goals, additional efforts to strengthen regional statistical capacity are needed (Figure 8). Attention should focus on indicators with insufficient data points, specifically 9.1.1 (infrastructure), 9.3.1 and 9.3.2 (industry) and 9.5.2 (innovation).

For example, available regional transportation data relate only to the positive progress made in freight and passenger transportation (SDG indicator 9.1.2). However, there is insufficient data on the provision of all-surface roads or accessibility to draw any conclusions. The granular data on transportation infrastructure is one of the primary requirements to understand the type of required transportation, quality of roads, interconnectedness and interdependence of the transportation with other critical infrastructure. The development of baseline data on transportation infrastructure would be benefit planning climate-resilient transportation infrastructure for sustainable development in the South and South-East Asia region. The much broader aim of reporting on the progress of resilient infrastructure cannot be effectively monitored, given the indicator definitions and existing data collection challenges.

There is also limited data availability and timeliness for both SDG 9.3 indicators, which makes measuring progress on this target particularly challenging. This seriously impedes monitoring whether industrialization and other targets of SDG 9 have equally benefited different sectors and groups of firms, including SMEs, or if progress favours a small share of firms.

Figure 8: Data indicator availability for Goal 9.
III. HUMAN RIGHTS AND GENDER EQUALITY CONSIDERATIONS

INCLUSIVE AND GENDER-RESPONSIVE INFRASTRUCTURE

Inclusive and gender-responsive infrastructure is central to achieving international commitments on gender equality, empowering women, girls, and vulnerable groups such as informal workers, the disabled and the elderly, and supporting a sustainable future for all. This is also the case for transport infrastructure and digital connectivity. Inclusive and gender-responsive passenger transport infrastructure that recognizes different travel patterns, including travel time, travel distance, number of trips per day, mode choice, and the needs of various gender groups, can help reduce social and gender inequalities. It can also improve the safety and security of those traveling to access social and economic opportunities, especially for cross-border trade. A more socially-diverse and gender-balanced workforce will also help achieve greater diversity and gender equality. Attracting and retaining more women in the transport workforce will support better planning and designing of transport infrastructure systems and services that address women’s needs across socially diverse backgrounds. Increasing the representation and visibility of all social groups, minorities and women at all stages of transport policy, planning, implementation, and usage of transport infrastructure projects will make transport more responsive to the needs of all users and increase the sustainability of transport development.

Digital communications infrastructure enables knowledge sharing and creates more inclusive, empowered societies. There remains a digital divide between male and female access to the Internet in countries at all levels of development. The percentage of the male population using the Internet in Asia and the Pacific is 68 per cent, compared to 61 per cent of females in the region, excluding the Commonwealth of Independent States (CIS). This gender gap must be addressed to ensure an inclusive digital transformation.

WOMEN AND TECHNOLOGY

A large gender gap continues to be present in technology and innovation, despite recent improvements. Women and girls are underrepresented in academia, industries relying on innovation and the broader technology sector. Globally and in Asia and the Pacific, women hold only two in every ten jobs in science, engineering and information and communication technologies. Adopting new technologies brings uncertainty
III. HUMAN RIGHTS AND GENDER EQUALITY CONSIDERATIONS

about the impact on women’s and men’s wages and labour force participation. Intelligent technologies and smart products risk perpetuating or even amplifying inequalities if they are not designed in a way that considers the different realities of women and men and persistent, harmful gender biases. Intelligent industry and digital transformation have enormous potential to make industries, economies and societies more inclusive and sustainable. However, steps should be taken to ensure that women and men have equal opportunities to participate and benefit from developments – in decision-making, the workforce and as consumers.25

Beyond the wage gap associated with women being underrepresented in STEM (science, technology, engineering and mathematics) jobs, the STEM gender gap represents an inefficient allocation of labour and talent and a missed opportunity for economies. Although more women are enrolled in universities and have higher graduation rates than men globally, women are far less likely to enrol in STEM fields and even less likely to pursue STEM careers. Educational biases, stereotypes and a typically male-centric, inflexible and exclusionary working environment make the field less attractive to women and other underrepresented groups.26

In Asia and the Pacific, 44 per cent of women in STEM occupations with caring responsibilities did not have flexible work arrangements during the COVID-19 pandemic. Gaps in STEM education and careers are larger for women and girls doubly disadvantaged by the intersection of gender with other vulnerabilities.27

INTERCONNECTED DIMENSIONS OF CLIMATE CHANGE, ENVIRONMENTAL SUSTAINABILITY AND GENDER IN THE GARMENT INDUSTRY

Women contribute to 80 per cent of employment in the garment and textile industry worldwide. In Asia and the Pacific, this sector is the largest manufacturing employer of women, employing 35 million women. Despite its significant contribution to women’s formal employment, the sector largely relies on low-cost, low-skilled labour, and was significantly impacted by the pandemic, with major job losses.28

In addition, the garment sector contributes to and is vulnerable to the adverse effects of climate change. The ready-made garment sector, in particular, has been criticized for its overproduction, underutilization of clothing, use and misuse of water, contribution to oceanic microfibres and a large carbon footprint. Emerging literature also finds, however, that the impacts of climate change, such as rising sea levels and heat stress, will adversely affect production, factories and workers in key apparel-producing areas of Asia.29
III. HUMAN RIGHTS AND GENDER EQUALITY CONSIDERATIONS

Women’s leadership is central to promoting a circular economy and sustainable business practices. Women are differentially impacted by globalization and unsustainable production and consumption patterns than men, but are more likely to be sustainable consumers and attuned to ecological concerns. Women’s leadership is thus a driver for promoting and implementing sustainable business practices and gender equality in the workplace, especially in Asia and the Pacific’s garment sector. Successful role models of women’s leadership have shown how introducing circular economy practices in their businesses and communities can contribute positively to sector-specific challenges related to gender equality, environmental sustainability and industry recovery from COVID-19. Recognizing and uplifting women-led enterprises in the garment sector is an important step in encouraging women leaders in other regional sectors to introduce sustainable business practices and work towards gender equality.

IV. PROMISING INNOVATIONS AND PRACTICES

The COVID-19 crisis has had profound global socio-economic impacts, but not all regions were affected equally. Countries’ industrial capabilities and the size of their manufacturing sector constituted two important factors of resilience to the crisis. Economies with a diversified industrial sector and strong infrastructure, e.g., transport, internet connectivity and utility services, sustained less economic damage and experienced a faster recovery.

The long-term impact of the COVID-19 pandemic will depend on its interplay with the ongoing megatrends likely to shape the future of industrialization. Three important megatrends will have a significant impact on the industrial landscape:

- **Digital transformation of societies**, as technological innovation essentially affects all spheres of business development and infrastructure design, and deeply changes the competitive advantages of firms and nations;

- **Global economic power shifts**, especially the emergence of Asia as a dominant hub of world industrial production. This development, alongside China’s

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Choice of fibres; choice of dyes; use of recycled materials; traditional/low-impact production processes; life of the product is longer; waste management (recycling, disposal, others); water management (recycling, discharges, others); enabling circular processes/collaborations.
structural transformation towards a knowledge-driven, high-income economy, implies a major restructuring of trade flows and global value chains;

- **The greening of industrial production, consumption and its supporting infrastructure**, as the need to reduce environmental footprints and decarbonize economies calls for radically different business and consumption models. Systemic transformations have far-reaching effects on the positioning of industrializing economies in the global economy.\(^\text{32}\)

Asia and the Pacific lie at the forefront of the three megatrends in industry. The region is the world’s most important manufacturing hub and leader in digitalization, advanced production processes, and the transition to green production. Those trends need reinforcing in the coming years to support the region’s manufacturing potential and strengthen its progress towards sustainable industrial development goals.

The following examples showcase regional initiatives that have successfully contributed to SDG 9 progress, with positive ramifications for other Goals. In Cambodia, innovations in communication infrastructure have led to 99 per cent of the country being covered by at least a 2G mobile network. This connectivity has allowed for an effective Early Warning System (EWS 1294) to disseminate flood warnings to over 130,000 distinct users. Developed by People in Need (PIN) Cambodia and managed by Cambodia’s National Committee for Disaster Management, the system was also used for COVID-19 information issuance in 2021, resulting in more than 150 triggers to nearly 500,000 people.\(^\text{33}\) With the achievements across Asia and the Pacific in communications, notably cell phone infrastructure, EWS 1294 provides an example of a distinct opportunity to strengthen infrastructure and progress toward the goal of providing early warnings to all people in the next five years. However, it will require continued development and strengthening of communications infrastructure regionally and globally.

Community networks or community-owned or managed initiatives are important in bridging the digital divide and connecting the unconnected. A case of a successful community network initiative in Asia is that of the Common Room Networks Foundation, which partnered with the Kasepuhan Ciptagelar Indigenous Community in Indonesia. They developed and provided community-based local internet services in West Java province with *PT. Awinet Global Mandiri* (AwiNet) as their partner internet service provider (ISP) company. Through the partnership, Common Room provides the conceptual framework and operation of the system, manages the tripartite agreement and handles finance and administration. Kasepuhan Ciptagelar, the village government of the Indigenous community in the area, represents and manages the primary stakeholders and beneficiaries of the initiative. They handle
IV. PROMISING INNOVATIONS AND PRACTICES

resource mobilization, local support, voucher distribution, and technical assistance. AwiNet handles the local internet infrastructure development, bandwidth and licenses, technical support, maintenance, knowledge and skill transfer. By mid-2021, internet connectivity has reached 29 villages, creating new local jobs through the initiative’s need for local voucher agents and technicians. Internet connectivity has also effectively supported remote education processes and COVID-19 pandemic preparedness in the region. The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has developed guidelines to support the COVID-19 response and recovery of road freight transport in the Association of South-East Asian Nations (ASEAN) Member States, which are also ESCAP member States. The guidelines support countries in developing national and regional plans focusing on resilient and sustainable road freight connectivity. They provide recommendations for responses to the COVID-19 pandemic crisis and other future disruptions in three priority areas, namely, (i) improving transport workers’ safety and training, (ii) preserving connectivity for efficient and resilient supply chains, and (iii) building back better through resilient, digital, and decarbonized transport connectivity in the immediate, medium and long-term. This would support the development of cross-border road freight transport in the region. Specifically, the guidelines categorize policy responses to COVID-19 related to transport connectivity and resilience; propose principles for the implementation of policies and measures; suggest a communication mechanism for the timely exchange of relevant information; and provide insights for creating a real-time monitoring tool to assess policy interventions’ impact on transport connectivity, capacity and resilience. The Guidelines also contribute to implementing initiatives under the ASEAN Comprehensive Recovery Framework adopted at the 37th ASEAN Summit in 2020.

Founded in the Asia and the Pacific Region and launched by India at COP 26, the Coalition for Disaster Resilient Infrastructure (CDRI) brings together national governments, United Nations agencies, financial institutions and private sector entities, among others, to promote resilience in new and existing infrastructure. Of the 31 countries in the coalition, 11 hail from Asia and the Pacific region. Together, they have mobilized technical support, capacity-building programs, research, advocacy and partnerships to enable more resilient infrastructure. This includes the Pacific Island’s participation and leadership in the Infrastructure for Resilient Island States (IRIS), which equips SIDS with the knowledge, tools, and partnerships to achieve disaster and climate-resilient infrastructure. These initiatives offer a global future for climate and disaster-resilient infrastructure, particularly in Asia and the Pacific.
V. PRIORITY ACTIONS

SUSTAINABLE, RESILIENT AND INCLUSIVE INFRASTRUCTURE

While there has been some progress in infrastructure development supporting industry, innovation and connectivity, the need for sustainable and resilient infrastructure development is outpacing progress. The number of natural hazards impacting communities has grown rapidly in the last decade, with Asia and the Pacific being by far the most affected region. While funding support for infrastructure is still very much needed in the region, sustainable, resilient and inclusive approaches must be embedded into its development. Doing so will achieve long-term development outcomes, including access to key services, such as digital or transport connectivity and implementation of low-carbon technologies. Integrated and agile approaches around infrastructure, youth, gender and firm development are key for increased adoption and sustainability. In this regard, more attention has been recently given to joint programmes in the region to facilitate sustainable development through digital transformation as a lever. One example of such movements is the Smart Village and Smart Island Programme. In this, governments, multiple UN agencies, the private sector, academia, and other actors collaborate towards achieving SDGs by bringing resilient connectivity, affordable digital infrastructures, and e-services to remote communities.

TECHNOLOGICAL INNOVATION AND DIGITAL TRANSFORMATION

Throughout its three focus areas (infrastructure, industry and innovation), digital transformation is a key enabler and disruptor of SDG 9. Digitalization advancements are changing how we do business and how we create value. Innovation-based industrial production is enhancing participation in regional and global value chains, thus becoming a key driver of industrial resilience against future crises.

In addition to effectively harnessing the power of digitalization, countries in the region also need to prepare the workforce with the right skills and training opportunities and mitigate its potential negative effects, such as leaving behind those not digitally connected.

Focus should be on digital transformation to ensure that, as people are brought online, they can harness the opportunities the Internet provides. This transformation must be
inclusive, equitable and consider the digital gender divide to generate an inclusive digital society.

**INCLUSIVE AND SUSTAINABLE INDUSTRIAL POLICY**

As the region continues its recovery from the COVID-19 crisis, aligning industrial policies with the ‘building back better’ narrative means putting them to work toward achieving the SDGs. This should also account for the megatrends likely to shape the future of industrialization and the tangible risk of global disasters such as the COVID-19 pandemic and increasingly frequent extreme weather conditions. These policies should promote a green, inclusive and resilient recovery. They should also enhance the region’s transition towards higher-productivity, innovation-focused industries that could provide enhanced growth opportunities and higher economic resilience.

Green industrial policy should simultaneously target demand and supply by (i) shifting consumer behaviour through demand-side instruments and (ii) providing incentives to improve firms’ resource and energy efficiency and promote green innovation.

Inclusive industrial policy should support the actors most vulnerable during the pandemic and help SMEs facilitate the uptake of new technologies and promote market diversification. Enhancing safety-net provisions will support employability, especially of female, youth, low-skilled and informal workers. Research conducted in selected Asian countries during the pandemic suggested women were more likely to use online platforms to provide food and beverage delivery or care jobs than men to cope with COVID-19-related income loss. Providing access to such opportunities is important to build resilience to shocks, but such opportunities must be accompanied by legislation and social protection provisions for digital platform workers.

Industrial policies should promote diversification, accelerate progress towards structural transformation and strengthen resilience against future risks by building awareness and fostering knowledge creation and exchange about new and existing risks. These policies should be informed by clear statistical evidence and be implemented under a coherent framework in activities and intent, ensuring that they strengthen each other toward achieving long-term goals.

**STATISTICAL CAPACITY BUILDING**

Finally, increased domestic and international resources and political commitment are essential for strengthening national statistical offices and enhancing statistical capacity, particularly in developing countries. Producing disaggregated data can
better help track the inclusiveness of industrial development, the integration of small industrial enterprises in value chains and the role of women and youth in industry and R&D.

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