

REGIONAL INTEGRATION AND COOPERATION OF PAKISTAN IN HEALTH-RELATED SECTORS



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REGIONAL INTEGRATION AND COOPERATION OF PAKISTAN IN HEALTH- RELATED SECTORS

Adil Nakhoda

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This report is part of the 11th Tranche of the Development Account on Measuring, monitoring and improving performance in regional integration within ECA, ESCWA and ESCAP regions. Under overall guidance of Yann Duval, Officer-in-Charge, Trade, Investment and Innovation Division of ESCAP, and section Chief, Trade Policy and Facilitation Section, and supervision of Witada Anukoonwattaka, Economic Affairs Officer and project manager, this report was prepared by Dr. Adil Nakhoda. The report is also benefited from inputs and comments received from national consultation meetings with several governments and non-government entities and experts in Pakistan. Comments provided on an earlier version of this report by Dr. Vaqar Ahmed, Joint Executive Director of the Sustainable Development Policy Institute (SDPI) are also kindly acknowledged.

Executive summary

The spread of the COVID-19 pandemic has resulted in significant challenges for the Government of Pakistan. However, the pandemic has also provided opportunities for the Government to enhance trading linkages in medical products, particularly within the Asia-Pacific region. With the onset of the pandemic, the demand for diagnostic test kits, ventilators, protective outfits and equipment, and disinfectants and sterilization products increased not only in Pakistan but across the world. In addition, greater demand for the services of health-care workers increased the scope for migrant workers to serve their country of origin. Finally, the role of digital technologies to increase the quality of health service delivery has become evident.

The report offers a comprehensive review of issues that have affected the effectiveness of Pakistan's policy responses to the COVID-19 pandemic. It includes an analysis of the trading patterns of health-related goods and professional services between Pakistan and its regional trading partners in Asia and the Pacific, as well as the role of tariffs and the non-tariff measures before the pandemic and of measures taken by the Government to meet the surging demand for medical products during the pandemic. It examines various government measures to alleviate the adverse impact of the pandemic, including the nationwide lockdown at the onset of the pandemic in Pakistan, and the handouts and economic relief programmes to affected citizens and businesses. The analysis concludes with a proposed action plan for policymakers. The action plan includes specific actions related to the following:

- *Recommended actions on trade-related measures:* improving trading relationships for health-related products and services, reducing tariff rates on imports, and adopting non-tariff measures to ensure poor quality products are neither imported nor produced in Pakistan. Other measures include: taking advantage of tariff concessions provided by China to Pakistani exporters on medical products; removing certificate requirements and other procedures that delay exports; reconsidering the minimum export price restriction on exports of surgical instruments; and on-time implementation of the National Single Window (NSW) lead by Pakistan Customs.
- *Actions on foreign flow of health services:* facilitating foreign-trained health workers to practice in Pakistan; increasing scholarship opportunities in foreign medical colleges for Pakistani medical students; increasing the flow of medical tourists into Pakistan; and improving data collection on the flow of services.
- *Actions on improving government response to the COVID-19 pandemic:* better adherence to standard operating procedures (SOPs) and using contact-tracing apps to collect information on COVID-19 patients.
- *Actions regarding the national telehealth programme:* increasing the number of doctors, reducing the number of fake doctors, raising concerns regarding the protection of data privacy and ensuring participation of foreign-trained medical doctors in the programme.
- *Actions on ensuring the use of digital technologies to improve the delivery of health-sector services:* better communication between hospitals and emergency medical responders as well as digitally mapping areas in order to cater for those areas that are most in need of medical services.

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Abbreviations and acronyms

ABVC	ASEAN BioDiaspora Virtual Centre
AHMM	ASEAN Health Ministers' Meeting
APHDA	ASEAN Post-2015 Health Development Agenda
APPNA	Association of Physicians of Pakistani Descent in North America
ASCC	ASEAN Socio-Cultural Community
ASEAN	Association of Southeast Asian Nations
AWS	Amazon Web Services
BACI	Base pour l'Analyse du Commerce International
CAREC	Central Asia Regional Economic Cooperation
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CNIC	Computerized National Identity Card
DDOSed	distributed denial of services
DFID	Department for International Development
CPEC	China-Pakistan Economic Corridor
DRAP	Drug Regulatory Authority of Pakistan
ECO	Economic Cooperation Organization
eHDSI	eHealth Digital Service Infrastructure
ESCAP	(United Nations) Economic and Social Commission for Asia and the Pacific
FBR	Federal Bureau of Revenue
FTA	Free Trade Agreements
GDP	gross domestic product
GDPR	General Data Protection Regulation
GIS	Geographic Information Systems
GNI	gross national income
GVC	global value chain
HEC	Higher Education Commission
HOTA	Human Organ Transplant Authority
HS Code	Harmonized Commodity Description and Coding System
IBA	Institute of Business Administration
ICT	information and communication technology
IDIMS	Integrated Disease Information Management System
IHITC	Isolation Hospitals and Infectious Treatment Centre
ILCs	Inland Letters of Credit
ISO	International Organization for Standardization
IT	information technology
IVF	in-vitro fertilization
KP	Khyber Pakhtunkhwa
NCPeH	National Contact Points for eHealth
NEB	National Examination Board
LCs	Letters of credit
NCC	National Coordination Committee
NCOC	National Command and Operation Centre
NHS	National Health Service
NHSRC	Ministry of National Health Services Regulations and Coordination
NITB	National Information Technology Board
NOCs	no-objection certificate
NSW	National Single Window

NTC	National Tariff Commission
NTFCs	National Trade Facilitation Committees
NTMs	non-tariff measures
MEP	minimum export price
MoC	Ministry of Commerce
MOPHRD	Ministry of Overseas Pakistanis and Human Resources
MoITT	Ministry of Information Technology and Telecommunication
OECD	Organisation for Economic Co-operation and Development
PBS	Pakistan Bureau of Statistics
PKR	Pakistani rupee
PMC	Pakistan Medical Commission
PMDC	Pakistan Medical and Dental Council
PPP	Purchasing Power Parity
PTA	Pakistan Telecommunication Authority
PSQCA	Pakistan Standards and Quality Control Authority
RCA	revealed comparative advantage
RTAs	regional trade agreements
SAARC	South Asian Association for Regional Cooperation
SBP	State Bank of Pakistan
SDPI	Sustainable Development Policy Institute
SMEDA	Small and Medium Enterprise Development Authority
SMS	short message service
SOMHD	Senior Officials' Meetings on Health Development
SOPs	Standard Operating Procedures
SPS	sanitary and phytosanitary measures
SRO	Statutory Regulatory Order
STAC	SAARC Tuberculosis and HIV/AIDS Centre
TBT	technical barriers to trade
TERF	Temporary Economic Refinance Facility
TOHOTO	Transplantation of Human Organs and Tissues Ordinance
USAID	United States Agency for International Development
UNCTAD	United Nations Conference on Trade and Development
USMCA	United States-Mexico-Canada Agreement
WCO	World Customs Organization
WHO	World Health Organization
WITS	World Integrated Trade Solution

Introduction

As the COVID-19 pandemic spread across the country, the Government of Pakistan undertook several measures to ensure that a maximum number of lives are saved with minimal loss in livelihood, particularly among the most vulnerable part of the population. Due to a high risk of hunger and poverty due to the COVID-19 pandemic, the Government of Pakistan adopted measures that included financial incentives and standard operating procedures (SOPs), to alleviate the loss in livelihoods. The SOPs include regulations on mask wearing and social distancing rules as well as implementation of practices to ensure workplace hygiene. The first COVID-19 case in Pakistan was reported on 26 February 2020. As the number of cases increased over time, the Government announced several measures, including a countrywide lockdown. The measures also include the Government ensuring that poorer individuals, including daily wagers and the economically vulnerable individuals with a high risk of employment and income loss, were provided with income and financial support to mitigate the shocks of the pandemic to their income. The Government, the State Bank of Pakistan and the provincial governments all played an important role in alleviating the economic crisis that accompanied the health crisis. In addition, SOPs were introduced to ensure that commercial and industrial activities followed certain rules and obligations when conducting their business. These include maintaining hygiene standards, ensuring social distancing between employees and obligatory mask-wearing requirements. The Government also set up helplines, public messaging services as well as field hospitals and isolation centres throughout the country.

However, the COVID-19 pandemic has provided an opportunity for Governments across the world to re-evaluate their regional and global trading networks to ensure that the demand for COVID-19-related medical products is met.¹ It has also provided an opportunity to consider the size of the diaspora of health-care service workers, mainly doctors and nurses who are working in different countries, and tap into service networks.

An analysis of this nature will help countries identify possible approaches to strengthening their ability to handle future health crises through regional collaborations. Chapter 1 of this report provides a detailed analysis of the level of trade integration in health-related goods between Pakistan and regional trading partners, particularly the South Asian Association for Regional Cooperation (SAARC) countries, the Association of Southeast Asian Nations members and China.² The proximity of the SAARC countries and the ASEAN members within the Asia-Pacific region as well as the proximity and the large economic size of China makes the aforementioned regions and China important trading partners. In addition, Pakistan has strong diplomatic relations with China that can be further enhanced with the trading of crucial medical products during the pandemic. It further analyses the size of the health-care service worker diaspora in different countries, which can provide potential service networks at the time of need.³ At the start of the pandemic, the Chinese arrived in Pakistan to support

¹ The COVID-19 pandemic-related medical products are listed in Appendix A.

² The ASEAN and SAARC members are listed in Appendix B.

³ Although it would be interesting to determine the presence of Pakistani doctors in China and vice-versa as well as the number of Pakistani students attending medical colleges in China, the lack of credible data makes the

local health officials in treating infectious diseases (Gul, 2020). Although these exchanges are common, there is little data on the number of doctors and trips made by them between the two countries.

Kathuria and Mathur (2018) pinpointed the lack of intraregional trade in South Asia as it accounts for only 5 per cent of South Asia's total trade. This is in contrast to the level of intraregional trade in East Asia and the Pacific, where 50 per cent of the total trade is intraregional. The authors mentioned that trade between Pakistan and India barely scratches the potential. Husain (2013) recommended that although India enjoys an edge in terms of competitiveness in pharmaceutical products, as it can take advantage of the economies of scale and an abundance of raw materials, regional integration would also provide an opportunity to improve the poor quality standards of the imports and the production of pharmaceutical products in Pakistan. This will limit low quality imports and the availability of low-quality pharmaceutical products that are currently prominent in the local market. Furthermore, the World Bank report, *Pakistan@100: Shaping the Future* lists the lack of regional trade as a major impediment to productivity growth in Pakistan. The report highlights the fact that Pakistan has negligible trade with its neighbours with the exception of China (World Bank, 2019). Considering the potential of greater trade between Pakistan and ASEAN members, Jamil and Izzuddin (2020) noted that the Government of Pakistan had shown enthusiasm for multilateral and bilateral arrangements in the South-East Asian region (Jamil and Izzuddin, 2020). This reinvigorates the "Vision East Asia", which had recently stagnated due to a preoccupation with a more Western-oriented policy that included the Middle East, Europe and Central Asia. They further stated that there was significant potential to scale up economic engagement with ASEAN members as trade was limited to US\$ 6.3 billion, minuscule compared to India's US\$ 96 billion trade. Finally, Jamil and Izzuddin (2020) recommended greater urgency in pursuing Pakistan-ASEAN free trade agreements (FTAs). Therefore, Pakistan's lack of integration into the SAARC region countries and the ASEAN region is analysed and compared with its relatively more successful integration with China. With China as its largest trading partner, a relatively large flow of exports and imports is expected.

Furthermore, chapter 2 of this report focuses on the response of the Government of Pakistan and the State Bank of Pakistan to alleviating the economic crisis that accompanied the health crisis. This is essential as the Government of Pakistan ensured that the shock from COVID-19 on the income levels of the most vulnerable segment of the population, i.e., citizens and businesses, was alleviated. The cash handouts by the Government ensured that the poorest citizens were able to purchase their basic needs as the country entered into a lockdown and curtailment of economic activity. Starting with a discussion on the extent of the lockdown in Pakistan, chapter 3 includes a description of various responses by the State Bank of Pakistan to support businesses and the Ehsaas Emergency Cash Programme started by the Government. Moreover, the trade measures to ease imports of important medical products and the export bans imposed on specific medical products are analysed. These measures were introduced to ensure that the supply of essential medical items remained available and a shortage was avoided during such challenging times. The National Telehealth Portal

analysis difficult. Also, with a proliferation of inferior colleges, Pakistani doctors trained in China risk losing their jobs.

developed in response to the COVID-19 crisis in Pakistan was one of its kind, developed to connect doctors with patients using WhatsApp. It plays an essential role in remotely connecting patients with doctors.

In addition, chapter 3 summarizes the conditions of the local health sector by analysing the number of hospitals, dispensaries and hospital beds across different provinces. This helps to gauge the readiness of the provinces to tackle a health emergency. The responses of other regional blocs in Asia as well as developed countries such as the European Union and New Zealand are also discussed. The report concludes in chapter 4 with a list of recommendations that can serve as a national action plan. This would ensure that the health sector can evolve with greater trading of medical products between Pakistan and its neighbours by facilitating improvement of the flow of medical services and easing the exchange of medical personal into and from Pakistan based on the findings. This report also recommends the use of digital technology, such as setting up telehealth clinics and mapping of areas in need of medical services to ensure a more accessible health sector.

A. Data sources

The data on trade patterns involving export and import values of different countries are extracted using HS 2012 classification from UN Comtrade. The 3rd edition of the HS classification of the COVID-19 related medical products, jointly prepared by the World Customs Organization (WCO) and the World Health Organization (WHO), is used to categorize products reported in the United Nations Comtrade database at the HS six-digit level into the COVID-19 related medical products. Although the products in the WCO/WHO list are classified under HS codes 2017, the products are converted to HS codes 2012 using a correspondence table.⁴ Data on tariffs are extracted from World Bank's World Integrated Trade Solution (WITS). The NTMs TRAINS researcher file containing the data on NTMs is extracted via UN's NTM Hub. NTMs are collected from official sources on national laws and regulations. The data on bilateral export flow in terms of quantity and value to calculate unit values of exports is borrowed from *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII) *Base pour l'Analyse du Commerce International* (BACI) dataset. Data on monthly values of exports and imports of Pakistan is borrowed from the Pakistan Bureau of Statistics (PBS). The products receiving concessions under the free trade agreement (FTA) between Pakistan and China, in the second phase of the Pakistan China FTA are available on the website of the Ministry of Commerce of Pakistan. The data on imports into Pakistan and China classified at the national tariff lines is derived from the International Trade Center's *Trademap.org*. The data on products affected by tariff liberalization and export bans due to the COVID-19 pandemic as well by State Bank of Pakistan regulations is derived from *Global Trade Alert*. The data on the total amount of healthcare worker migrants in the Organisation for Economic Co-operation and Development (OECD) countries, which includes doctors and nurses, is derived from *OECD.Stat*.

⁴ The correspondence tables can be obtained from the United Nations Trade Statistics provided by the United Nations Statistics Division. Available at <https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp>.

The data on the number of hospitals, dispensaries, number of beds and maternity clinics at the provincial level in Pakistan is extracted from Social Statistics provided by the Pakistan Bureau of Statistics. The data for the population of the four provinces and the federal territory is derived from the results of the latest population census conducted at provincial level in 2017. The data on the number of medical and paramedical workers is derived from the Economic Survey 2019-2020. This survey also provided data on the health expenditures budgeted by provincial and federal governments in Pakistan.

The data on the total number of cases of the COVID-19, deaths from particular pandemic and positivity rate is borrowed from *Our World in Data* website.⁵ The data on life expectancy and current health expenditure per capita is borrowed from the World Bank's World Development Indicators.

B. Selected trade and health-related indicators

Before discussing the potential linkages in health-related trade integration between Pakistan and selected Asia-Pacific countries, some of the facts and figures on the COVID-19 infection and death rates until August 31st 2020, the trend in exports and imports of Pakistan between July 2019 and August 2020 and certain health-related indicators are presented. This introduces the intensity at which Pakistan is facing the pandemic, its effects on trade and the quality of existing health infrastructure in the country. Pakistan reported a total of 295,849 cases and 6,294 deaths until August 31st 2020, while India reported more than 3.6 million cases and 64,469 deaths and Bangladesh reported 310,822 cases and 4,248 deaths. This translates into 1339 cases per million people and 28.5 deaths per million people in Pakistan, 2624 cases per million people and 46.7 deaths per million people in India, 1,887 cases per million people and 25.8 deaths per million people in Bangladesh. Although Pakistan was spared the intensity of the prevalence of the pandemic in terms of cases and deaths, as observed in India, the health indicators suggest one of the poorest quality health infrastructures in the region.

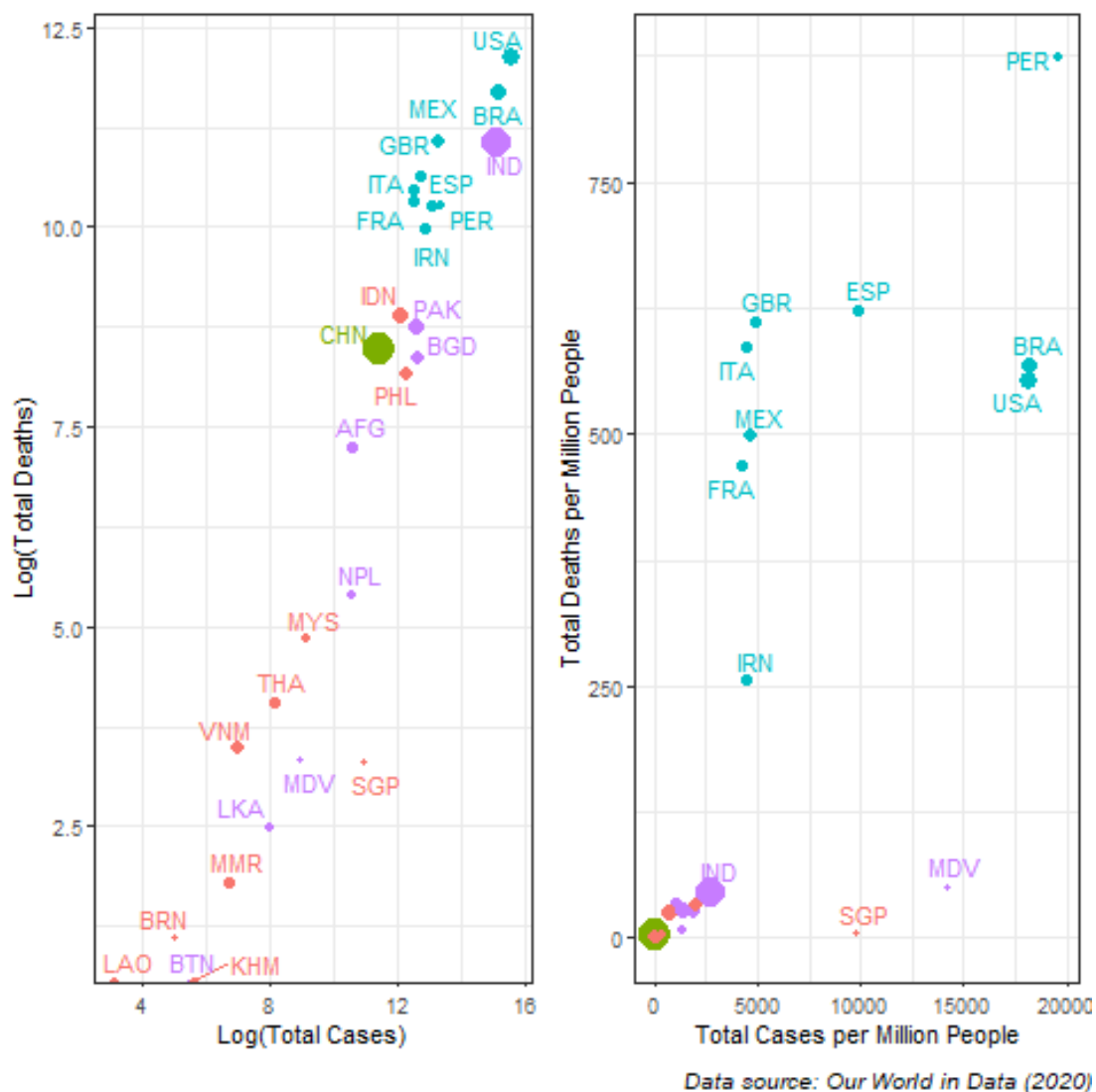
1. COVID-19 infection and death rates

The total number of cases of the COVID-19 pandemic and the number of deaths (log) from particular pandemic reported until 31 August 2020 in selected countries, which include from the Asia-Pacific region (including ASEAN countries, China, South Asian countries and the Islamic Republic of Iran) and Western countries (Europe, North America and Latin America), is presented in the left panel of figure 1. The countries from Europe, North America and Latin America were selected on the basis of the numbers of cases reported until 31 August 2020. The total number of cases and the total number of deaths are each divided by a million people, which is presented in the right panel. This provides a better picture of the prevalence of the disease. Pakistan reported 295,849 cases and 6,294 deaths until 31 August 2020. In the left panel of **Error! Reference source not found.**, the countries labelled in blue, all Western countries and the Islamic Republic of Iran, reported the greatest number of deaths until 31 August 2020. The United States reported the highest number of deaths at 183,069, followed by Brazil at 120,820. India reported the highest deaths in the Asian region at 64,469. These three countries also reported the highest number of cases, with the United

⁵ This also includes data on total cases and total deaths per million people.

States touching 6 million. Brazil and India were closing in at 4 million cases. Although China, Pakistan, Indonesia and Bangladesh along with India also rank high in terms of the number of cases and deaths, the prevalence drops when adjusted to the number of people. Pakistan reported 1,339 cases per million people and 28,494 deaths per million people. India reported 2,624 cases per million people and 46,717 deaths per million people. Comparatively, the United States reported more than 18,000 cases per million people and 550 deaths per million people. Peru fared the worst amongst the selected countries with 19,628 cases per million and 873 deaths per million (**Error! Reference source not found.**, Right Panel).

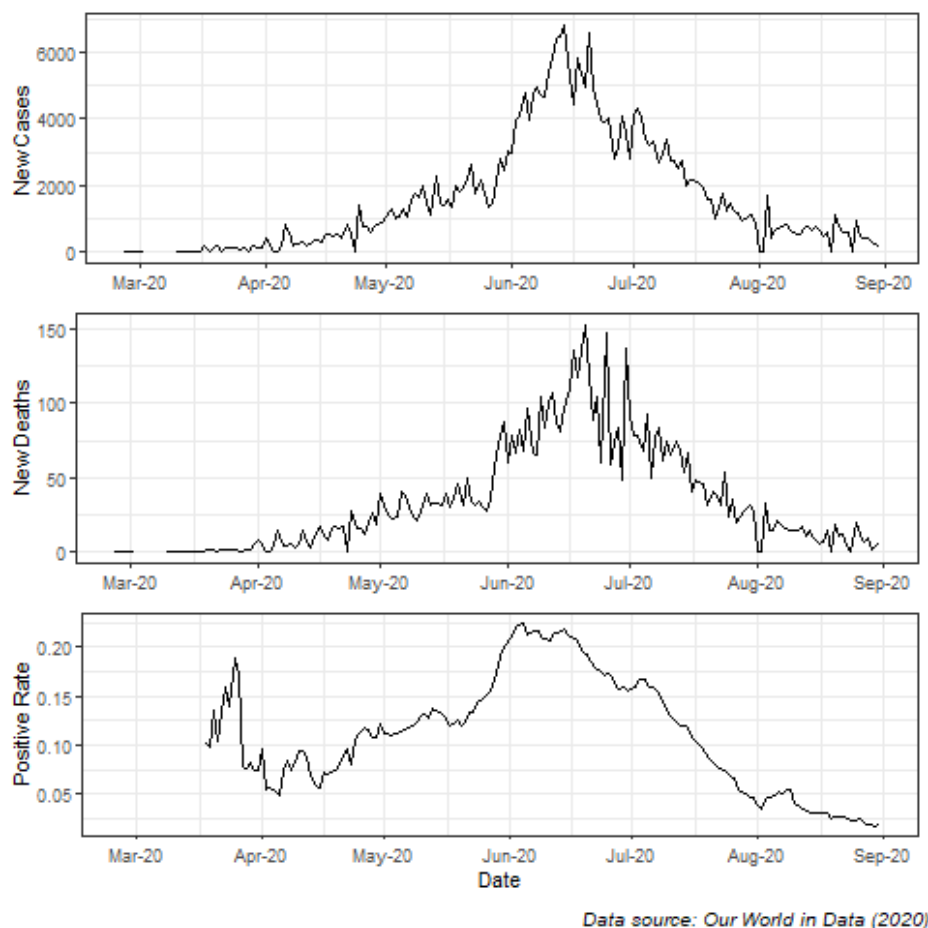
Figure 1. The extent of COVID-19 cases and deaths in selected countries as reported on 31 August 2020



The trend in the daily new cases, daily new deaths and the daily positive rates, the share of tests returning a positive result, are presented for Pakistan in **Error! Reference source not found.** The first case was reported on 26 February 2020. The first death was reported on 20 March 2020. Cases peaked at 6,825 on 14 June 2020 and deaths peaked at 153 on 20 June 2020. The positive rate peaked on 4 June 2020 at 22.4 per cent. Fortunately for Pakistan, the cases, deaths and positive rates have continued to decline since their peak in mid-June 2020. New cases decreased to 213, new deaths decreased to 6 and the positive rate decreased to 2

per cent on 31 August 2020. Pakistan reported 1 death from the COVID-19 pandemic on 29 August 2020.

Figure 2. Trends in new cases, new deaths and positive rate on tests in Pakistan between 27 February 2020 and 31 August 2020

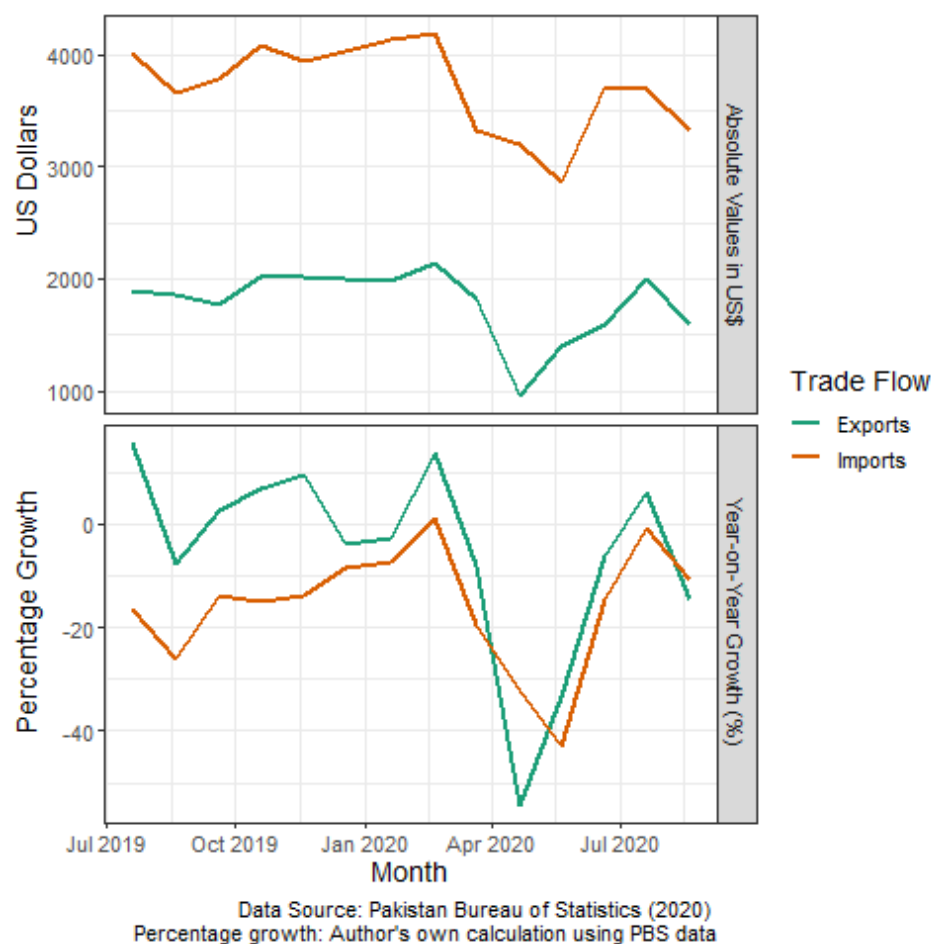


2. COVID-19 and its impact on Pakistan's trade

Similar to the impact on trade across several different countries, the COVID-19 pandemic reduced exports and imports by Pakistan considerably. The monthly absolute value and the year-on-year growth rates in US dollar value of exports and imports of Pakistan are presented in **Error! Reference source not found..** Exports and imports both peaked in February 2020 during FY2020, reaching US\$ 2.14 billion and US\$4.185 billion, respectively. Although imports and exports both started a downward trend in March 2020, the lowest values were reported in April 2020 for exports and May 2020 for imports. Exports were reported as US\$ 957 million and imports as US\$3.2 billion in April 2020. In April 2020 exports were 54 per cent lower and imports were 32 per cent lower than their values in April 2019. Although exports began to recover in May 2020, as they increased to US\$ 1.4 billion, imports plunged to US\$ 2.86 billion in the same month which was 42.9 per cent lower than in May 2019. Imports have yet to recover to their pre-COVID-19 levels, while exports in July 2020

surpassed the value reported in January 2020 to reach 6.1 per cent higher than the value reported in July 2019.⁶

Figure 3. Monthly trend in exports and Imports by Pakistan between July 2019 and June 2020



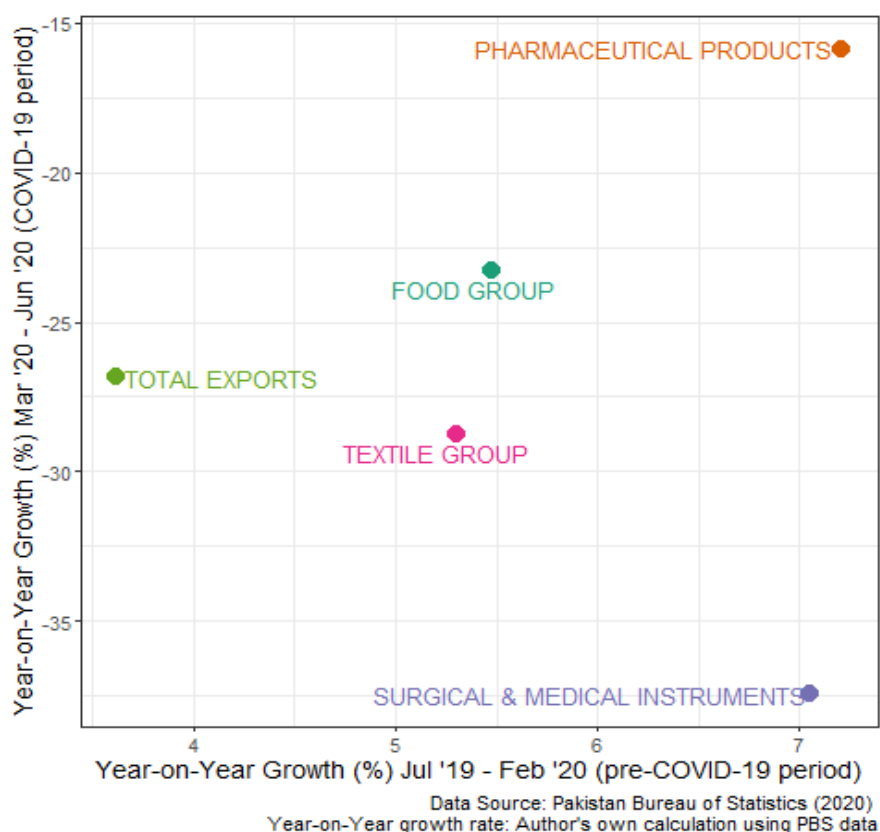
The year-on-year growth rates for selected products for the pre-COVID-19 months in FY2020 (July 2019 to June 2020) as well as between March 2020 and June 2020 are presented in figure 4.⁷ The selected products include major exports by Pakistan, i.e., textiles, food, pharmaceutical products, and surgical and medical instruments. The most commonly exported products from Pakistan include textile products (59 per cent of the total exports in FY2020) and food products (20 per cent of the total exports in FY2020). Major health-related products exported by Pakistan include surgical and medical instruments (1.7 per cent of total exports FY2020) and pharmaceutical products (1 per cent of total exports in FY2020). Total exports increasing over the previous months, and all the selected products also experienced

⁶ The exports declined again in August 2020. However, this is not directly attributable to the COVID-19 as the lockdown on export-related businesses was lifted before August 2020. This downward trend is primarily due to floods, electricity shortages and religious holidays in Pakistan. However, this sharp volatility in exports is rare.

⁷ The fiscal year, or financial year, in Pakistan starts on 1 July of the specified year ends on 30 June and ends on 30 June of the following year.

positive growth rates from the values reported for the same month in the previous fiscal year. However, the year-on-year growth rates collapsed for all products between March 2020 and June 2020. The largest decrease was reported for surgical and medical products, at 37 per cent. An export ban was imposed on selected protective garments and other protection gear at the end of March 2020 (via SRO 239 (I)/2020). An additional ban was imposed on certain pharmaceutical products, such as anti-malarial drugs, in April 2020 (via SRO 297 (I)/2020).⁸ It is important to note that not all products at disaggregated levels faced the export bans. However, either a shift in preference towards domestic consumption during the pandemic or supply chain disruptions due to the pandemic may have contributed to the decrease in exports of the aforementioned products. Furthermore, exports of textile products are likely to have been hit by the fall in demand in its major markets, such as the United States and the European Union, as they were severely impacted by the COVID-19 pandemic.⁹ In essence, major products exported by Pakistan recorded a significant decline between March 2020 and June 2020. COVID-19 thus had a major impact on Pakistan's international trading activities.

Figure 4. Year-on-Year Growth (%) in US dollar value of exports between July 2019 and June 2020 for pre-COVID-19 and COVID-19 periods in Pakistan



⁸ The Government may add, modify or withdraw various concessions and exemptions in the tax code through executive orders called Statutory Regulatory Orders (SROs).

⁹ Although not shown in the figure, exports of tents, canvas and tarpaulin increased 19.48 per cent in FY2020 compared with the value reported in FY2019. They are likely to be used as protective garments and equipment for disaster relief hospitals and shelters.

C. Health-related indicators: Where does Pakistan stand in terms of its health infrastructure?

The health indicators on life expectancy and current health expenditures – purchasing power parity (PPP) – for selected countries are presented in **Error! Reference source not found.** and 6. It can be seen that Pakistan not only lags in terms of life expectancy, relative to several of its counterparts. It also has the lowest amount of percentage change compared with several SAARC and ASEAN countries. Although several of the ASEAN members reported a lower percentage change than Pakistan, their life expectancy was significantly higher in 2018. Furthermore, not only was the percentage change in health expenditure per capita between 2000 and 2017 one of the lowest for Pakistan, but the health expenditure per capita in 2017 was also one of the lowest among the selected countries. Therefore, this indicates that the health infrastructure in Pakistan is likely to be the least developed in the region.

Figure 5. Indicators of life expectancy for selected countries

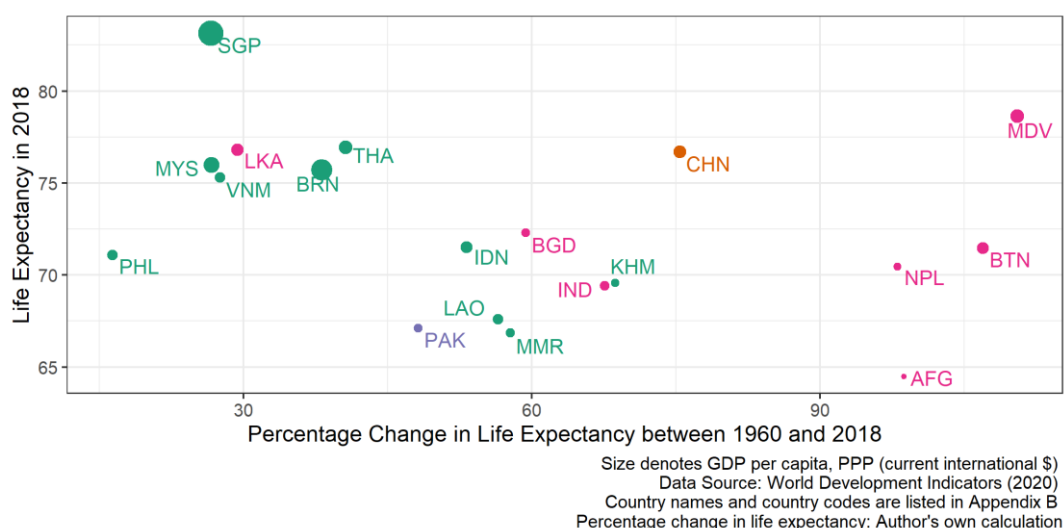
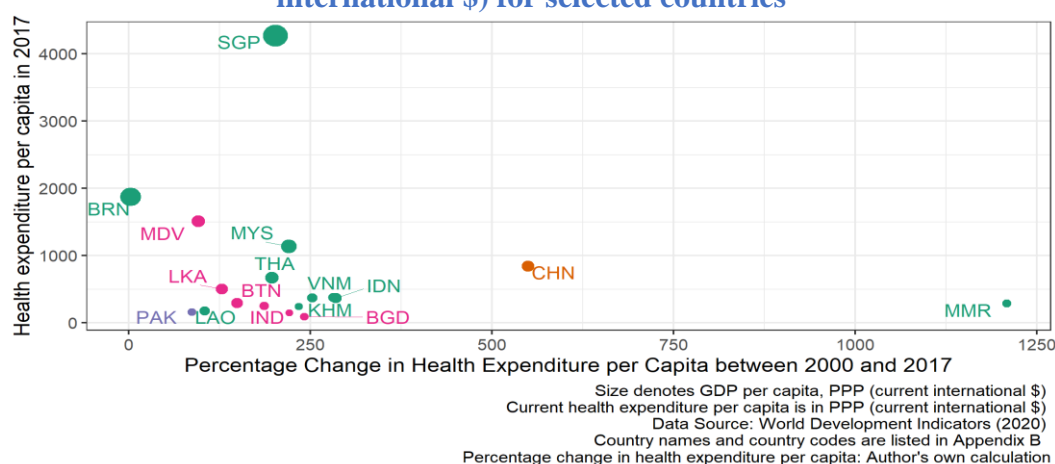


Figure 6. Indicators of current health expenditure per capita, PPP (current international \$) for selected countries



D. Literature survey

The COVID-19 pandemic brought an unprecedented plunge in global trade. Baldwin and Toimura (2020) discuss how the disease caused a triple-hit to the manufacturing activities as it resulted in: (a) direct supply hits; (b) a supply-chain contagion effect as shutdowns in one economy created disruptions in other economies; and (c) a reduction in aggregate demand and delays in spending caused by precautionary behaviour of consumers. However, as the challenges increase, governments and businesses are likely to make misguided policy choices that may lead to the dismantling of global value chains (GVCs) and a reduction in international trade. The UNCTAD *Trade and Development Report 2020* report asserts that trade will shrink by one-fifth, while foreign direct investment will fall by 40 per cent and remittances will drop by US\$ 100 billion in 2020. Although the biggest fall in output will be in the developed world, the economic and social losses are likely to be most significant, not only is their informality in the economy high but they are likely to have little fiscal space to bolster their economies. The challenges to the economy of Pakistan from the COVID-19 pandemic and possible solutions are highlighted in this report.

Miroudot (2020) identified complications to GVCs due to the COVID-19 pandemic and proposed recommendations for better resilience. The strengthening of GVCs can lead to new narrative on policies supporting them. Gruszczynski (2020) discussed the short-term and long-term consequences of the COVID-19 pandemic on international trade, as countries adopt a range of options to tackle the effect of the pandemic on their respective economies, including export restrictions and tariff rationalization. The pandemic has created uncertainty in the negotiations between the United States and China, as they continue to face-off in the ongoing trade war between them that has led to tit-for-tat tariff policies, restrictions on foreign technology transfer between the two countries and a number of disputed cases at the WTO. Further, the pandemic has created challenges in the implementation of the United States-Mexico-Canada Agreement (USMCA). Structural changes are expected in the long term in the process of trade liberalization. Mikic, Puutio and Gallagher (2020) advised caution over the increasing trend in protectionism affecting the trade of medical products.

The unprecedented scale of impact on manufacturing activities as the pandemic spreads has resulted in supply chain disruptions, low production capacities, delayed shipments and distribution difficulties. The authors of this report warn that manufacturing activities are likely to record a decline but the impact will likely vary across industries. Gereffi (2020) discussed the need for a more fragmented, multipolar and regionally-oriented trade system and added how de-globalization is not a viable long-term solution and provided examples of the trade in essential medical products. The United States has significantly increased its imports of medical products from non-traditional markets as increased expenditure on health care in developing countries, coupled with low tariff rates, have promoted trade in low-priced and high-quality products. The bolstering of domestic capacity, increasing the number of foreign production sites and meeting the growing demand for medical products from international production networks are recommended for tackling shortages and sudden surges in demand. Regional cooperation during the pandemic is essential in ensuring that the crisis due to shortages of products is alleviated.

Reforms to free trade agreements (FTAs) can help build-back-better from the adverse effects of the pandemic. Kuhlmann and others (2020) provided extensive recommendations on reforming FTAs such as that they are key to achieving sustainable development goals. The recommendations focus on various aspects, including digitization, intellectual property and trade facilitation, to ensure that recovery from the pandemic is more inclusive. In considering

the central theme of this study – i.e., the COVID-19 pandemic-related medical products – Dash and Sai (2020) suggested a framework for provision in regional trade agreements (RTAs) in order to promote the trading of critical medical supplies during a crisis. It includes creating special channels to move such products across borders, promoting digital and paperless trade, capacity-building of developing countries and ensuring supply chains remain established.

Adam (2020) suggested that trade agreements must include new initiatives based on recent best practices that expand their scope to resist trade restrictions during the crisis. For example, he recommended extending the scope of National Trade Facilitation Committees (NTFCs) to enhance border management coordination as well as adopting risk management initiatives that can facilitate timely delivery of essential items. He discussed the consequences of trade restrictions, which will not only hurt smaller countries in their fight against the pandemic, but can also result in shortages of raw materials and intermediate goods in larger economies that are reliant on the flow of supplies across international borders. Adam also recommended increasing the role of trade facilitation capable of ensuring timely movement of goods between countries. Tan and Zhang (2020) discussed the role of regulatory requirements in ensuring a balance between the health and safety of consumers as well as the cost of trading – i.e., barriers to trade created by different procedures and processes must not be too restrictive that they discourage international trade, but at the same time are sufficient to protect human lives from imports of substandard products. It is obvious that trade integration of health products is essential to achieve the Sustainable Development Goals focusing on good health (SDG 3). This involves not only trade facilitation but also requires investment in robust digitization of the economy.

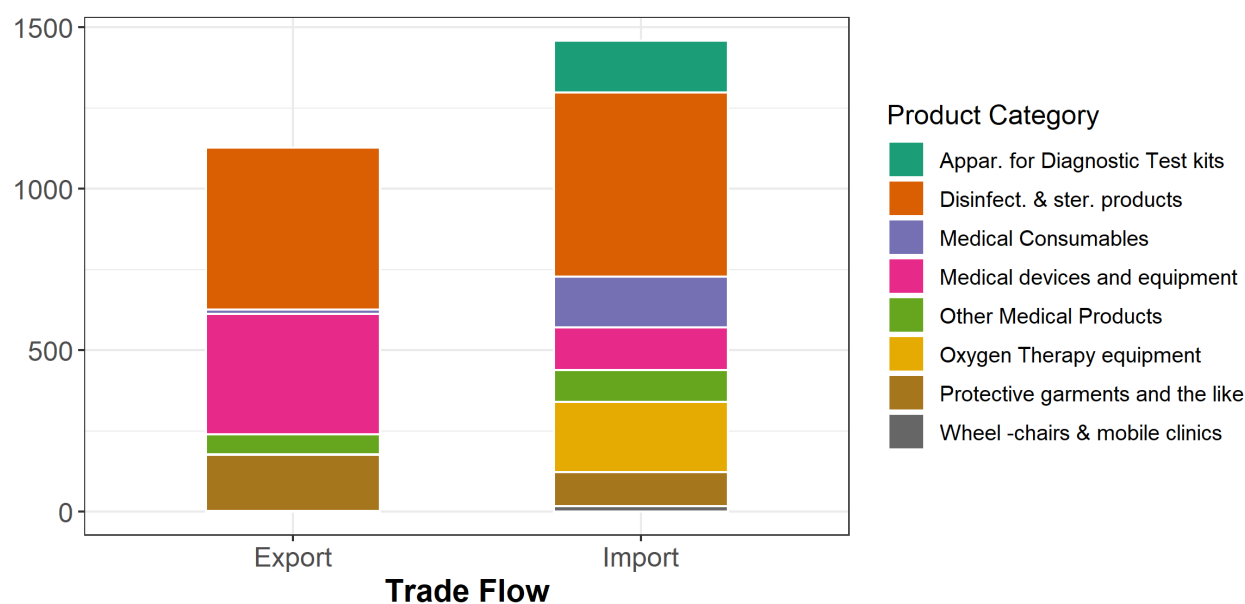
There is a significant role for digital technologies to play in improving the quality of health services and ensuring all residents across different economic strata benefit from the development of the health sector. Cory and Stevens (2020) emphasized the role of information and communications technologies (ICT) in developing countries that face stringent labour and physical constraints to provide efficient health services. They pointed to the need for a global digital health framework that ensures innovations in technologies are not only tapped into but that issues pertaining to data protection are addressed. Gillson and Muramatsu (2020) recommended easier movement of health workers across borders and improving the scope of telemedicine to complement physical health-care systems to boost the quality of health services in poor countries. They further recommended the entry of foreign health service providers, international coordination between different stakeholders in the health sector and the improvement in digital connectivity across the health-care system. This study takes into account their recommendations as it considers different policy options to boost the quality of health-care services in Pakistan.

An overview of regional integration of Pakistan health-related sectors

A. Regional trade flows

Pakistan's world trade in COVID-19-related medical products is presented in **Error! Reference source not found.**. Pakistan exported US\$ 1,128 million and imported US\$ 1,459 millions of COVID-19 related medical products in 2018. Pakistan exported US\$5 00 million worth of disinfectants and sterilization products, US\$ 373 million worth of medical devices and equipment and US\$ 174 million worth of protective garments and related products. Pakistan is likely to have comparative advantage in the manufacturing of products belonging to the aforementioned categories, such as un-denatured ethyl alcohol, medical and surgical instruments and knitted or crocheted gloves that have been impregnated or covered with plastic or rubber. Its position in terms of global competitiveness is highlighted in the following analysis. The exports from other product categories were much lower. On the other hand, Pakistan imported a more diverse range of medical products, including disinfectants and sterilization products (US\$ 572 million), oxygen therapy equipment (US\$ 217 million), apparatus for diagnostic test kits (US\$ 160 million), medical consumables (US\$157 million), and medical devices and equipment (US\$131 million). Pakistan also reported more imports than exports in several product categories. For example, Pakistan exported less than US\$ 2 million worth of wheelchairs and mobile clinics, oxygen therapy equipment and apparatus for diagnostic test kits. Barring a limited number of products, Pakistan is primarily dependent upon imports to meet the demand for COVID-19-related medical products. A more detailed analysis at a disaggregated product level is presented later in this chapter.

Figure 7. Pakistan's world trade in COVID-19-related medical products, 2018 (USD Million)



Data Source: UN Comtrade (2020)

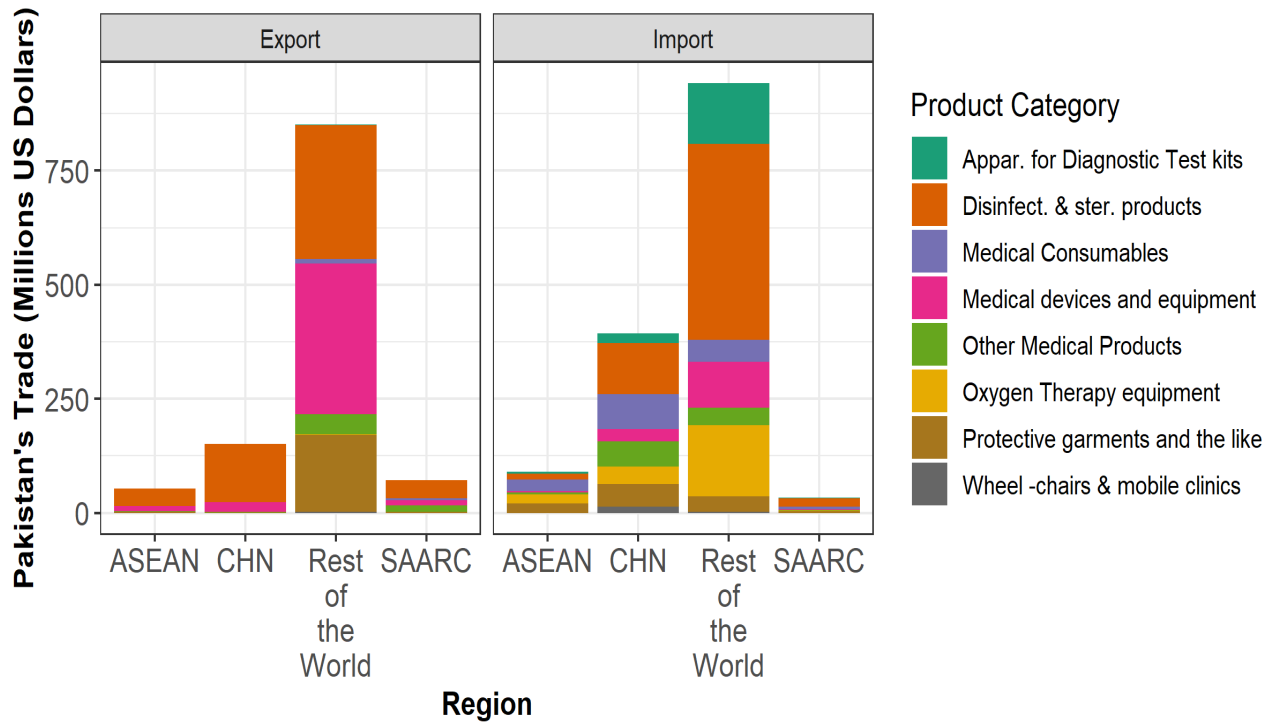
Pakistan's trade of the COVID-19 related medical products to different regions, namely ASEAN, China, SAARC and the rest of the world is presented in figure 8. In 2018, Pakistan exported disinfectants and sterilization products worth US\$ 39 million worth to ASEAN members, US\$ 128 million to China, US\$ 40 million to SAARC countries and US\$ 294 million to the rest of the world. Significant trading partners in the 'rest of the world' category

included the United States of America, the Republic of Korea, Germany, the Netherlands and the United Kingdom. In 2018 Pakistan also exported medical devices and equipment worth US\$ 11 million to ASEAN countries, US\$ 22 million to China, US\$ 11 million to SAARC countries and US\$ 330 million to the rest of the world. More than US\$ 187 million worth of medical devices and equipment (classified as HS 901890 (various types of medical devices and equipment)) to three countries in the 'rest of the world' category, namely the United States, Germany and the United Kingdom. Other notable exports from Pakistan included US\$169 million worth of protective garments and US\$ 44 million worth of other medical products to the rest of the world and US\$ 15 million to SAARC. In essence, exports of the COVID-19-related medical products from Pakistan are limited to a few product categories, with disinfectants and sterilization products, and medical devices and equipment contributing to the highest share.

On the other hand, the import basket of the COVID-19-related medical products is more diversified than the export basket, as stated above. Pakistan imported US\$ 429 million worth of disinfectants and sterilization products, US\$ 157 million worth of oxygen therapy products, US\$ 133 million worth of apparatus for diagnostic test kits and US\$ 100 million worth of medical devices and equipment from the rest of the world. The top sources for imports in the 'rest of the world' category for disinfectants and sterilization products were Germany, Switzerland and Italy. Sources for oxygen therapy equipment were Ireland, the United States and Germany, while sources of apparatus for diagnostic kits as well as medical devices and equipment were Germany and the United States. China was by far the second-most important destination for exports and source of imports in terms of the specified regional classifications. Pakistan imported US\$ 111 million worth of disinfectants and sterilization products, US\$ 78 million worth of medical consumables, US\$ 56 million worth of other medical products and US\$ 49 million worth of protective garments and related products from China. Pakistan imported US\$ 26 million worth of medical consumables, US\$ 21 million worth of oxygen therapy equipment and US\$ 20 million worth of protective garments and related from ASEAN members. The only notable import from SAARC countries were disinfectants and sterilization products, which amounted to US\$ 19 million. Pakistan's imports of other product categories from SAARC countries did not exceed US\$ 10 million. This reflects the lack of trade between Pakistan and SAARC countries. This is not surprising as SAARC is one of the least integrated regions in the world.

To summarize, China has dominated the trade flow from, and into Pakistan from the Asia-Pacific region. Even though the rest of the world includes several countries prominently producing and exporting COVID-19-related medical products, China is the largest supplier of medical consumables, other medical products, protective garments and related products, and wheelchairs and mobile clinics to Pakistan.

Figure 8. Pakistan's trade in the COVID-19-related medical product categories to specified regions

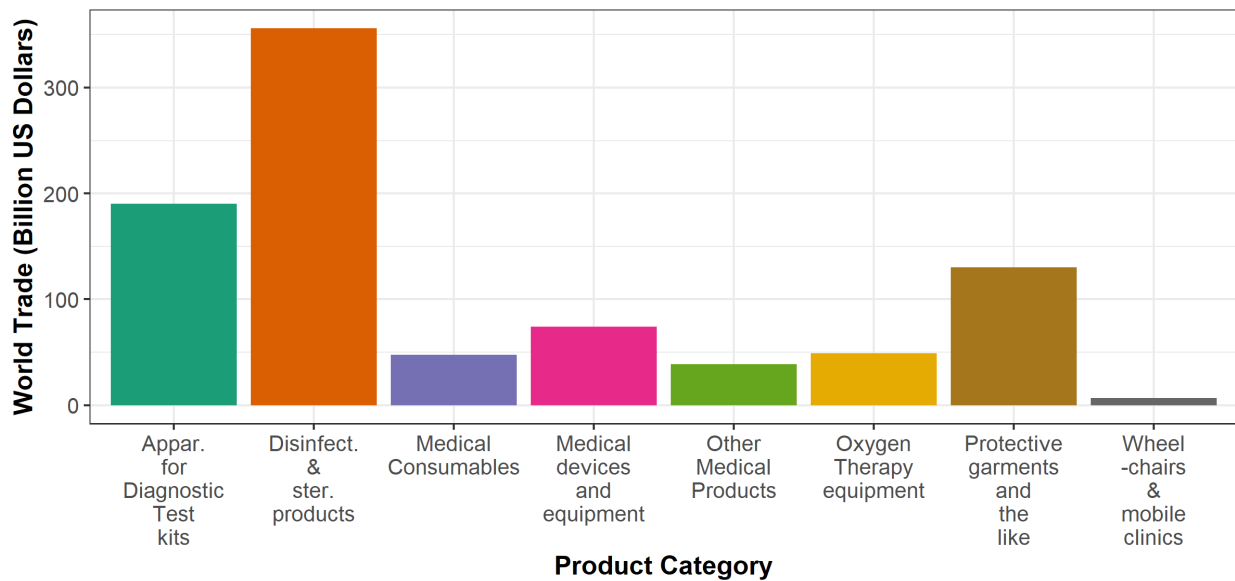


Data Source: UN Comtrade (2020)

The total world trade in the COVID-19-related product categories is presented in figure 9. **Error! Reference source not found.**¹⁰ Total global trade in the COVID-19-related product categories was US\$ 900 billion in 2018. The disinfectants and sterilization products accounted for the largest amount of global trade at US\$ 356 billion, followed by apparatus for diagnostic kits, protective garments and related products, and medical devices and equipment, worth US\$ 190 billion, US\$ 130 billion and US\$ 74 billion, respectively. The other categories listed in figure 9 reported trade worth less than US\$ 50 billion.

¹⁰ The import values rather than the export values reported by each country for COVID-19-related product categories are used to calculate the total trade of this figure. The differences between the two values are not substantial. The flow direction of total trade is matched with the trade flow direction for each respective trading partner in all other figures.

Figure 9. Total world trade in the COVID-19 related product categories



Data Source: UN Comtrade (2020)

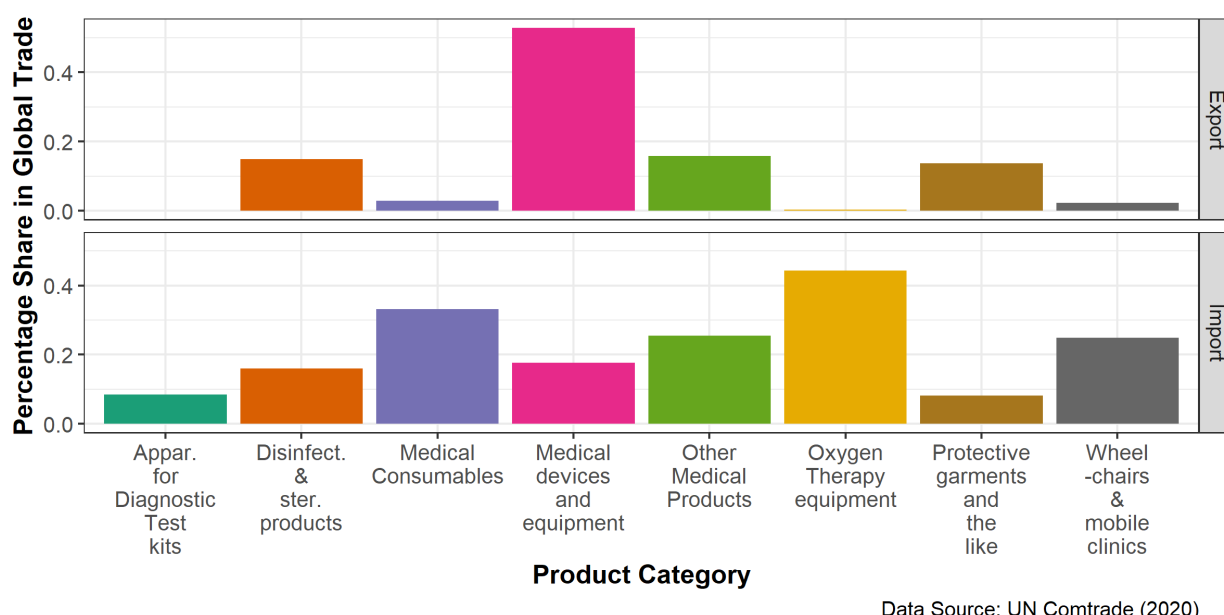
The percentage share of exports from Pakistan and imports by Pakistan in total global exports and global imports, respectively, for COVID-19-related medical products, is presented in **Error! Reference source not found..** Pakistan exported US\$ 23.78 billion worth of goods in 2018. This was approximately 0.12 per cent of total global exports.¹¹ The share in the global trade of exports from Pakistan exceeded 0.12 per cent for medical devices and equipment (0.53 per cent), disinfectants and sterilization products (0.15 per cent), protective garments and related products (0.14 per cent) and other medical products (0.16 per cent). In other words, Pakistan is likely to have a comparative advantage in exports of the aforementioned categories. It is essential that policymakers explore further the potential originating from these product categories. The share of exports from Pakistan of medical devices and equipment stands out the most. As trade volume in medical devices and equipment is worth US\$ 130 billion. With a stronger comparative advantage, Pakistan can benefit by capturing a greater market share of medical devices and equipment, particularly in the share of various surgical and medical instruments highlighted in **Error! Reference source not found..**

On the other hand, Pakistan imported goods worth US\$ 60.39 billion in 2018, which was approximately 0.3 per cent of total global imports. The imports of oxygen therapy equipment and medical consumables by Pakistan were 0.44 per cent and 0.33 per cent of total world trade, respectively. Unfortunately, imports of apparatus for diagnostic kits by Pakistani consumers was only 0.08 per cent of total global imports. The small share in total imports and limited domestic production capabilities of diagnostic test kits has become a cause of

¹¹ The overall percentage share is used as a benchmark. For example, if on average 0.12 per cent of an export basket containing all exported products is sourced from Pakistan, and a 0.30 per cent share of an export basket containing products from a particular category is sourced from Pakistan. This will imply that the latter export basket is 2.5 times more likely to be sourced from Pakistan than the former export basket. The higher the percentage share of exports from Pakistan of a particular product, the greater the dominance of Pakistan in its global exports. This is synonymous with the concept of revealed comparative advantage (RCA).

concern during the COVID-19 pandemic as Pakistan is increasing its testing capacity. The largest exporters of diagnostic or laboratory reagents on a backing and prepared diagnostic or laboratory reagents (HS 382200) are the United States, Germany, the Netherlands, and the United Kingdom, which are countries hard-hit by the pandemic.

Figure 10. Percentage share of Pakistan's trade in total global trade for the COVID-19 related medical product categories



B. Trade in the Asia-Pacific region

The trade of the COVID-19-related medical products by selected regions in Asia is presented in nominal terms in **Error! Reference source not found.**, and the percentage shares in the global trade of different product categories are detailed in figure 12. China dominated ASEAN and SAARC in terms of total exports and total imports of COVID-19-related medical products in 2018. China exported COVID-19 related medical products worth more than US\$ 75 billion and imported more than US\$ 47 billion worth. ASEAN exports and imports were worth US\$ 39 billion and US\$ 35 billion, respectively, and SAARC exports and imports were worth US\$ 16 billion and US \$9 billion, respectively, of COVID-19-related medical products. Disinfectants and sterilization products as well as protective garments and related products were the most common product category exported across the region. China exported US\$ 32 billion, ASEAN exported US\$ 8 billion and SAARC exported US\$ 11 billion worth of disinfectants and sterilization products. China exported US\$ 32 billion, ASEAN exported US\$ 14 billion and SAARC exported US\$ 2 billion worth of protective garments and related products. China also exported more than US\$ 5 billion worth of medical consumables, other medical products and medical devices and equipment. Similarly, ASEAN members cumulatively exported more than US\$ 3 billion worth of apparatus for diagnostic test kits, oxygen therapy equipment, medical consumables, and medical devices and equipment. On the other hand, SAARC cumulatively exported less than US\$1 billion in all product categories except for disinfectants and sterilization products and protective garments and related products.

Apparatus for diagnostic test kits, disinfectants and sterilization products, and protective garments and related products were commonly imported into the three regions. Imports by China were worth US\$ 17 billion, while ASEAN and SAARC imports of disinfectants and sterilization products were worth US\$ 12 billion and more than US\$2 billion, respectively. China imported US\$ 12 billion worth of apparatus for diagnostic test kits, while ASEAN and SAARC imports were worth US\$3 billion and more than US\$ 1 billion, respectively. ASEAN imported US\$8 billion worth of protective garments and related products, while China imported US\$ 5 billion worth and SAARC imported US\$ 1 billion worth. ASEAN and China imported more than US\$ 2 billion worth of medical devices and equipment, medical consumables, other medical products and oxygen therapy equipment. Although SAARC imported more than US\$ 1 billion worth of medical devices and equipment, its imports of medical consumables, oxygen therapy equipment and other medical products were worth less than US\$ 1 billion.

Exports from China accounted for more than a quarter of protective garments and related products that were traded globally. Exports from China amounted to more than 10 per cent of total trade in multiple product categories. Exports from ASEAN accounted for 10 per cent of protective garments and related products traded globally. On the other hand, the only prominent product category exported by SAARC countries was disinfectants and sterilization products. accounted for 3 per cent of global trade in this product category. India exported more than US\$ 10.8 billion in medicaments (HS 300490), which was approximately 94 per cent of all exports originating from SAARC in the disinfectants and sterilization product category. On the other hand, the Asian region is a relatively less prominent importer of COVID-19-related medical products. None of the regions within Asia imported more than 8 per cent of global trade in any of the product categories. Furthermore, it is important to note that SAARC only imported 0.7 per cent of all global trade in apparatus for diagnostic test kits and disinfectants and sterilization products. It imported approximately 2 per cent of global trade in medical devices and equipment, medical consumables, other medical products and oxygen therapy equipment. Therefore, the participation of SAARC in the global trade of the COVID-19 medical products is the least relative to China and ASEAN. SAARC neither exports nor imports a significant amount in any of the product categories. Given its size in the SAARC region, India is the only country to prominently trade across different categories compared with China and other countries in the Asia-Pacific region.

Figure 11. World trade of selected regions in the COVID-19-related medical product categories by selected regions

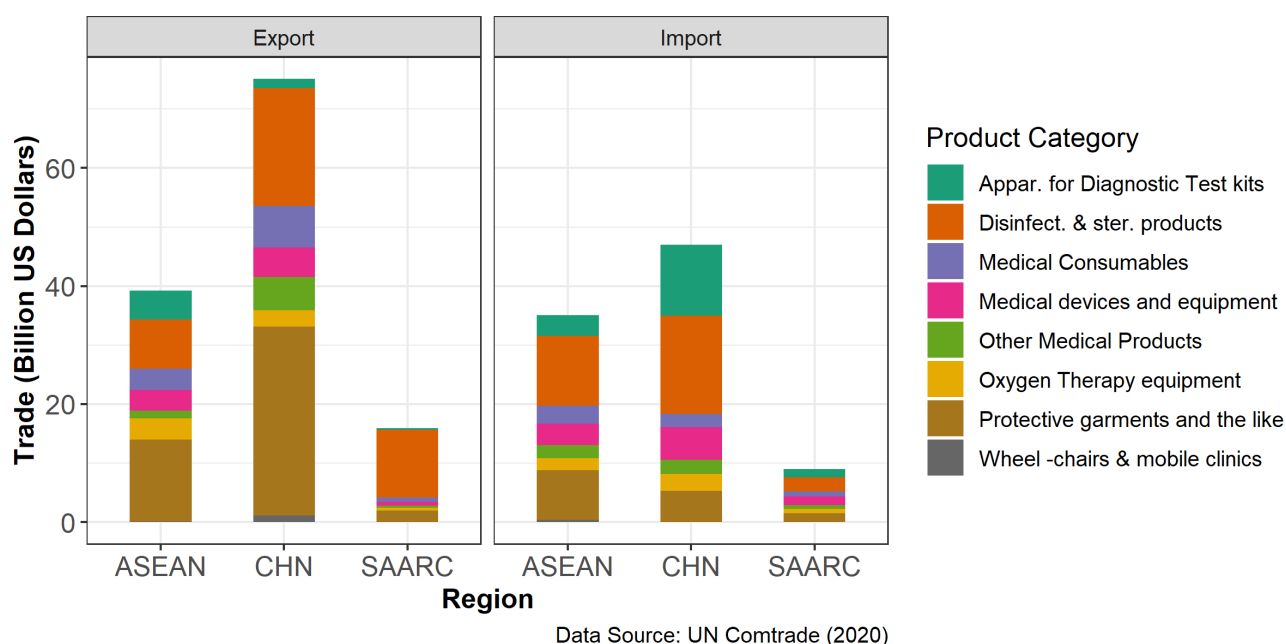
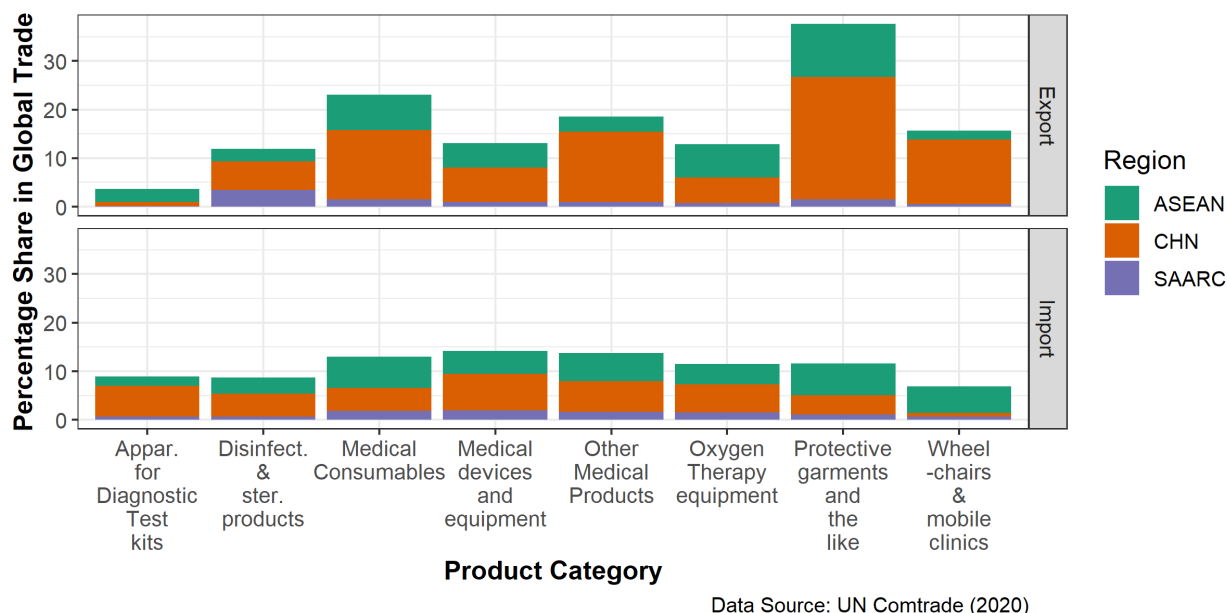


Figure 12. Percentage share in global trade of the COVID-19-related medical products distributed in product categories

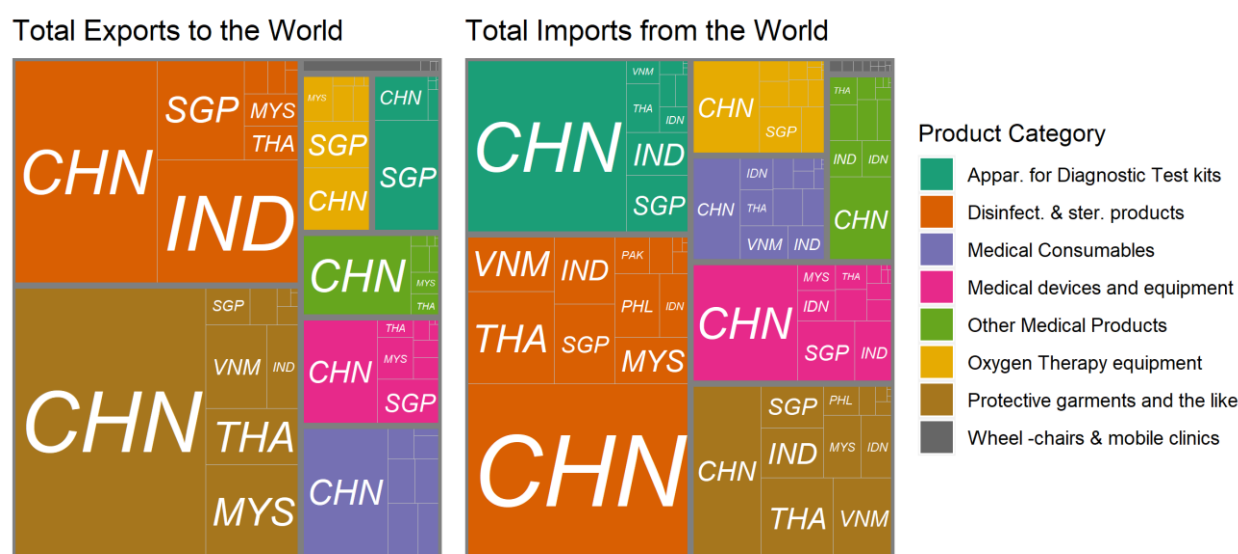


Total exports and imports of each product category originating from SAARC, ASEAN members and China are presented in **Error! Reference source not found.**. The areas under the respective International Organization for Standardization (ISO) 3166 standard codes for each respective country show the value of trade. China dominated trade in both directions for almost all products. India was a relatively large exporter of disinfectants and sterilization

products, worth US\$ 11 billion. Interestingly, it is the only SAARC country to appear in the treemap on the left. The treemap presents a hierarchical view of the data, with the size of rectangles organized to show the prominence of respective products or countries. Singapore appears to be an important source of exports for disinfectants and sterilization products, apparatus for diagnostic test kits, oxygen therapy equipment, and medical devices and equipment, as it reported exports worth US\$ 5 billion for the first two products and US\$ 2 billion for the latter two products. Malaysia and Thailand appear as important sources for protective garments and related products as well as disinfectants and sterilization products, as both countries exported more than US\$ 3 billion of the former category and US\$ 1 billion of the latter category.

Considering the flow of imports, China dominated across all product categories. More prominently, China imported US\$ 17 billion and US\$ 12 billion worth of disinfectants and sterilization products and apparatus for diagnostic test kits. Thailand, Viet Nam, Singapore and India imported at least \$1.7 billion worth of disinfectants and sterilization products. Pakistan imported US\$ 572 million worth of disinfectants and sterilization products, while India and Singapore imported at least US\$ 1.2 billion worth of apparatus for diagnostic test kits and at least US\$ 1 billion worth of medical devices and equipment. Thailand and Viet Nam imported US\$ 2.4 billion worth of protective garments and related products. In essence, although China dominates as a major importing partner across all product categories, ASEAN members such as Singapore, Malaysia, Thailand and Viet Nam together with India reported significant import demand for several product categories.

Figure 13. Exports and imports of listed product categories by China, ASEAN and SAARC countries



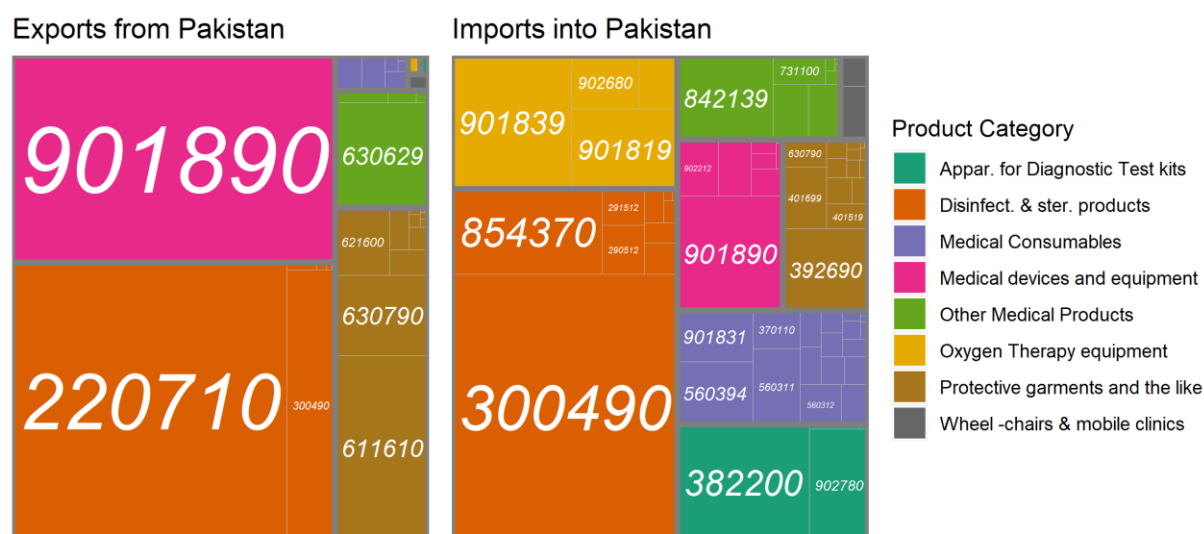
Names of countries represented by ISO codes are listed in Appendix B
The size of each rectangle is proportional to the share of country in global trade.

The analysis of trade at the product level of exports and imports by Pakistan of major COVID-19-related medical products – as prepared by the World Customs Organization (WCO) and World Health Organization (WHO) in their HS classification reference for COVID-19 medical supplies – are highlighted in **Error! Reference source not found..** Pakistan exported US\$ 425 million worth of HS 220710, described as “undenatured, containing by volume 80% or more ethyl alcohol” and US\$ 373 million worth of HS 901890

described as “various types of medical devices and equipment”.¹² With US\$ 1,128 million worth of exports originating from Pakistan, the two aforementioned products constituted 70 per cent of the total exports of the COVID-19 related products originating from that country. Pakistan exported US\$ 97 million worth of HS 61160 (knitted or crocheted gloves which have been impregnated or covered with plastics or rubber), US\$ 74 million worth of HS 300490 (hydrogen peroxide presented as a medicament) and US\$ 55 million worth of HS 630629 (tents for setting up field hospitals, including temporary canopies made of synthetic fibres or other textile materials). Pakistan also exported US\$ 42 million worth of HS 630790 (textile face-masks, without a replaceable filter or mechanical parts, including surgical masks and disposable face-masks made of non-woven textiles, including N95 Particulate Respirators).

Pakistan imported US\$ 433 million worth of HS 300490, US\$ 115 million worth of HS 901839 (oxygen delivery devices to supply oxygen from the device to the patient such as nasal prongs and nasal catheters), US\$ 111 million worth of HS 382200 (diagnostic reagents based on polymerase chain reaction [PCR] nucleic acid test). Furthermore, Pakistan imported US\$ 92 million worth of HS 854370 (ultra-violet irradiation equipment for disinfection purpose) and US\$ 88 million worth of HS 901890. Imports were comparatively more diversified than exports, with the top five products constituting less than 60 per cent of the total imports of the COVID-19-related medical products.

Figure 14. Trade in the COVID-19-related medical products by Pakistan at the HS 6-digit level



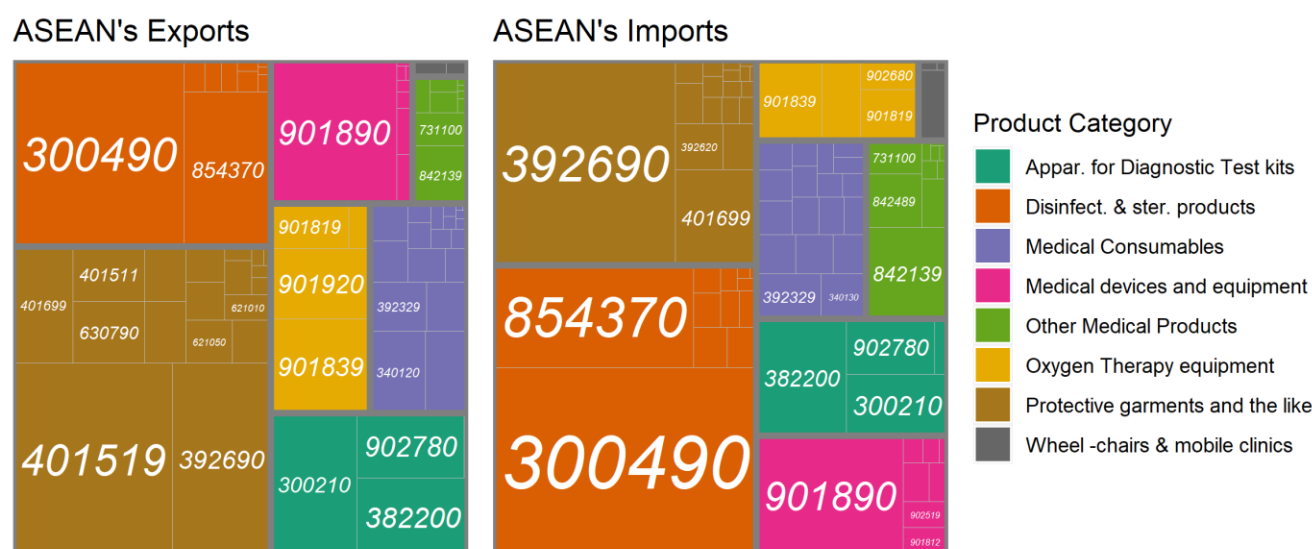
The numbers represent HS codes. Corresponding product labels are listed in Appendix A and in the text. The size of each rectangle is proportional to the share of product in total trade of COVID-19 related medical products.

¹² Although HS 901890 appears in more than one product category, it dominantly belongs to medical devices and equipment. Hence, it is labelled as medical devices and equipment for the purpose of this study. Some of the specific products labelled as HS 901890 include stethoscopes, Magill intubation forceps, Intubation kits, Medical suction pumps, Medical drills for vascular access and intubation kits.

Trade in the COVID-19-related medical products from ASEAN members is presented in **Error! Reference source not found.** The products accounting for the highest cumulative exports are HS 300490 worth US\$ 5.5 billion, HS 401519 (other rubber gloves) worth US\$ 5.3 billion, HS 392690 (plastic gloves) worth US\$ 3.3 billion and HS 901890 worth US\$ 3.2 billion. ASEAN countries with a more diversified export basket also reported exports worth US\$ 1 billion in products labelled as apparatus for diagnostic test kits and oxygen therapy equipment. ASEAN imported US\$ 7.7 billion worth of HS 300490, US\$ 5.8 billion worth of HS 392690, US\$ 3.2 billion worth of HS 854730 and US\$ 2.7 billion worth of HS 901890.

Singapore is by far the largest exporter of several the COVID-19-related medical products originating from the ASEAN region. It exported US\$ 4.7 billion worth of HS 300490 (hydrogen peroxide presented as a medicament) and US\$ 1.6 billion worth of HS 901890 (various types of medical devices and equipment) apart from more than US\$ 1 billion in products related to diagnostic kits and medical ventilators. Malaysia exported US\$ 4 billion worth of HS 401519 and Thailand exported US\$ 1 billion worth of HS 392690. On the other hand, Thailand and Viet Nam dominated the flow of imports into the ASEAN region of COVID-19-related medical products. Thailand reported US\$ 2 billion worth of imports in HS 854370, Viet Nam reported US\$ 1.8 billion in imports of HS 300490. Thailand and Viet Nam also reported US\$ 1.7 billion and US\$ 1.5 billion in imports of HS 392690, respectively, while Singapore reported imports worth US\$ 1.3 billion in HS 901890 (various types of medical devices and equipment).

Figure 15. Trade in COVID-19-related medical products by ASEAN members



Data Source: UN Comtrade (2020)

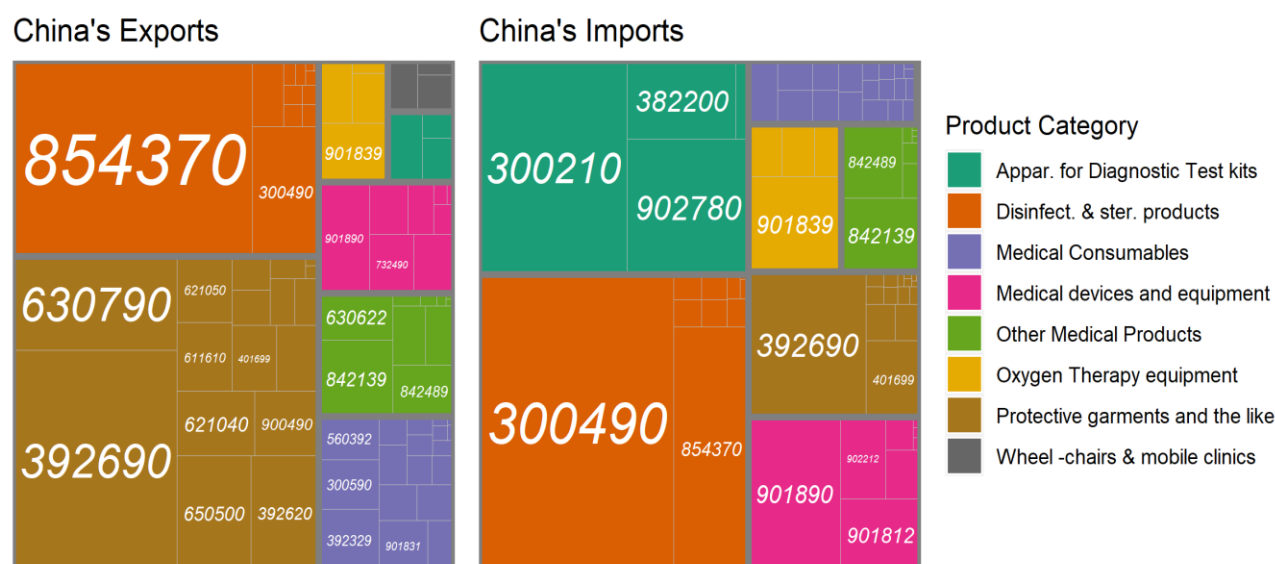
The numbers represent HS codes. Corresponding product labels are listed in Appendix A and in the text. The size of each rectangle is proportional to the share of product in total trade of COVID-19 related medical products.

The trade in the COVID-19-related medical products from China at the product level is presented in

Figure 16. China dominated trade from the Asian region in both directions. It exported US\$ 15.6 billion worth of HS 854370, US\$ 12 billion worth of HS 392690, US\$ 5 billion worth of HS 630790, US\$ 2.9 billion worth of HS 300490 and US\$ 2.8 billion worth of HS 650500 (disposable hairnets). On the other hand, China imported more than US\$ 12 billion worth of

HS 300490, US\$ 6.6 billion worth of HS 300210 (diagnostic reagents based on immunological reactions), US\$ 3.8 billion worth of HS 854370, US\$ 3.6 billion worth of HS 392690, US\$ 3.4 billion worth of HS 902780 and US\$ 2.9 billion worth of HS 901890.

Figure 16. Trade in the COVID-19-related medical products by China



Data Source: UN Comtrade (2020)

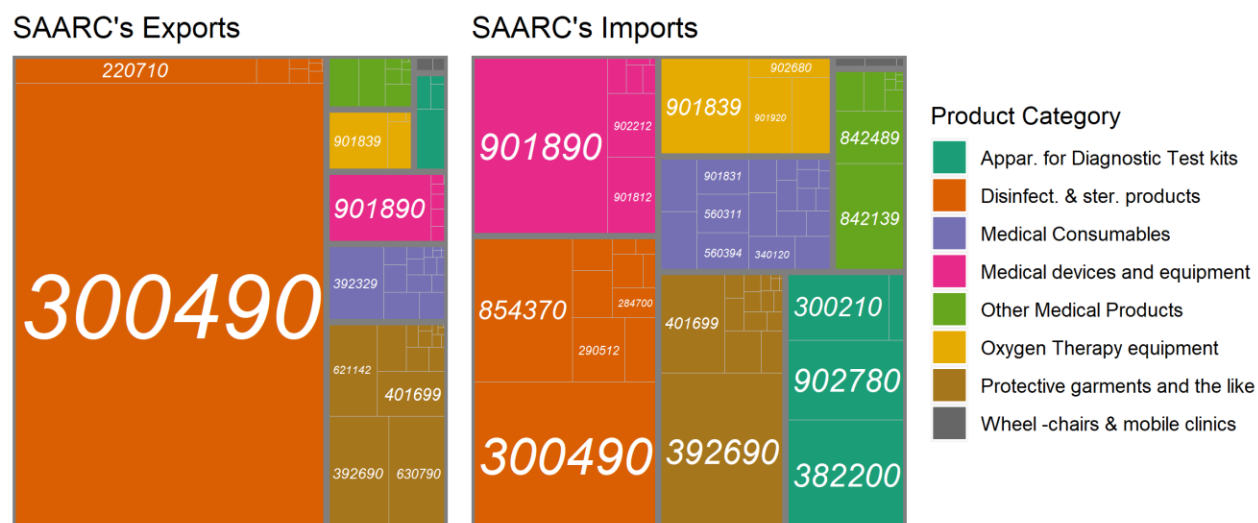
The numbers represent HS codes. Corresponding product labels are listed in Appendix A and in the text.

The size of each rectangle is proportional to the share of product in total trade of COVID-19 related medical products.

The trading of COVID-19-related medical products from SAARC countries is presented in **Error! Reference source not found..** The majority of the exports from the SAARC region is concentrated in disinfectants and sterilization products and in particular HS 220710 and HS 300490. SAARC countries exported US\$ 10.8 billion worth of HS 300490, US\$ 584 million worth of HS 901890, US\$ 541 million worth of HS 392690, US\$ 516 million worth of HS 630790 and US\$ 513 million worth of HS 220710. Pakistan dominated the exports of HS 901890 and HS 220710 with 62 per cent of the exports of the former and 83 per cent of the exports of the latter originating from the SAARC region.

SAARC countries imported US\$ 1.2 billion worth of HS 300490 and US\$ 1 billion worth of HS 901890. They also imported US\$ 872 million worth of HS 392690, US\$ 639 million worth of HS 854370 and US\$ 577 million worth of HS 382200. Although India, as the largest market in SAARC, is likely to report a significant share in total imports, the aforementioned products were also reported as prominent in the treemap for Pakistan's imports of COVID-19-related medical products.

Figure 17. Trade in the COVID-19-related medical products by SAARC countries



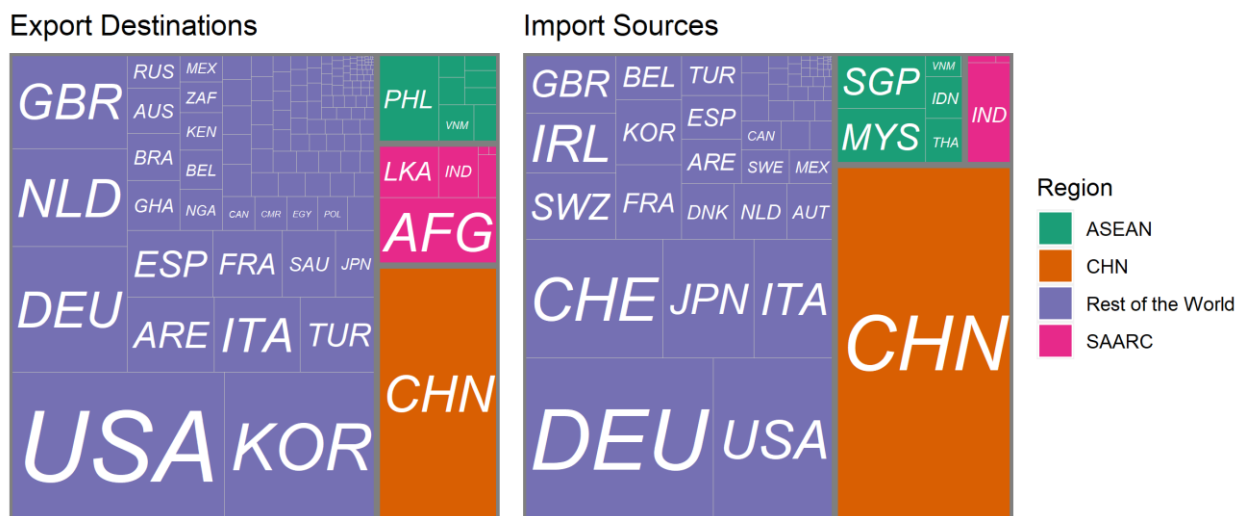
Data Source: UN Comtrade (2020)

The numbers represent HS codes. Corresponding product labels are listed in Appendix A and in the text.

The size of each rectangle is proportional to the share of product in total trade of COVID-19 related medical products.

The respective size of the export destination markets and the import origin sources for Pakistan's trade in the COVID-19-related medical products are presented in **Error! Reference source not found..** Pakistan exports were US\$ 155 million to the United States, followed by US\$ 152 million to China and US\$ 110 million to the Republic of Korea. The most prominent export destinations in ASEAN members were the Philippines (US\$ 27 million), followed by Viet Nam (US\$ 6.6 million). Pakistan exports amounted to US\$ 40 million to Afghanistan, US\$ 16 million to Sri Lanka and US\$ 10 million to India. Even though Pakistan has an FTA with Malaysia and a PTA with Indonesia, the value of the exports to those destinations were below US\$ 3 million. On the other hand, the largest source countries for the imports by Pakistan of COVID-19-related medical products were China (US\$ 394 million), followed by Germany (US\$ 192 million, the United States (US\$ 124 million) and Switzerland (US\$ 103 million). Pakistan imports amounted to US\$ 32 million from Malaysia, US\$ 31 million from Singapore, US\$ 11 million from Thailand and US\$ 10 million from Indonesia. Pakistan's imports from India and Sri Lanka were worth US\$ 31 million and US\$1.8 million, respectively. In essence, Pakistan's trade with ASEAN and SAARC countries is relatively low compared with its trade with Western countries.

Figure 18. Pakistan's export destinations and import sources for COVID-19-related medical products



Data Source: UN Comtrade (2020)

Trading partners are represented by their ISO 3166-1 alpha-3 codes.

The size of each rectangle is proportional to the share of country in Pakistan's trade of COVID-19 related medical products.

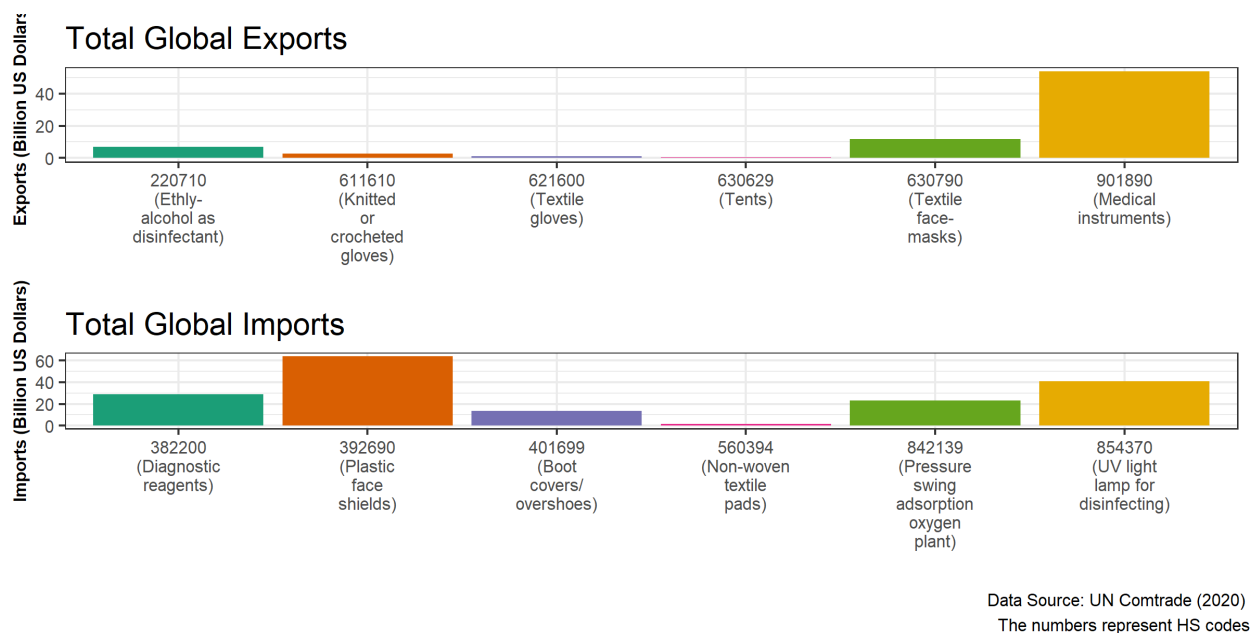
The above information helps to identify not only the key regional destination markets and origin sources for trade by Pakistan, but also the major products traded by Pakistan. The key products imported by Pakistan include HS 300490, HS 382200, HS 401699, HS 560394, HS 842139 and HS 854370.¹³ And, the key products exported from Pakistan include HS 220710, HS 300490, HS 611610, HS 621600, HS 630629, HS 630790 and HS 901890.

The total global exports and imports of selected COVID-19-related medical products are presented in **Error! Reference source not found.**¹⁴ HS 901890 recorded US\$ 53.8 billion in global exports, HS 630790 recorded US\$ 11.7 billion and HS 220710 recorded US\$ 6.8 billion. The total global exports of the other COVID-19-related medical products were less than US\$5 billion. The total global exports of HS 630629 were only worth US\$ 332 million. The total global imports of HS 392690 were worth US\$63.8 billion, while HS 854370 recorded US\$ 40.9 billion and HS 382200 recorded US\$ 29.1 billion. The global imports of the products listed were worth less than US\$ 25 billion. The global imports of HS 560394 were worth US\$ 1.7 billion.

¹³ HS 300490 was the most prominently traded product, with tremendous potential for two-way trade. On the other hand, a cursory look at the tree maps suggests that products labelled as HS 9018 belonging to the oxygen therapy product category are less frequently traded by the region's countries. Furthermore, HS 901890 accounts for a significant share of Pakistan's exports. This suggests a greater emphasis on the export trends of products belonging to HS 9018.

¹⁴ HS 300490 reported more than US\$ 277 billion in trade in 2018. In order to represent the level of trade of other products more clearly, HS 300490 is not included in the figures. It was ranked within the top five most commonly traded products at the HS six-digit level.

Figure 19. Total global exports and imports of COVID-19-related medical products

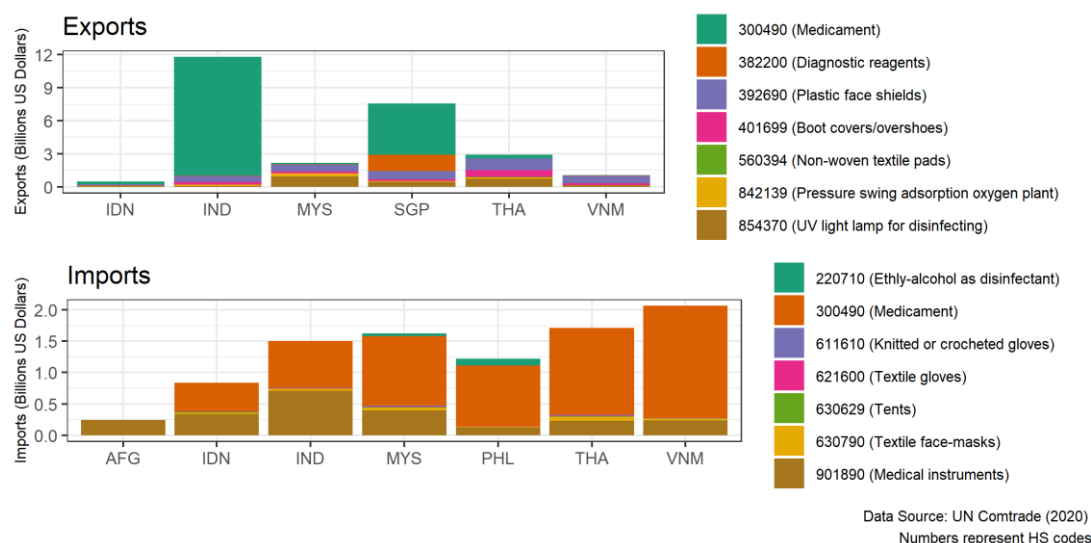


The total exports and imports by selected ASEAN and SAARC countries of the aforementioned products are presented in

Figure 20. It can be seen that HS 300490 dominates exports, with a substantive amount flowing from India and Singapore. India is by far the largest exporter in the Asia-Pacific region, followed by Singapore. Furthermore, India and Singapore were the only non-OECD countries ranked within the top 15 exporters of HS 300490 in 2018. Singapore was the fifth largest exporter of HS 382200 in 2018. Thailand exported more than US\$ 1 billion worth of HS 392690, while Malaysia exported more than US\$ 920 million worth of HS 854370. On the other hand, there was a limited flow of exports of the listed products from Viet Nam and Indonesia.

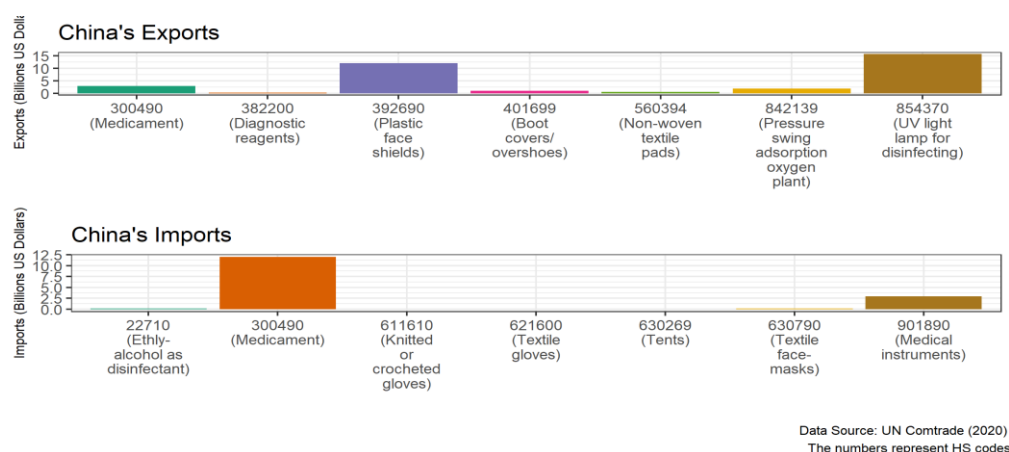
In terms of world imports flowing into the selected countries, they were concentrated in HS 300490 and HS 901890. Although Pakistan recorded limited exports of HS 300490, HS 901890 constituted a major share of the exports of COVID-19-related medical products. India's imports of HS 901890 were worth US\$ 707 million, Malaysia imports amounted to US\$ 400 million and Indonesia's imports totalled US\$337 million. There is potential in the exports of medical devices and equipment from Pakistan to other countries in the Asia-Pacific region. Pakistan is one of the world's largest exporters of HS 220710, while the import demand of other countries within the region is relatively low. The Philippines and Malaysia were the most prominent importers of HS 220710, worth US\$ 110 million and US\$ 47 million worth of total imports, respectively. Thailand, India, Viet Nam and Indonesia each imported less than US\$ 6 millions of HS 220710. Furthermore, Thailand and Malaysia imported US\$ 65 million and US\$ 47 million worth of HS 630790. Last, Pakistan is ranked as the world's second-largest exporter of HS 630629. However, Malaysia and Thailand, the largest importers in the list of selected trading partners, both reported an import demand of approximately US\$ 5 million each.

Figure 20. World exports and imports of selected regional trading partners with Pakistan in major products



The trading pattern of China is presented separately in **Error! Reference source not found.**¹⁵ The most prominent exports of the selected products from China were HS 854370 and HS 392690, with US\$ 15.6 billion and US\$ 12 billion worth of exports, respectively. China is also the largest exporter globally of the aforementioned products, accounting for US\$ 2.9 billion worth of HS 300490 and US\$ 1.9 billion worth of HS 842139. On the other hand, China imported more than US\$12 billion worth of HS 300490 and more than US\$ 2.9 billion of HS 901890. Imports by China of other products were significantly lower. For example, China only imported US\$ 159 million worth of HS 220710; interestingly, a significant proportion originated from Pakistan.

Figure 21. World exports and imports by China in major products



¹⁵ China exported more than US\$ 30 billion worth of selected products. If China were to be included in the graphs for the other countries, its magnitude would dwarf the results for those countries, making analysis more difficult. Therefore, in order to improve understandability, the trade by China is presented separately.

The exports and imports of major products by Pakistan from selected trading partners are presented in **Error! Reference source not found.** and **Error! Reference source not found.**, respectively. Pakistan exported US\$ 128 million worth of HS 220710 to China, US\$ 23 million to the Philippines and US\$ 5.4 million to Sri Lanka.¹⁶ Pakistan exported US\$ 21.6 million worth of HS 901890 to China, US\$ 9.2 million to India and US\$ 2.3 million to the Philippines. Pakistan also exported US\$ 22.4 million worth of HS 300490 and US\$ 12 million worth of HS 630629 to Afghanistan and US\$ 10 million worth of HS 300490 to Sri Lanka. Pakistan has an FTA with China, Sri Lanka and Malaysia. Although Pakistan is an important importer of HS 300490 and HS 220710 from Sri Lanka and HS 220710 from China, trade with Malaysia in the COVID-19-related medical products is highly limited. Its exports to Malaysia were below US\$ 1 million for all the listed products, which is much below the potential, given that Malaysia imports US\$ 1.5 billion worth of the listed products. Malaysia imported a total of US\$ 257 million from Pakistan in 2018, which is approximately 0.12 per cent of Malaysia's US\$ 205 billion imports from the world. The Pakistan Business Council, in its assessment of the FTA between Pakistan and Malaysia, states that either Pakistan has failed to receive concessions from Malaysia on its exports, or even when it has received concessions its competitors have also enjoyed preferential treatment. This is further analysed in the section on import tariffs below.

China dominated the imports by Pakistan, with a starkly diversified basket range. Pakistan imported US\$ 85 million worth of HS 854370, US\$ 35 million worth of HS 842139, US\$ 29 million worth of HS 560394 and US\$ 22 million worth of HS 392690 from China. India was the largest source of imports for HS 300490 worth US\$ 18.9 million among the SAARC and ASEAN countries, followed by US\$ 11.8 million from China and US\$ 7.8 million from Singapore. Trade with the other four countries, i.e., Indonesia, Malaysia, Thailand and Viet Nam, was highly limited. Further, Thailand exported more than US\$3 billion in the listed products but had minimal trade with Pakistan.

¹⁶ Exports of HS 220710 by Pakistan were volatile between 2010 and 2019, when they have fluctuated between US\$ 82 million in 2012 and US\$ 428 million in 2018. Furthermore, the highest exports to China were reported in 2018, increasing from US\$ 12.4 million in 2017 and then decreasing to US\$ 24 million in 2019. The peak in exports in 2018 thus captures the potential for exports of HS 220710. It was also the second-highest in terms of export value from Pakistan to China across all products defined at the HS six-digit level.

Figure 22. Exports of major products from Pakistan to selected destinations

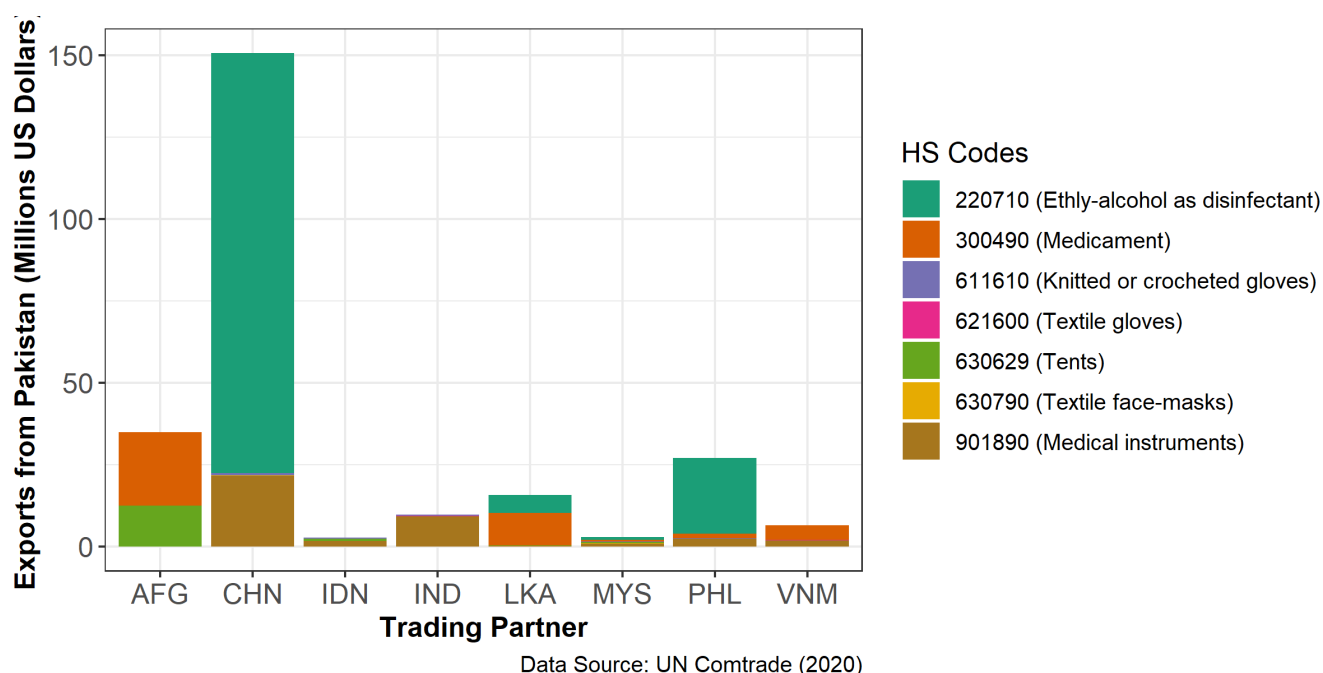
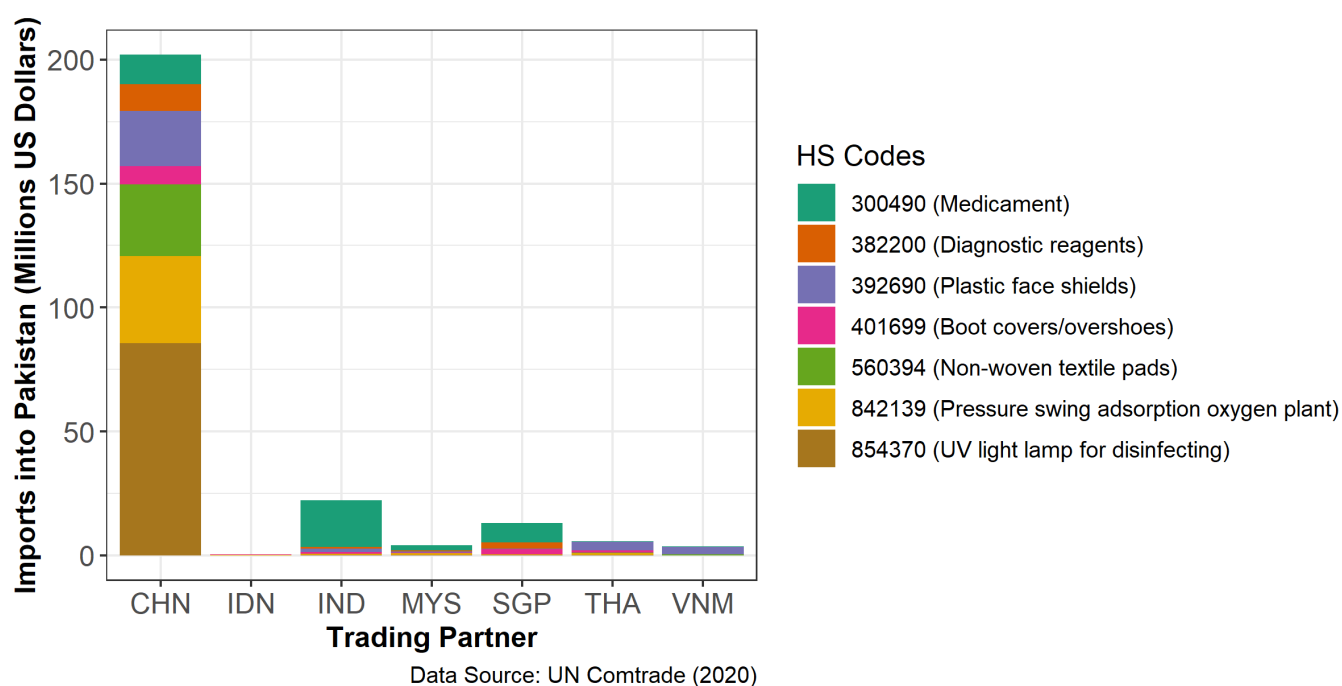


Figure 23. Imports of major products by Pakistan from selected sources

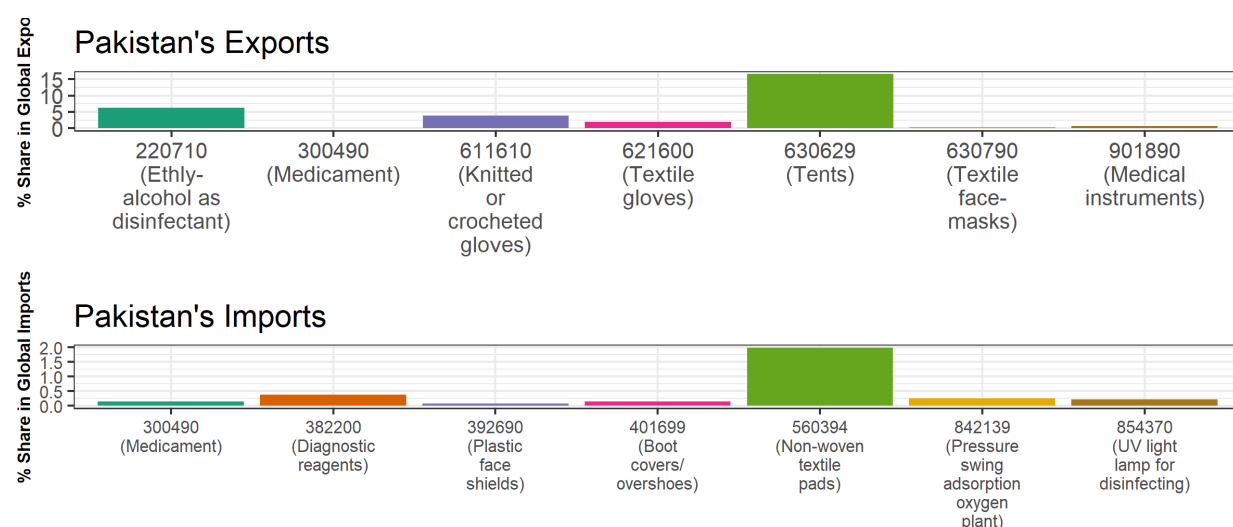


The share of Pakistan's exports and imports as a percentage of global exports and imports, respectively, is presented in **Error! Reference source not found..** The share of exports from Pakistan for HS 630629, HS 220710, HS 611610 and HS 621600 was 16.6 per cent, 6.3 per cent, 3.8 per cent and 1.9 per cent, respectively, for global exports. Pakistan ranks as the second-highest exporter of HS 630629 (tents) in the world, following China. However, its share of HS 901890 (various types of medical devices and equipment) and HS 630790 was less than 1 per cent. It is important to note that total global exports of HS 630629 were worth

merely US\$ 332 million. On the other hand, the share of exports from Pakistan in products that accounted for significantly greater values of global trade is much lower.¹⁷

The share of imports by Pakistan of HS 560394 was 2 per cent of its global trade. The share of HS 382200 was 0.38 per cent. The share of other products was less than 0.3 per cent. Even though these products recorded relatively higher import values compared with other COVID-19-related medical products, their total imports by Pakistan as a share of global trade is low.

Figure 24. Pakistan's share of global trade in major products



Data Source: UN Comtrade (2020)
Numbers represent HS codes
Percentage share in global trade: Author's own calculation

C. Pakistan's relative position in terms of exports and unit value

The world ranking of exports and the unit value of exports of selected countries are presented in **Error! Reference source not found.** The unit value is calculated by dividing the total value of trade in a particular category by the quantity traded. The lower the unit value, the higher the ranking in terms of the unit value of exports and the more competitive in terms of price. In other words, a product ranked as first in terms of its unit value reports the lowest unit value. Lower export unit value signals a lower cost of production, while higher export unit value will suggest higher prices of a product. On the other hand, the unit value may be indicative of the type of technology and the inputs embedded within a product. The seminal study by Schott (2004) found large systematic differences in import unit values. Unit values not only tend to be lower for varieties of a product originating from labour-abundant countries, they also tend to be positively correlated with the capital intensity of the techniques employed to produce the goods. Theoretically, the relative abundance of the inputs available in a country and the relative intensities with which they are incorporated into the production of a particular good, given the level of technology, will influence the relative unit value of

¹⁷ For example, the export totals for HS 300490 and HS 901890 were US\$ 277 billion and US\$ 54.6 billion, respectively. Pakistan's share of total exports for the former was 0.03 per cent and, for the latter, it was 0.7 per cent. A total of 44 per cent of Pakistan's HS 300490 exports were to Afghanistan and Sri Lanka.

exports. For example, industry characteristics combined with firm-level characteristics, and the importance of profit margins, can influence unit values. Firms can either squeeze or increase their margins, depending on the sensitivity of price to profit margins, to maintain the unit value of exports. Firms producing with greater efficiency may have room to manoeuvre their profit margins. Melitz and Ottaviano (2008) suggested that firms may find it optimal to vary prices across destinations and absorb differences in costs across markets. Further, Bastos and Silva (2010) suggested that firms may increase the unit value of exports, given the income levels of the importing country. The positioning of a country in terms of its export unit value given the level of its exports will help to explain the price competitiveness as it generates greater export value.¹⁸ For simplicity and the purpose of this study, the rankings of the unit value of exports and the total value of exports for each product category are collaborated into a single graph.

The BACI dataset is particularly designed to allow the comparisons of unit values of exports across different countries. The BACI dataset is a useful complement to United Nations Comtrade as it not only allows for international comparison of data but provides comparable quantities. Unit values are frequently used as proxies for prices. Among others, Amiti and others (2019) are a recent study that incorporates the use of unit values.

Exporters of a particular product within one country may take advantage of economies of scale and price differentiation, while in another country they may focus on the level of its sophistication or quality differentiation. This will place them in different quadrants of a figure representing ranking for unit value on one axis and ranking for export value on the other axis. A country ranking high on the unit value of exports (where higher-ranked firms have lower unit values) and high on the total value of exports is likely to be exported at a lower price, but simultaneously generating significant demand for its products. On the other hand, a country ranking low on export unit value and total exports is obtaining a higher price from its foreign consumers relative to a country ranking high on export unit value but generating the same amount of total exports. Countries reporting low values of export sales may not have sufficient resources available to produce a particular product.

Pakistan is ranked fifth and sixth in terms of the unit value of apparatus for diagnostic test kits, and disinfectants and sterilization products out of 195 and 200 exporters, respectively. Although the unit value is relatively high for the apparatus for diagnostic test kits, Pakistan is unable to export at a significant value. Pakistan is either unlikely to have the capacity to export diagnostic out of 203 exporters test kits or export poor quality kits that have low demand in export markets. Pakistan ranks forty-ninth in terms of unit value for medical devices and equipment. However, it ranks high in terms of unit value for protective garments and related products, and medical consumables.¹⁹

¹⁸ Policymakers promoting exports of a particular product should be concerned with the unit value when the total exports of a product are lower than that of its regional counterparts with similar characteristics. In simpler words, unit values are likely to be a constraint for export growth when exports of a particular product are relatively low, as inefficiencies in production may not allow producers to increase their export value.

¹⁹ Pakistan's exports are concentrated in HS 611610, HS 621600 and HS 621142, which recorded higher export values relative to other regional counterparts producing goods with lower unit values. The same can be said for medical consumables, as Pakistan's exports are focused on products that record significantly higher export unit value. This lowers the export competitiveness of Pakistan, which is determined by the unit value.

On the other hand, Pakistan performs relatively well in terms of the value of exports of disinfectants and sterilization products, medical devices and equipment as well as protective garments and related products. It is the forty-second-largest exporter for the first group and thirty-sixth-largest for the latter two. India ranks as the eleventh-largest exporter for disinfectants and sterilization products, and between 21 and 29 for exports of products belonging to all the other product categories. Interestingly, the unit value of disinfectants and sterilization products is relatively higher for India compared with other countries, primarily due to being driven by the high unit values recorded for HS 300490. In comparison to HS 300490, the HS 220710 category – Pakistan’s largest export in the category of COVID-19-related medical products – has one of the lowest unit values for exports in this product category, giving Pakistan its reported edge in terms of unit value. This suggests that different products within the same product category will report different unit values, based on the cost of inputs and the technology incorporated for their production. Intensive use of labour may not necessarily give a country an advantage in the production of a particular product.

China, as the largest exporter in the world, also dominates global trade in COVID-19-related medical products. China ranks within the top five largest exporters of all medical product categories, except for apparatus for diagnostic test kits, for which it ranks as sixteenth-largest. However, the unit value of exports of products originating from China is relatively high. Even as the largest exporter of medical consumables, including protective garments and related products, China ranks at 119 in terms of its unit value for the former and 86 for the latter. For example, although China dominates the exports of HS 392690 (plastic face shields), several other countries, such as Pakistan, Malaysia and India, are exporting it at a lower unit value than China. The same can be said for HS 300590 (wadding, gauze, bandages, cotton sticks and similar articles) and HS 392329 (plastic hazardous waste disposal bags) as various other countries may export at lower unit value but not necessarily generate greater exports. Similar analysis of other product categories can reveal the same pattern for the other goods exported from China.

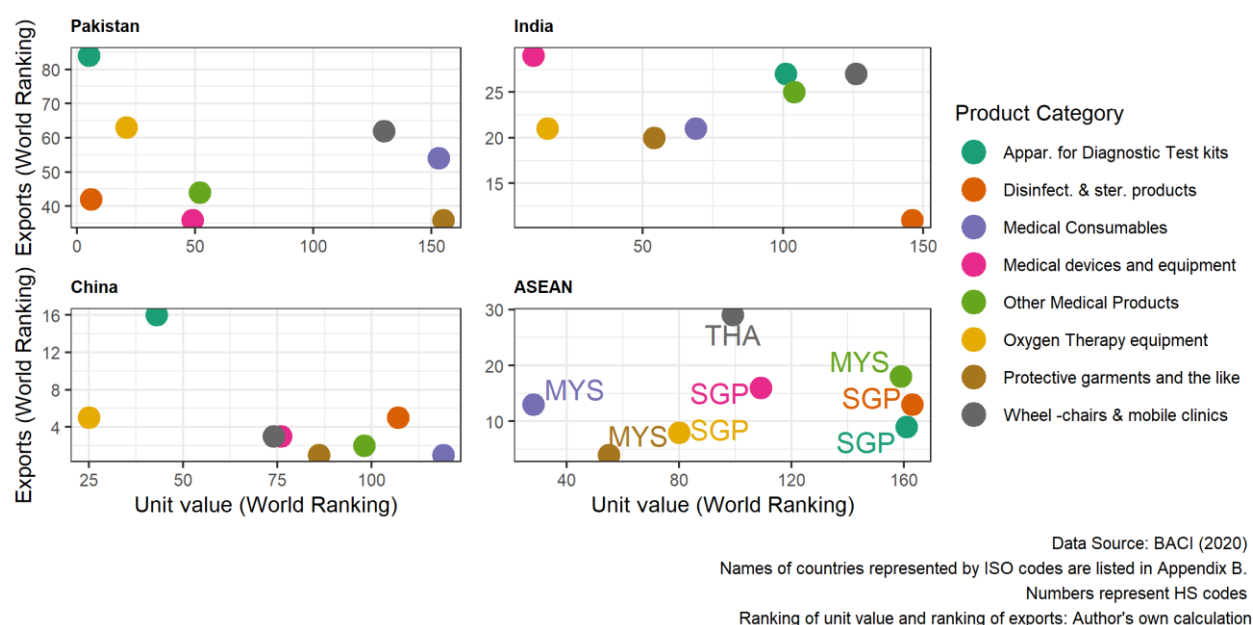
The ASEAN countries that dominate the trade of the COVID-19-related medical products are Singapore, Malaysia and Thailand. The largest exporters within the ASEAN region are listed for each product category together with their ranking in terms of export unit value. Singapore ranks as the ninth-largest exporter in the world for apparatus for diagnostic test kits and the eighth-largest for oxygen therapy equipment. Singapore ranks as the thirteenth-largest for disinfectants and sterilization products, and sixteenth-largest for medical devices and equipment. Furthermore, Malaysia is the fourth-largest exporter of protective garments and related products, and thirteenth-largest for medical consumables. Thailand is the twenty-ninth-largest exporter of wheelchairs and mobile clinics. Singapore reports higher unit values for the product categories it exports frequently, suggesting its focus is on quality differentiation rather than on price competition. Baldwin and Ito (2011) stated that competition between products originating from developed and developing countries may vary based on how much price and quality matter to the consumers. Therefore, consumers may care about the products with certain qualities rather than their prices. This is evident with certain countries reporting a low ranking in terms of export unit value but a high ranking in

terms of export sales.²⁰ Singapore's largest exports in apparatus for diagnostic test kits is HS 300210, for which it reports one of the highest unit values in the world. The same can be said for HS 300490.

On the other hand, Malaysia is relatively competitive in exports of HS 401519 (other rubber gloves), for which it reports the highest export value for protective garments and related products, in terms of its unit value. The same can be said for medical consumables (soap), under HS 340120, for which Malaysia reports one of the lowest export unit values and the highest export values in the world.

It is evident that Pakistan has failed to take advantage of the FTA with Malaysia. Exports of both the aforementioned items from Malaysia to Pakistan were negligible compared to world exports from Malaysia.

Figure 25. World ranking in unit value of exports by selected countries



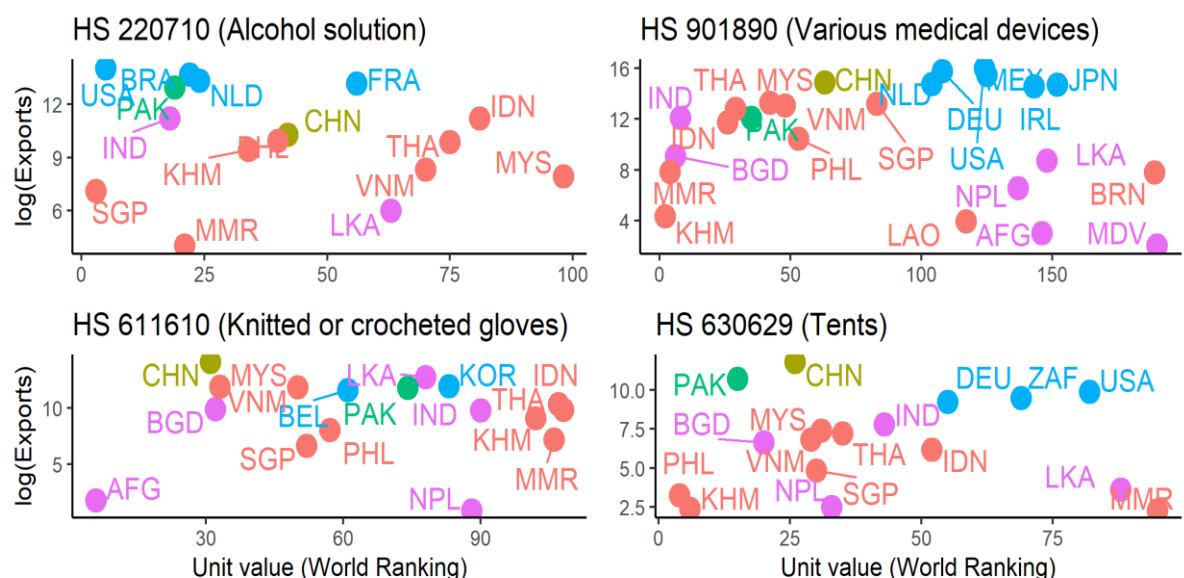
Total exports of products and their export unit value ranking for COVID-19-related medical products frequently exported by Pakistan is presented in **Error! Reference source not found.** A cursory look at the four plots in the figure for products frequently exported by Pakistan suggests that the country not only exports more than several of its counterparts, but also reports lower export unit value. Pakistan was the fifth-largest exporter of HS 220710 and the second-largest exporter of HS 630629.²¹ However, Pakistan faces relatively greater competition in terms of export value and unit value for exports of HS 901890 (various types of medical devices and equipment) and HS 611610. Although Pakistan is a large exporter,

²⁰ This requires further analysis on the characteristics of the trading partners at the country-product level, which is not within the scope of this study.

²¹ The total global export value of HS 630629 is US\$ 332 million. Although Pakistan dominates HS 630629 trade, the potential is likely to be limited. The other products report significantly higher values of global trade, increasing the potential levels.

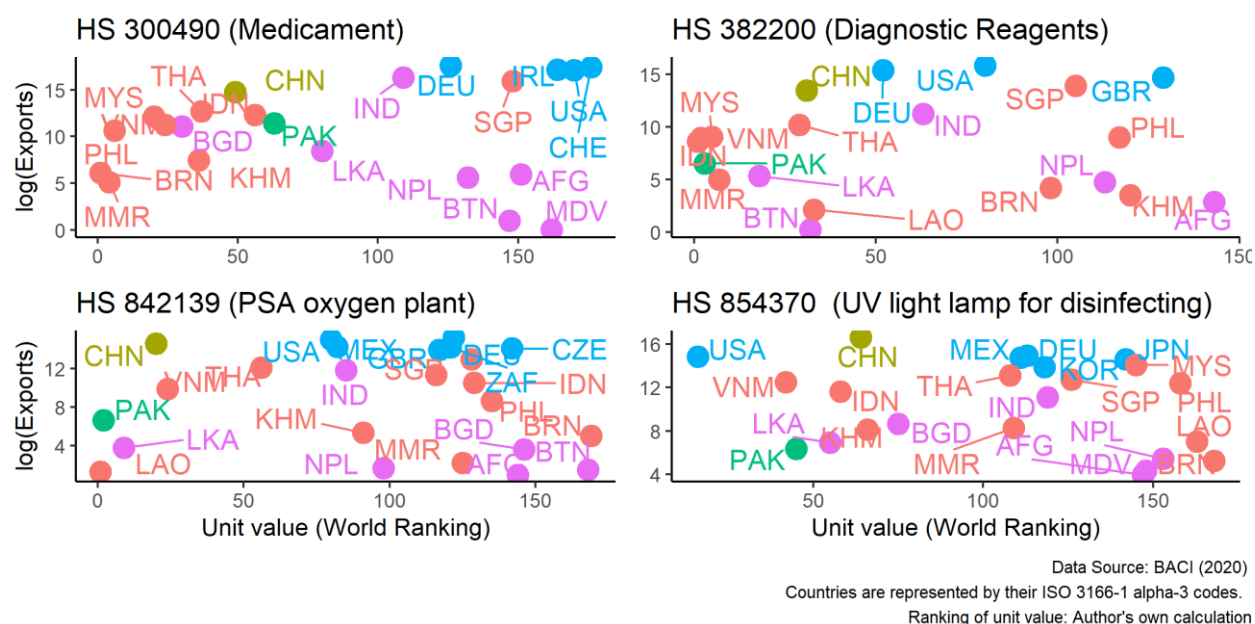
other regional countries are reporting better competitiveness in terms of export sales and export unit value, such as China, Sri Lanka and Viet Nam for HS 611610, and China and Malaysia for HS 901890. On the other hand, the total exports of products presented in **Error! Reference source not found.** are relatively lower compared with the products that Pakistan frequently exports. Although Pakistan does report lower export unit value than several of its counterparts for all products except HS 300490, it has not been able to capture a large market share. Pakistan's competitiveness in terms of lower unit values fails to translate into higher exports. It is also likely that Pakistan fails to produce enough to cater to its domestic market, hence reporting higher import demand. Pakistan's exports of HS 300490 are mainly to Afghanistan and Sri Lanka, both of which are markets that not only fare poorly in terms of their exports but also report higher export unit values than Pakistan. The proximity of Afghanistan to Pakistan and an FTA with Sri Lanka may contribute to the exports of HS 300490 from Pakistan to Afghanistan and Sri Lanka.

Figure 26. Total exports and ranking of export unit value for COVID-19-related medical products frequently exported by Pakistan



Data Source: BACI (2020)
Countries are represented by their ISO 3166-1 alpha-3 codes.
Ranking of unit value: Author's own calculation

Figure 27. Total exports and ranking of export unit value for COVID-19-related medical products frequently imported by Pakistan

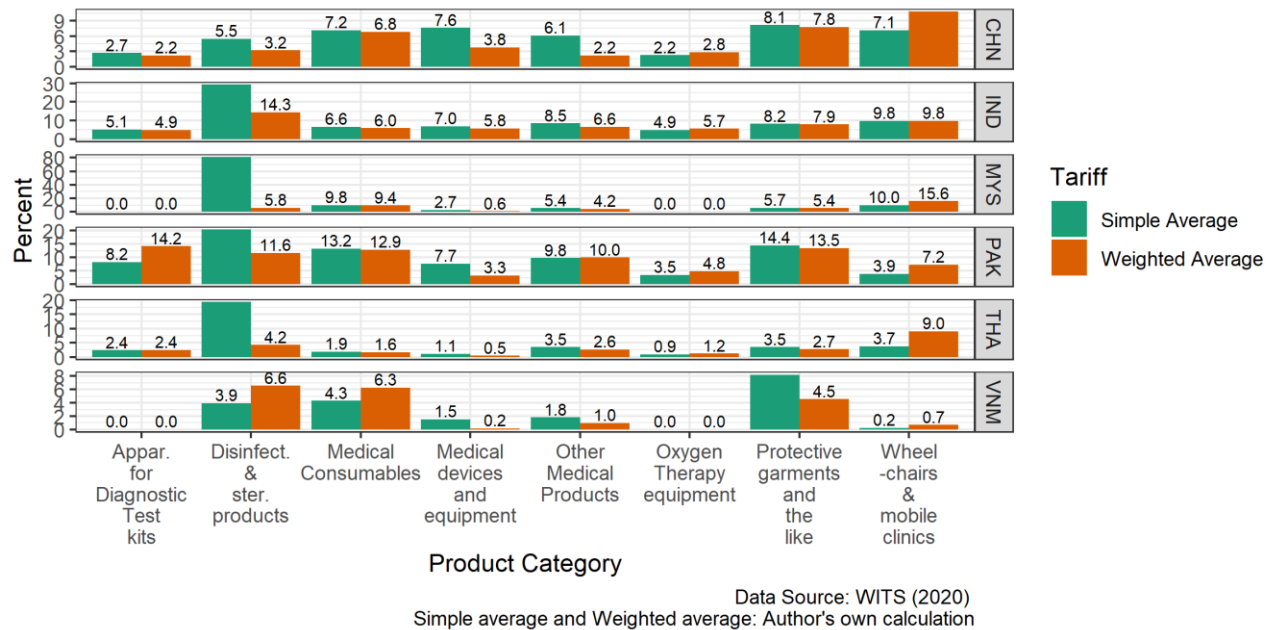


D. Import tariffs

The import tariffs, calculated as a simple and trade-weighted average, of selected countries are presented in **Error! Reference source not found.** All countries impose relatively higher rates on the imports of disinfectants and sterilization products, which is the most commonly exported product category from Pakistan. Pakistan has an FTA with China, Sri Lanka and Malaysia and a preferential trade agreement with Indonesia, with concessions on a limited number of products. The purpose of the following analysis is to highlight the differences in tariffs across various countries that are imposed by Pakistan and which Pakistan faces for its trade in COVID-19-related medical products. A deeper analysis on trade agreements is beyond the scope of this study.

Malaysia reported a simple average of 81 per cent, India reported a simple average of 29 per cent, and Pakistan and Thailand reported a simple average of 20 per cent. However, the weighted average is lower in Malaysia and Thailand as it falls below 6 per cent, suggesting that tariffs are protecting specific products within this product category. Countries such as China and Viet Nam impose higher tariffs on the imports of protective garments and related products, with simple averages of approximately 8 per cent. It is important to note that Pakistan and India both impose tariffs across all product categories, while Malaysia and Viet Nam impose zero tariff rates on imports of apparatus for diagnostic test kits and oxygen therapy equipment. Furthermore, Pakistan, Malaysia and China impose higher tariffs on medical consumables and medical devices than their counterparts, at 13.2 per cent, 9.75 per cent and 7.2 per cent, respectively. The simple average of tariffs on medical consumables imported by Thailand and Viet Nam are below 5 per cent. In essence, Pakistan imposes higher import tariffs on the imports of several product categories of COVID-19-related medical products. Consequently, Pakistan is likely to face tariff restrictions by its trading partners on products which it frequently exports.

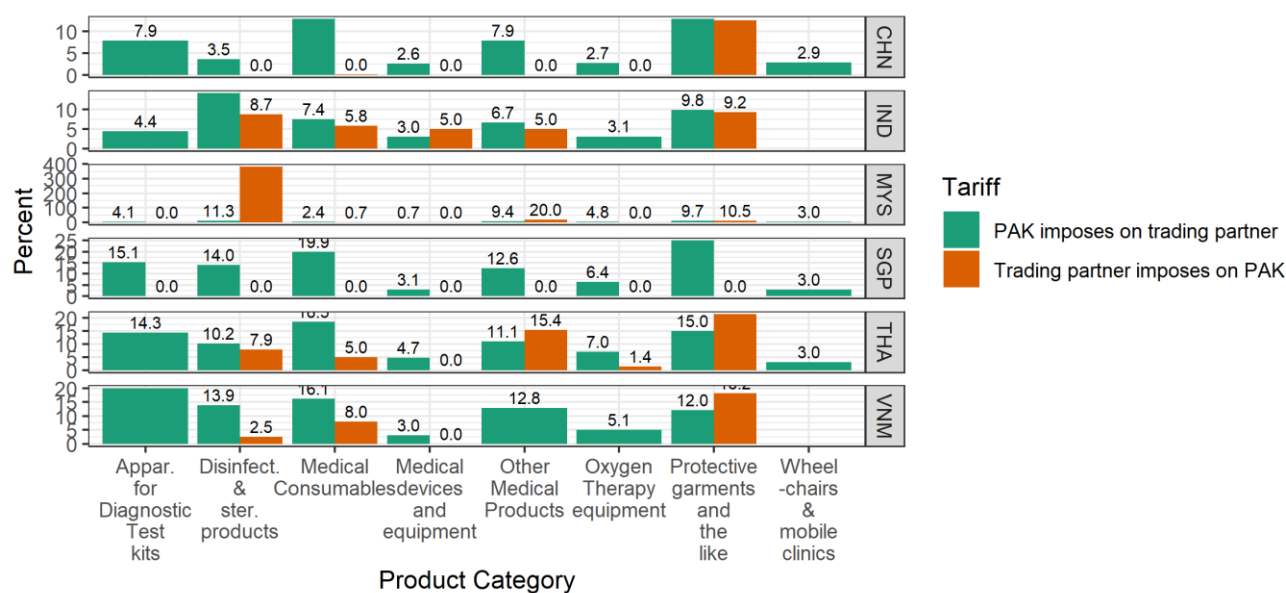
Figure 28. Import tariffs of selected countries for categories of COVID-19-related medical products



Trade-weighted average tariffs on imports from Pakistan by trading partners and vice versa are presented in **Error! Reference source not found.** China and Malaysia have negotiated an FTA with Pakistan, while India maintains a sensitive list of imports from Pakistan that leads to higher tariffs on imports of the products maintained on the list. Some of the products frequently exported by Pakistan on the sensitive list include HS 220710, HS 611610 and HS 621600. China offers zero duty tariff rates for Pakistani products in all categories except protective garments and related products. On the other hand, Pakistan imposes positive tariff rates on the imports of Chinese products. A detailed analysis of the tariff rates imposed on trade between Pakistan and China is provided below. India restricts trade by imposing tariffs on the bi-directional trade flow with Pakistan.

Although Malaysia provides duty-free concessions across several product categories, it imposes relatively higher levels of tariffs on imports of disinfectants and sterilization products, other medical products, and protective garments and related products. The tariff on disinfectants and sterilization products is 383 per cent. On the other hand, the tariffs on the imports of Malaysian products by Pakistan (disinfectants and sterilization products) are significantly lower. Singapore provides tariff-free concessions for Pakistani goods in all product categories, while Pakistan maintains tariffs exceeding 12 per cent for several product categories. According to the World Integrated Trade Solution (WITS), Singapore has one of the lowest average weighted tariff rates in the Asia-Pacific region. Again, Pakistan imposes higher tariffs on its imports from Thailand than Thailand does on imports from Pakistan, except in the case of protective garments and related products. A similar trend can be seen for Viet Nam, with zero duty tariff concessions by Viet Nam on the imports of medical devices and equipment from Pakistan.

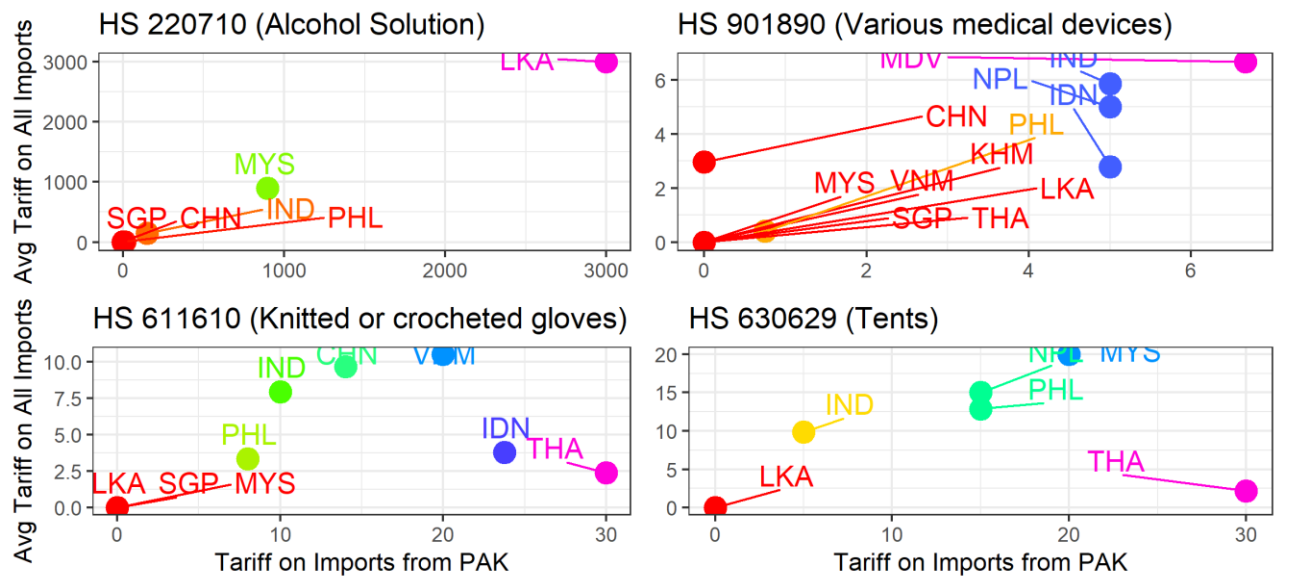
Figure 29. Trade-weighted average import tariffs on trade by Pakistan for categories of COVID-19-related medical products



Data Source: WITS (2020)
 Trade-weighted average tariff rates: Author's own calculations

The import tariffs imposed by trading partners on imports from Pakistan (x-axis) and the average across all exporters (y-axis) on selected products frequently exported by Pakistan are presented in **Error! Reference source not found.** The tariff rates are extracted from the WITS data set. Considering imports of HS 220710, Sri Lanka and Malaysia impose significantly high tariff rates, 3,000 per cent and 898 per cent, respectively. On the other hand, India imposes lower rates at 150 per cent, the Philippines at 10 per cent, while China and Singapore provide duty-free concession. The tariff rates imposed on HS 901890 (various types of medical devices and equipment) are significantly lower. It is important to note that China provides duty-free access for Pakistan while reporting an average of 2.96 per cent tariff rate on all trading partners. Tariff rates on HS 611610 are more dispersed. Imports from Pakistan by Thailand, Indonesia, Viet Nam, China, India and the Philippines face higher tariff rates than the average reported for all trading partners. On the other hand, Sri Lanka, Malaysia and Singapore provide duty-free access for Pakistan imports as well as all other trading partners. Furthermore, Pakistan faces higher tariff rates on its exports of HS 630629 to ASEAN members, particularly Thailand and the Philippines as they impose a higher tariff on imports from Pakistan than they do on average to all countries. Although Malaysia has an FTA with Pakistan it does not provide any concession on this particular product. On the other hand, Pakistan receives a concessionary rate from India and a zero tariff rate from Sri Lanka. There is room to negotiate lower tariffs with several ASEAN members, such as Thailand, Indonesia and Viet Nam. However, Pakistan has to develop the capacity to take advantage of that opportunity and export a larger volume of COVID-19-related medical products.

Figure 30. Import tariffs imposed by trading partners on selected products

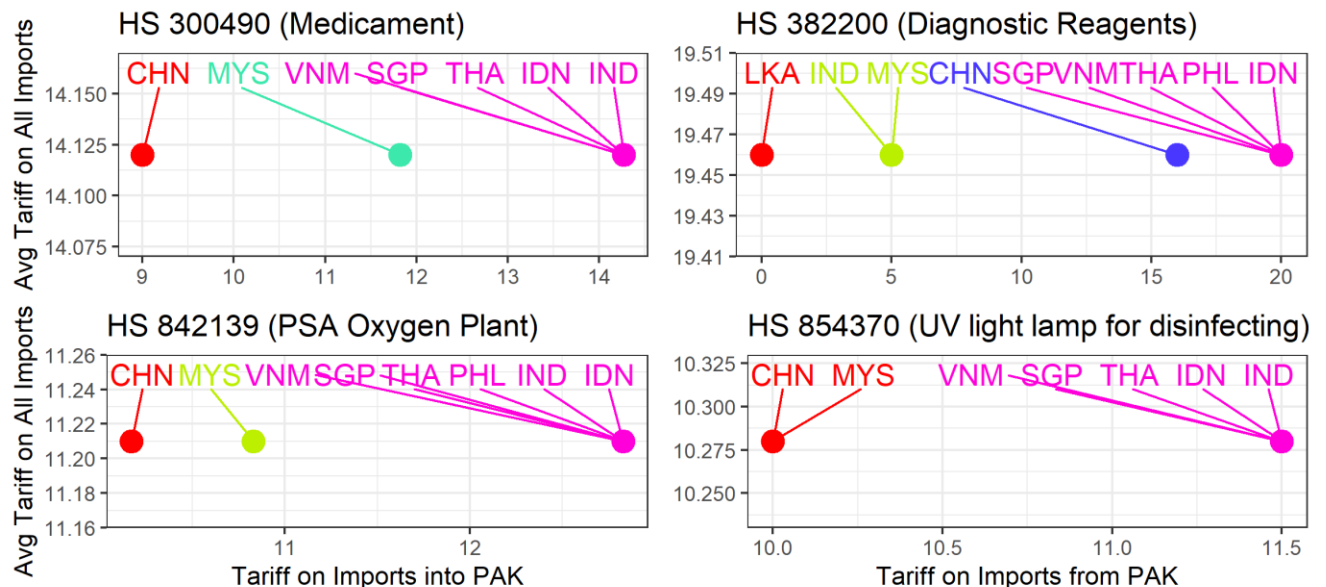


Data Source: WITS (2020)

Numbers represent HS codes. Names of countries represented by ISO codes are listed in Appendix B

Import tariffs imposed by Pakistan on specified trading partners (x-axis) and the average across all trading partners (y-axis) are presented in **Error! Reference source not found..** China, Malaysia and Sri Lanka receive tariff concessions compared to other trading partners in the listed products, as Pakistan has an FTA with the aforementioned countries. The tariffs on imports from those countries are lower than the tariffs imposed on imports from all trading partners. India also receives concessions on HS 382200.

Figure 31. Import tariffs imposed by Pakistan on imports of selected products



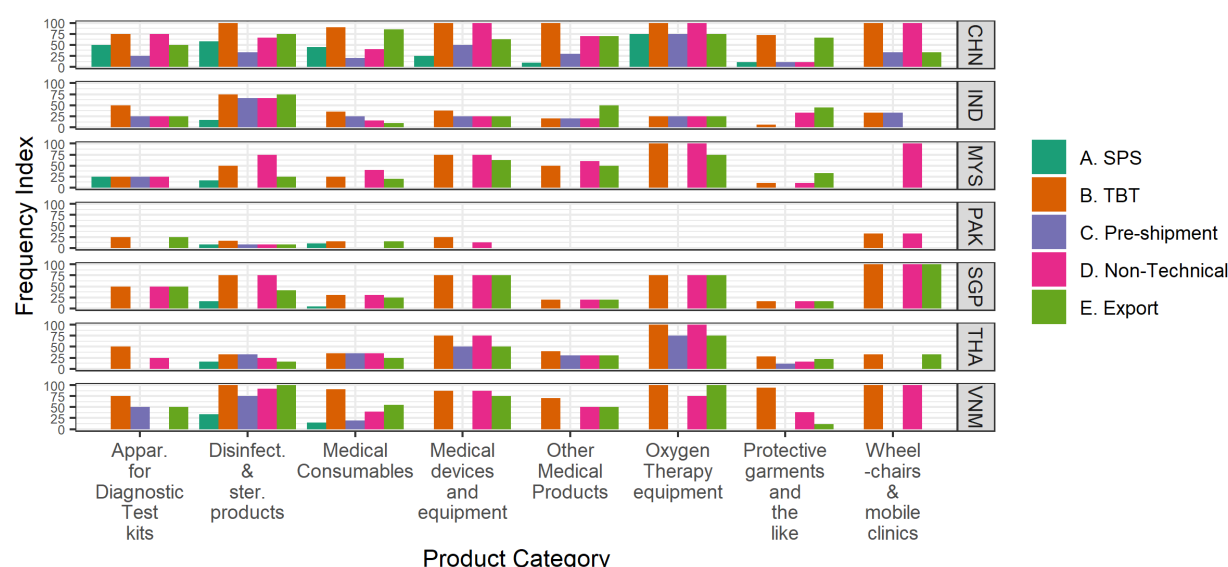
Data Source: WITS (2020)

Numbers represent HS codes. Names of countries represented by ISO codes are listed in Appendix B

E. Non-tariff measures

The frequency index of NON-TARIFF MEASURES (NTMS) imposed by China, India, Malaysia, Pakistan, Singapore, Thailand and Viet Nam on product categories of COVID-19-related medical products are presented in **Error! Reference source not found.**²² The NTMs include technical measures, i.e., sanitary and phytosanitary measures (SPS), technical barriers to trade (TBTs) and pre-shipment inspection as well as non-technical measures and export-related NTMs. Pakistan does not impose NTMs on imports of the COVID-19-related medical products to the extent observed for regional counterparts, as shown in **Error! Reference source not found.** On the other hand, China imposes the most stringent measures, by adopting various NTMs. The maximum frequency for NTMs imposed by Pakistan is 33 per cent. Although different types of NTMs are imposed on imports of disinfectants and sterilization products, the frequency is still the lowest. Although Pakistan imposes high tariff rates on the imports of different categories of COVID-19-related medical products, the incidence of NTMs is likely the lowest.

Figure 32. Frequency index of NTMs imposed by selected countries on product categories of COVID-19-related medical products



Data Source: Trade data from UN Comtrade (2020) and NTM data from UNCTAD (2017)

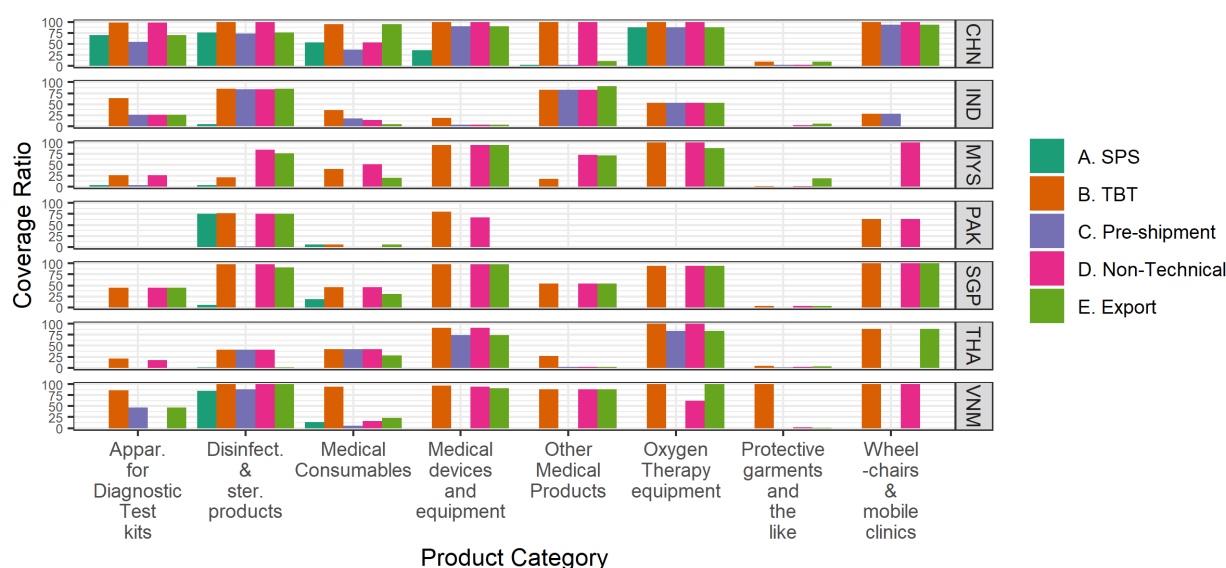
The coverage ratio of NTMs imposed by selected countries on product categories of COVID-19-related medical products is presented in **Error! Reference source not found.**²³ Although the frequency index for disinfectants and sterilization products, medical devices and equipment, and wheelchairs and mobile clinics was relatively low for Pakistan, three-quarters of the imports by Pakistan in the aforementioned product category are covered by NTMs, as determined by the coverage ratio. TBTs and non-technical measures tend to be the most

²² The frequency index is the percentage of products within a product category imported by a country reporting NTMs.

²³ The coverage ratio is the percentage of imports by a particular country within a product category reporting NTMs. In other words, it is frequency index weighted by trade.

common measures across the three product categories. Disinfectants and sterilization products also face SPS and export measures on products commonly imported.²⁴ However, the coverage ratio on apparatus for diagnostic test kits, other medical products, oxygen therapy equipment, and protective garments and related products is trivial, suggesting that a lower intensity of NTMs is imposed by Pakistan. On the other hand, ASEAN members and India have adopted NTMs across several product categories, as is evident in the figure. Nakhoda (2020) reported a higher frequency index and coverage ratio for the NTMs imposed by China relative to Pakistan, similar to the findings reported in this study. It is evident that Pakistan is less likely to impose NTMs than other countries on the imports of products.

Figure 33. Coverage ratio of NTMs imposed by selected countries on product categories of COVID-19-related medical products

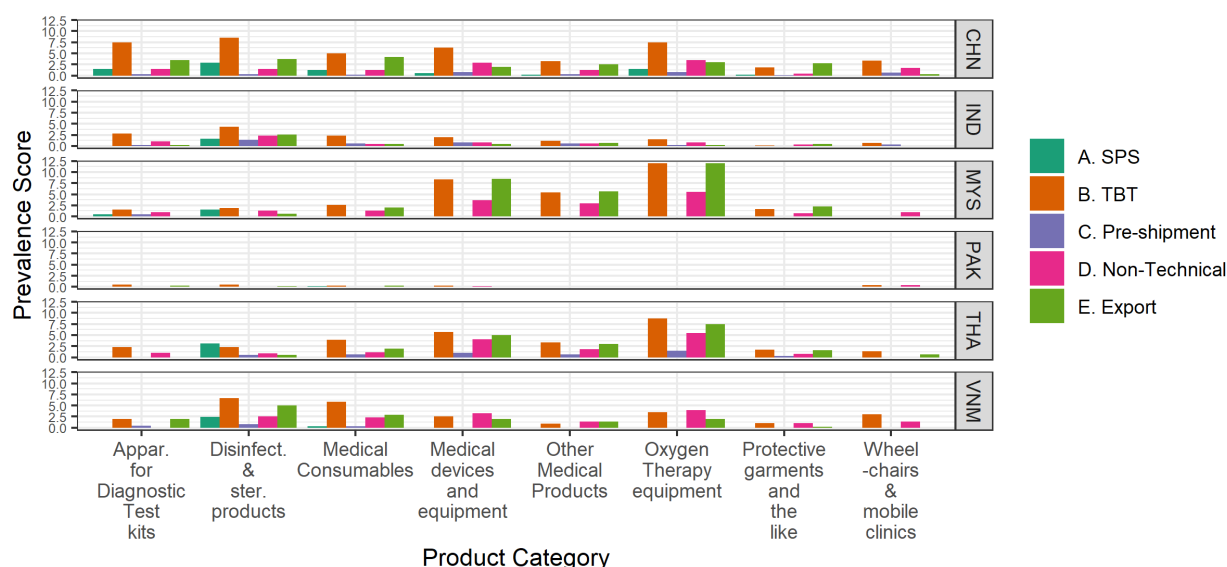


Data Source: Trade data from UN Comtrade (2020) and NTM data from UNCTAD (2017)

The prevalence score of NTMs imposed by selected countries for each product category is reported in **Error! Reference source not found..** The prevalence score calculates the average number of NTMs on each product in the product categories. Pakistan has the least prevalence of NTMs. On the other hand, Malaysia has the highest prevalence of TBTs and export-related NTMs for oxygen therapy equipment.

²⁴ As reported in figure 33, Pakistan imposes export licensing and registration requirements as well as export support measures on exports of medicaments (HS 300490).

Figure 34. Prevalence score of NTMs imposed by selected countries on product categories of COVID-19-related medical products



Data Source: Trade data from UN Comtrade (2020) and NTM data from UNCTAD (2017)

A list of NTMs imposed by selected countries on imports of HS 300490 and HS 382200 are presented in Table 1. Pakistan requires A83 (certification of conformity requirements), B31 (labelling requirements), B33 (packaging requirements), E1 (non-automatic import-licensing procedures), P33 (licensing, permit or registration requirements for exports) and P6 (export-support measures). The NTMs imposed by India include import authorizations, tolerance limits, labelling and packaging requirements, production and product quality requirements, testing and traceability requirements, pre-shipment inspections, import-licensing procedures, additional taxes and charges levied for customs inspection, licence fees, licence and permits to export, and measures on re-exporting. China has 22 different measures, again ranging from authorization requirements related to SPS measures, TBTs involving authorization, quality requirements, and testing and traceability requirements. Malaysia's NTMs are non-technical and export-related only. Pakistan and Malaysia do not impose any NTMs on imports of HS 382200. India imposes two measures requiring product quality, safety and performance requirements, and testing requirements based on conformity assessments. China has adopted several NTMs.

Table 1. NTMs on imports of COVID-19-related medical products by Pakistan under HS 300490 and HS 382200*

HS 300490	NTMs
Pakistan (6)	A83, B31, B33, E1, P33, P6
India (18)	B19, B21, B22, B31, B33, B41, B42, B7, B82, B853, B859, C3, E1, F61, F65, P33, P7, P9
China (22)	A14, B22, B7, B81, B82, B83, B84, B851, B852, B89, C3, E1, E119, F61, F69, P14, P162, P163, P169, P33, P4, P9
Malaysia (4)	E1, F69, P11, P43

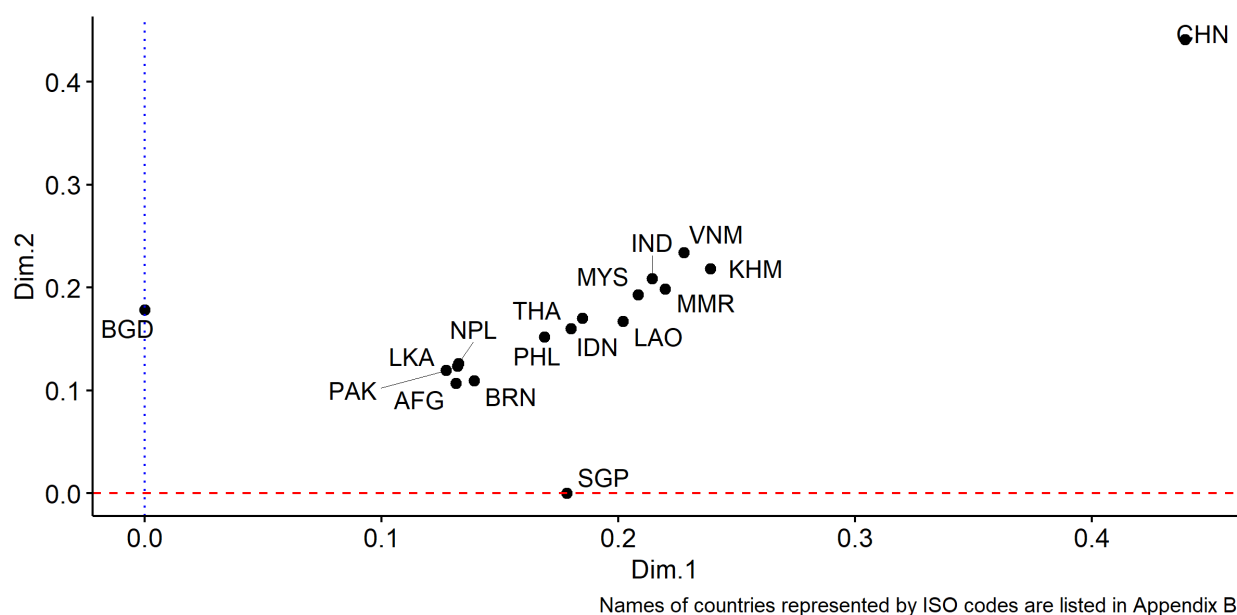
HS 382200	
Pakistan (0)	-
India (2)	B7, B82
China (23)	A84, A86, B22, B31, B32, B33, B7, B81, B82, B83, B84, B851, B852, B853, B89, E1, P13, P14, P15, P162, P163, P169, P33
Malaysia (0)	-

Data source: UNCTAD, 2017.

* The numbers in parentheses are the measures where the partner is given as 'World'.

The regulatory distance between different country-pairs for measuring the similarity of NTMs imposed by selected countries across the Asian region is presented in figure 35. Kravchenko and Doytchinova (2020) calculated the regulatory distance between two countries as the sum of all combinations of products, where the two countries share the product-NTM combination divided by the sum of all product-NTM combinations.²⁵ The similarity between Pakistan and China in terms of their product-NTM combinations is one of the lowest. In essence, while China maintains NTMs on several of the COVID-19-related medical products at a higher intensity than other Asian countries, Pakistan is unlikely to adopt a similar range of regulations through NTMs.

Figure 35. Regulatory distance between different countries measuring the similarity of NTMs on COVID-19-related medical products



1. Export Policy and Import Policy Orders of 2020

The Government of Pakistan released Export Policy Order 2020 and Import Policy Order 2020 on 25 September 2020, together with the issuance of Statutory Regulatory Orders

²⁵ This strategy is derived from ESCAP Online Training on Using R for Trade Analysis, available at <https://r.tiid.org/regulatory-distance.html#calculating-the-regulatory-distance>.

(SROs) 901 and 902, respectively. The orders relate to the set of rules and regulations on trade and are updated periodically for the schemes, processes and procedures involved in the trade of goods and services. The orders have different requirements for different COVID-19-related medical products. Although the data available on UNCTAD's NTM Hub was compiled before 2016, it is unlikely that the new orders will significantly increase the intensity at which NTMs are imposed on imports of COVID-19-related medical products compared to other regional countries.

Products such as surgical instruments and ethanol face certain conditions on their exports that require certifications and test reports for the former and restrictions on the origin of the raw material for the latter. Furthermore, the exports of surgical instruments are subject to minimum export price (MEP) restriction, provided they have not been exported at less than the free-on-board FOB price specified for each item listed in Schedule IV of Export Policy Order 2020.

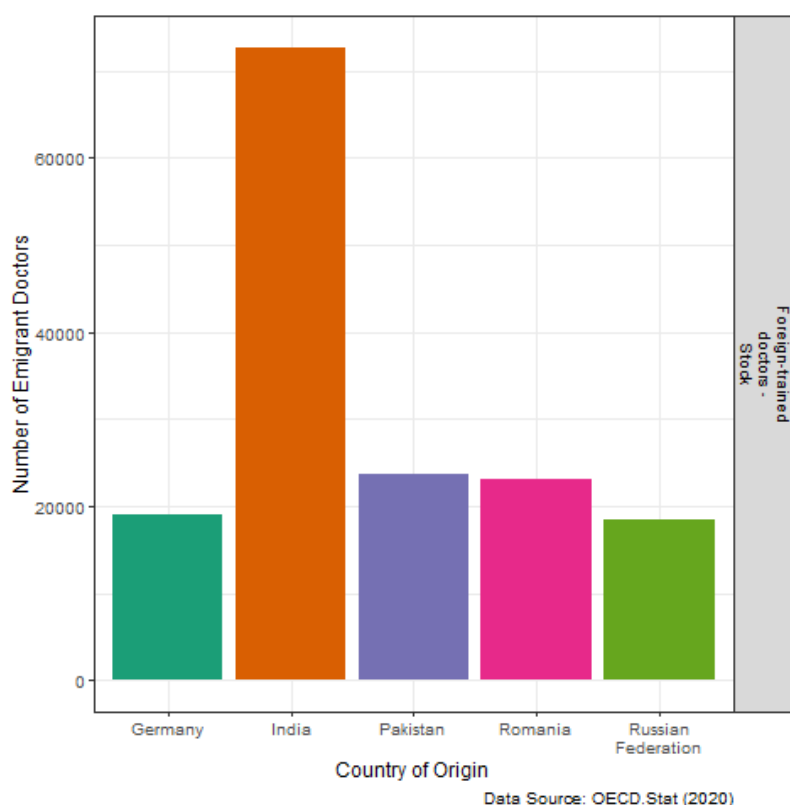
Import Policy Order 2020 lists syringes of 40 I.U. strength in the negative list, banning their imports into Pakistan. The order also imposes health and safety requirements on the imports of narcotic drugs and psychotropic substances not included in the banned list, human blood and its fractions, contaminated blood samples for laboratory testing, used or refurbished cryogenic containers, and non-sterilized surgical needles and syringes. The order further imposes procedural requirements on the imports of medical products, such as pharmaceutical raw materials that have a certain shelf-life, labelling and packaging requirements, regulation of the imports of second-hand ambulances and mobile clinics as well as second-hand imports of medical devices and equipment. These requirements involve certifications and inspections and a shelf-life of no more than five years. Several products require a no-objection certificate from relevant regulatory authorities. Furthermore, there are compulsory requirements to meet standards at the import stage for products such as soap.

F. Trends in migration of health workers from Pakistan

Pakistan has been a major supplier of doctors to English-speaking advanced countries. WHO, in its Implementation Strategy Report for Pakistan, published in 2011, states that the lack of favourable opportunities nationally and the overall increase in demand of foreign health sector service workers in developed countries as major reasons for the migration of doctors from Pakistan. Western countries such as the United Kingdom, the United States and Canada are major destinations for health-care workers migrating from Pakistan. The following analysis looks at the migration patterns of health workers to different destinations and compares the trend for Pakistan with that of different source countries in the Asia-Pacific region. With health-care workers from different countries migrating to Western countries, it is likely that migrant health workers have similar qualifications and licences that allow them to practice in Western countries. This creates the potential for collaboration between doctors from countries that are frequently supplying health workers to Western countries. Furthermore, there is significant potential for medical tourism in Pakistan. However, the lack of internationally certified and recognized hospitals as well as the lack of medical visas are major impediments to attracting medical tourism. This remains limited to Afghan patients visiting hospitals located near the Pakistan-Afghan border, but that too has decreased with border management becoming tighter (Ali 2018). Last, there is significant potential for the exchange of doctors between Pakistan and China as well as Pakistani students attending medical colleges in China for training. The latter is limited by the issue faced in recognizing Chinese medical colleges as genuine by the local medical commission.

The total number of foreign-trained doctors in OECD host countries who are from the top five origin countries is presented in **Error! Reference source not found.**²⁶ India has the largest number of doctors and the second-largest number of nurses abroad, at 72,700. Pakistan has the second-largest number of doctors abroad, at 23,700. Romania closely follows with 22,000 doctors practising abroad. According to the statistics extracted from the World Bank's World Development Indicators, Pakistan and India had less than one physician per 1,000 people, while Romania had three. Even though Pakistan and India both have a low number of physicians in ratio to their population within the country, they are major sources of migrant doctors who have settled abroad. A total of 19,000 German doctors and 18,500 Russian doctors are practising in foreign countries. Although not reported in the graph, the Philippines supplies the largest number of nurses, with 56,400 serving in foreign countries. Pakistan has only 1,380 nurses working in foreign countries, ranking it as the twenty-seventh largest supplier.

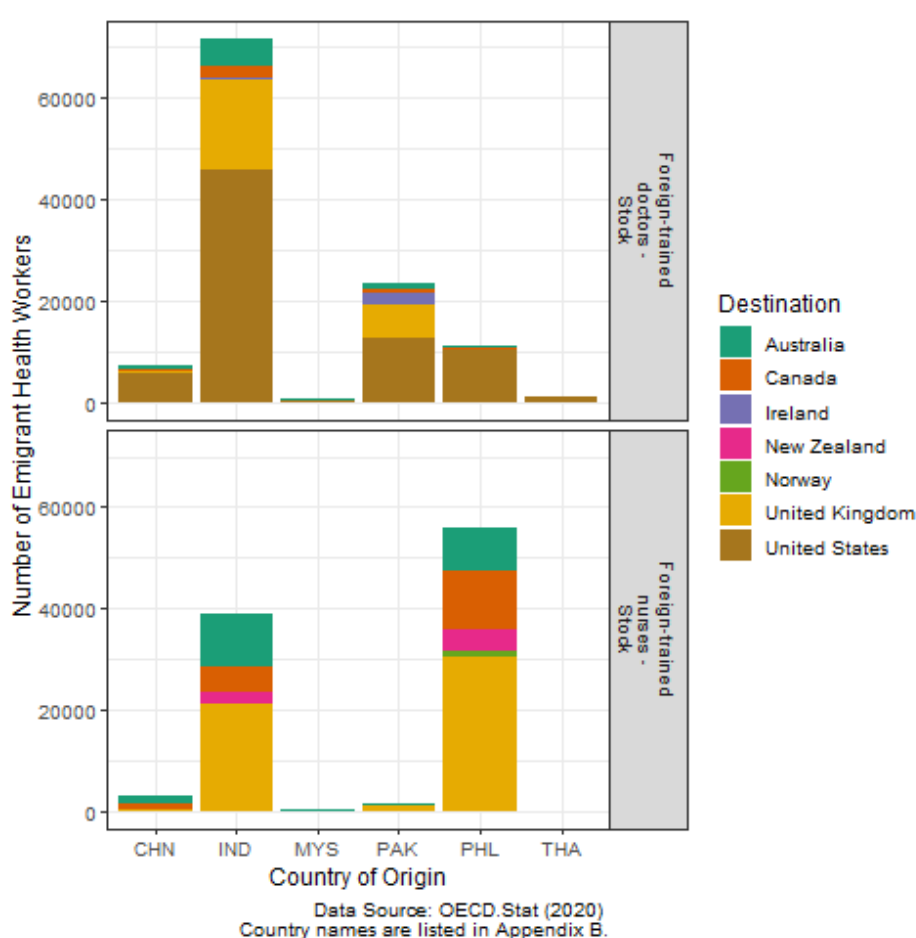
Figure 36. Total number of foreign-trained doctors in OECD destinations originating from top five origin countries



²⁶ The total stock of health workers is presented at the bilateral level. The last year for which the data are reported for the destination countries varies. Therefore, the stock of health workers originating from a particular country is marked at the final year for which the bilateral flow into each host country is reported. However, it is important to note that more than 73 per cent of the final year reported for all bilateral values is 2016 or later. This suggests that the variation in the stock value not captured by the data is likely to be limited.

The total number of foreign-trained doctors and nurses in prominent OECD countries selected by health worker migrants from selected Asian countries is presented in **Error! Reference source not found.** Approximately 45,800 doctors in the United States and 17,700 doctors in the United Kingdom are from India. About 12,500 doctors in the United States and 6,800 doctors in the United Kingdom migrated from Pakistan. About 2,000 doctors have migrated from Pakistan to Ireland, 1,100 to Australia and 1,000 to Canada. Doctors trained in China and the Philippines are more likely to be practising in the United States. Although the United States is the most attractive destination for doctors migrating from the selected Asian countries, the United Kingdom is the most attractive for nurses. About 31,000 nurses have migrated from the Philippines to the United Kingdom and about 21,000 nurses have done so from India.

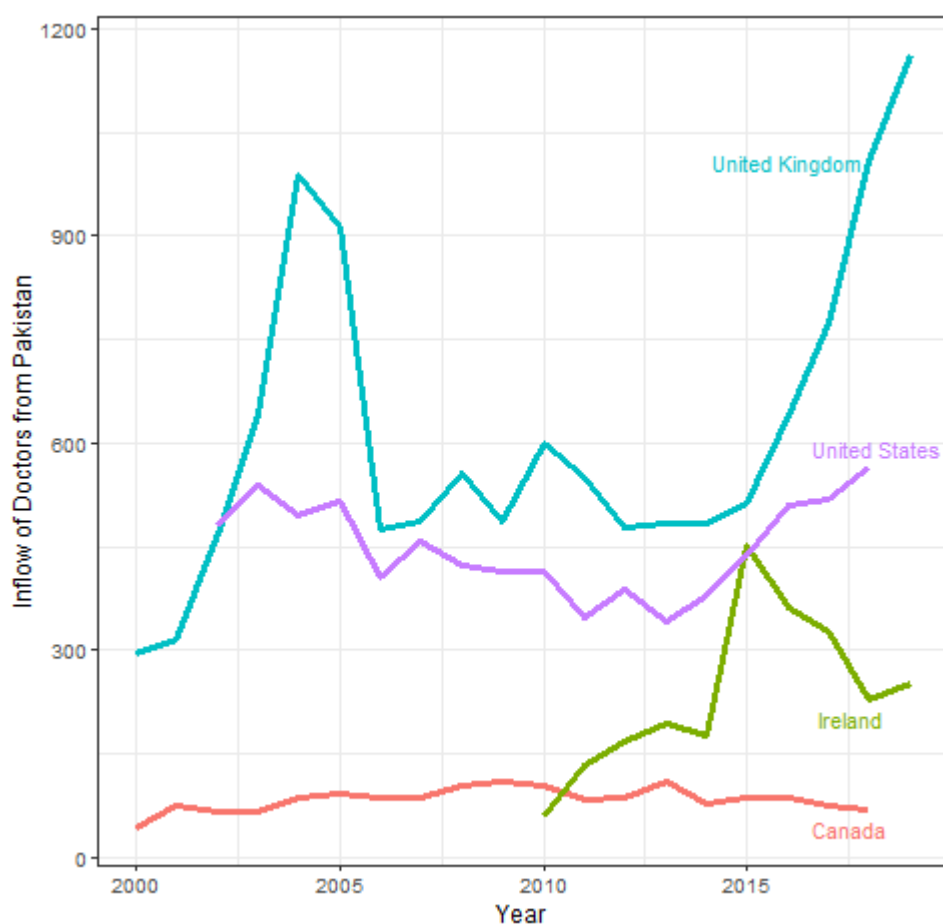
Figure 37. Total number of foreign-trained doctors and nurses migrating from selected Asian countries to prominent OECD destinations



The inflow of doctors trained in Pakistan into selected OECD countries, based on their ranking as a major destination, is presented in **Error! Reference source not found.** The United Kingdom has attracted the largest inflow of doctors from Pakistan in recent years. There was a strong upward surge post-2001, which started to decline in 2005. According to an article published in *Business Recorder* on 5 April 2006, the reason for the decline in immigrant health workers was the immigration rules introduced in 2006 that gave priority to foreign doctors from the European Union countries applying for a work permit for employment with the National Health Service (NHS) in the United Kingdom (“New immigration laws: Many Pakistani doctors in the United Kingdom have to pack up for

home”, 2006).²⁷ The trend in the inflows of foreign doctors increased again as sentiment of the British policymakers shifted away from the European Union following the start of Brexit. The non-European health workers are likely to gain preference, as immigration policies allowing doctors from the European Union become more stringent. The inflow from Pakistan surged past 1,000 in 2018 from a low of 479 in 2012. The inflow into the United States also increased post-2016. The inflow into Ireland increased to 452 in 2015 from 177 in 2014. Heffron and Socha-Dietrich (2019) reported that Ireland had become increasingly dependent upon foreign-trained doctors to meet its domestic demand. The inflow into Canada from Pakistan was 44 in 2000, peaking at 110 in 2013 and falling to 68 in 2018.

Figure 38. Inflow of doctors trained in Pakistan into selected OECD countries



Data Source: OECD.Stat (2020)

Pakistan is one of the largest suppliers of foreign-trained doctors residing across OECD members. A significant proportion of doctors trained in Pakistan are practising in the United States and the United Kingdom. Although there is potential for exchanging health service workers, given that India, Pakistan, China and the Philippines have a considerable number of doctors trained domestically who are practising in OECD members. There are initiatives by the Ministry of National Health Services, Regulations and Coordination, Government of Pakistan, such as *Yaran e Watan*, to tap into the Pakistani diaspora specializing in health

²⁷ Available at: <https://fp.brecorder.com/2006/04/20060405407437/> (accessed on 10 September 2020).

services. Pakistani doctors and nurses abroad can connect with Pakistani telemedicine institutes to provide voluntary free-of-cost consultations and counselling for patients in Pakistan. Asian countries can tap into each other's resources of doctors and nurses by introducing certifications and licences widely recognized across the region and providing alternative avenues for health workers trained domestically who are seeking employment abroad.

1. Medical tourism

Pakistan was once a leading destination for organ transplant tourism. However, the situation has changed. Minas and Chishty (2019) reported that 2,000 kidney transplants were conducted in 2006, of which 1,500 were on foreigners. The poor received about US\$ 1,000 for each kidney donated. Then, in 2007, a Transplantation of Human Organs and Tissues Ordinance (TOHOTO) was passed by the Pakistan Parliament that restricted transplantations to blood donors only. The Human Organ Transplant Authority (HOTA) was created to monitor illegal transplants and curb the practice. The Government regulates transplantations and it has authorized only a certain number of hospitals to conduct the process. Furthermore, in-vitro fertilization (IVF) centres are gaining prominence in Pakistan. Minas and Chishty (2019) stated that s procedure costs were significantly lower than those in developed countries, foreigners were opting it as an attractive destination.

Pakistan does not rank among the top destinations for medical tourism. There is no visa category for individuals wanting to receive medical treatment in Pakistan.²⁸ The majority of foreigners who come to Pakistan for medical treatment are either diaspora seeking low-cost medical alternatives than in their countries of residence or Afghan patients. According to an article published in *Dawn* on 9 October 2018 (Ali, Z, 2018),²⁹ Pakistani hospitals located on the border between Pakistan and Afghanistan had reported a large percentage of Afghani patients. However, an installation of new border management systems by the Government of Pakistan to check the flow of Afghan nationals has reduced the share of Afghan patients at such hospitals. Several philanthropic organizations donate and provide free medical treatment to poor Afghan patients. However, according to Minas and Chishty (2019), Pakistan is a cheap destination for medical treatment.

The major concerns for receiving medical treatment in Pakistan are the lack of accredited medical facilities, accessibility to the facilities without delay, availability of technology and the lack of expertise for particular treatments as well poor malpractice protection laws. Currently, the share of medical tourists who arrive in Pakistan and contribute to the global multi-billion United States dollar industry is negligible. Dalen and Alpert (2019) estimated the number of total medical tourists to be between 14 million and 17 million in 2017, and the value of medical tourism businesses to have generated approximately US\$ 439 billion. However, the role of digital technology can play a significant role in facilitating medical tourism in the country by developing a successful telehealth programme that is accessible to foreign patients. This can provide opportunities to consult patients remotely by linking Pakistani doctors to foreign patients, eventually resulting in greater travel of foreign patients to Pakistan for treatment. Furthermore, proper information on accessibility, availability of

²⁸ The Government of Pakistan introduced a medical visa category in early February 2021. However, at the time of the publication of this report, the Government was yet to issue medical visas to foreign patients.

²⁹ Available at <https://www.dawn.com/news/1437779> (accessed on 10 September 2020).

facilities and expertise as well as ensuring good quality of post-treatment care can become possible with the help of digital technologies.

2. Medical exchanges and training: Collaboration between Pakistan and China

At the onset of the COVID-19 pandemic, China offered to assist Pakistan by sending doctors, medical supplies and emergency kits. Voice of America News, in its article titled “Pakistan extends lockdown; Chinese Army Doctors arrive to help combat virus”, mentioned 10 military doctors arriving into Pakistan with the expertise of treating infectious diseases will support local doctors during their two-months stay (Gul, 2020). The article further mentions the cash support by China to Pakistan to build quarantine centres as well the donation of test kits, masks and ventilators to Pakistan.

Although this exchange highlighted the need for collaboration between Pakistan and China in curtailing the spread of the virus in the former country, such exchanges are uncommon. Unfortunately, Pakistani students attending Chinese medical colleges for training have reported significant challenges on their return to Pakistan and their desire to practice in their home country. Pakistani doctors trained abroad have to take a National Examination Board (NEB) test to start practising in Pakistan, according to an article in *Dawn*, titled “Fate of foreign medical graduates hangs in balance” (Junaidi, 2015). This requirement became mandatory for all students who graduate from countries where English is not the medium of instruction, under an Act of Parliament passed in 2012. However, certain colleges in China were given exemption as they offered degrees in English. Students were concerned about the low passing rate as well as the degree of effort required. Around 500 students were likely affected by this condition in 2015. Furthermore, the situation is exacerbated by Chinese medical colleges that are not recognized by the regulatory authorities in Pakistan, making it difficult for Pakistani medical graduates trained in China to return to Pakistan.

G. Pakistan-China FTA and trade in COVID-19-related medical products

Pakistan and China signed Phase II of the China-Pakistan Free Trade Agreement in April 2019. The trading relationship between Pakistan and China, its largest source for imports, is likely to be enhanced with the renegotiation of the FTA. Further, the purpose of the trade negotiation was primarily to increase exports to China, which performed below expectations in the first phase. Furthermore, according to the Pakistan Business Council’s report, titled “Preliminary Analysis of Pak-China FTA Phase II”, Chinese products inundated Pakistan as a result of the FTA between the two countries and were responsible for the premature de-industrialization in Pakistan. The report further states that the second phase of the FTA should increase access of Pakistani products into the Chinese market and lower the high trade deficit reported by Pakistan. The overall trade deficit for Pakistan in 2018 was US\$ 36 billion, which was 150 per cent more than the total export value generated by Pakistan in 2018. Pakistan also reported a bilateral trade deficit with China of US\$ 12.7 billion in 2018. This was seven times more than its exports to China and was responsible for more than two-thirds of the total trade deficit reported by Pakistan. With interests of several stakeholders in the renegotiations and the conclusion of the second phase of the China-Pakistan FTA, it is essential that its likely impact on the trade of COVID-19-related medical products between Pakistan and China is analysed. This section determines the tariff concessions across different product categories.

As stated by the Ministry of Commerce in Pakistan, Phase II of the FTA, which first entered into force in 2007, has secured deeper concessions for Pakistan in products that are likely to

have significant potential for exports to China. The new phase also includes a revision of the safeguard mechanism, the inclusion of a balance of payment safety clause as Pakistan regularly faces a balance of payment crisis, and the creation of electronic data exchanges between the two countries to reduce mis-declaration and trade mis-invoicing of imports from China. Both countries will liberalize 75 per cent of the tariff lines, while 25 per cent of the tariffs have been declared as protected; however, China will do so in 10 years and Pakistan will do so in 15 years. Safeguard measures have been introduced to limit imports of products that are likely to cause injury to the domestic industry. The tariff categories imposed by Pakistan and China are presented in table 2.

The tariff elimination schedule under the protocol to amend the FTA between Pakistan and China can be downloaded from Pakistan's Ministry of Commerce. The data on trade values reported in 2019 between Pakistan and China on the national tariff lines can be downloaded from www.treemap.org. The trade-weighted averages have been calculated using the trade values reported on the national tariff line and the base rate provided in the tariff elimination schedule.

Table 2. Tariff categories as negotiated under the China-Pakistan Free Trade Agreement, Phase II

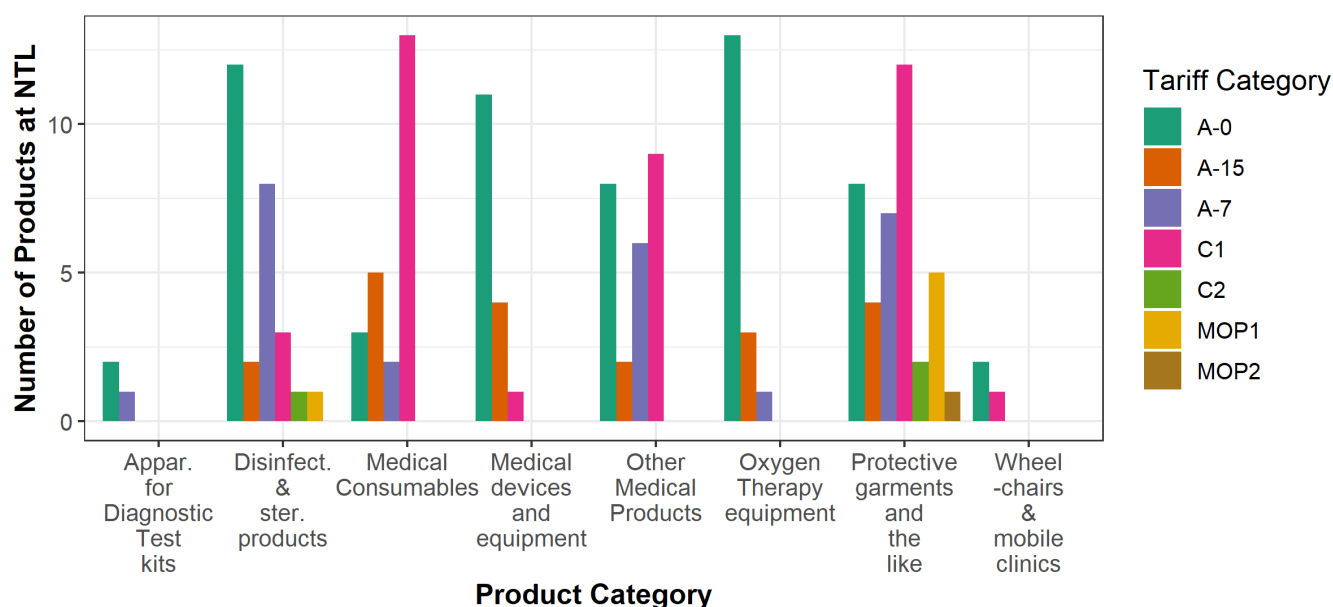
Imports by Pakistan from China		Imports by China from Pakistan	
Tariff category	Condition	Tariff category	Condition
A-0	Tariffs entirely eliminated and goods should be tariff-free at the date the Protocol enters into force	A-0	Tariffs entirely eliminated and goods tariff-free on the date the Protocol enters into force
A-7	Tariffs removed in 6 equal annual stages beginning in year 2 and tariff-free on 1 January of year 7	A-5	Tariffs removed in five equal annual stages, beginning on the date the Protocol enters into force and tariff-free on 1 January of year 5
A-15	Tariffs removed in 12 equal annual stages beginning in year 4 and tariff-free on 1 January of year 15	A-10	Tariffs removed in 10 equal annual stages beginning on the date the Protocol enters into force and tariff-free on 1 January of year 10
C1	Tariffs remain at base rates	C1	Tariffs will remain at base rates
C2	Will not be subject to any tariff concessions	C2	Will not be subject to any tariff concessions
MOP1	Tariffs will be reduced by 20 per cent on the date the	MOP1	Tariffs will be reduced by 20 per cent on the date the

	Protocol enters into force		Protocol enters into force
MOP2	Tariffs will be reduced by 20 per cent on 1 January 2022.	MOP2	Tariffs will be reduced by 20 per cent on 1 January 2022.

1. Pakistan's tariffs on Chinese goods

The number of tariff lines in each product category for the assigned tariff category negotiated for imports of Chinese goods into Pakistan is presented in **Error! Reference source not found..** The highest number of products receiving tariff-free concessions from the date of entry (A-0) belong to oxygen therapy equipment (13), disinfectants and sterilization products (12) and medical devices and equipment (11). On the other hand, the highest number of products for which tariffs will remain at the base rate (C-1) belong to medical consumables (13 out of 23 products), protective garments and related products (12 out of 39) and other medical products (9 out of 25). The most protected product category is protective garments and related products, which are likely to receive the most limited tariff concessions. Two products will receive zero-tariff concessions (C-2), 6 will receive only a twenty per cent tariff concession, while the base rate will be fixed for 12 products. Basically, many of the COVID-19-related medical product categories are excluded from receiving concessions from the Government of Pakistan.

Figure 39. Number of COVID-19-related medical products at national tariff lines reporting tariff concessions by Pakistan on Chinese imports per assigned category

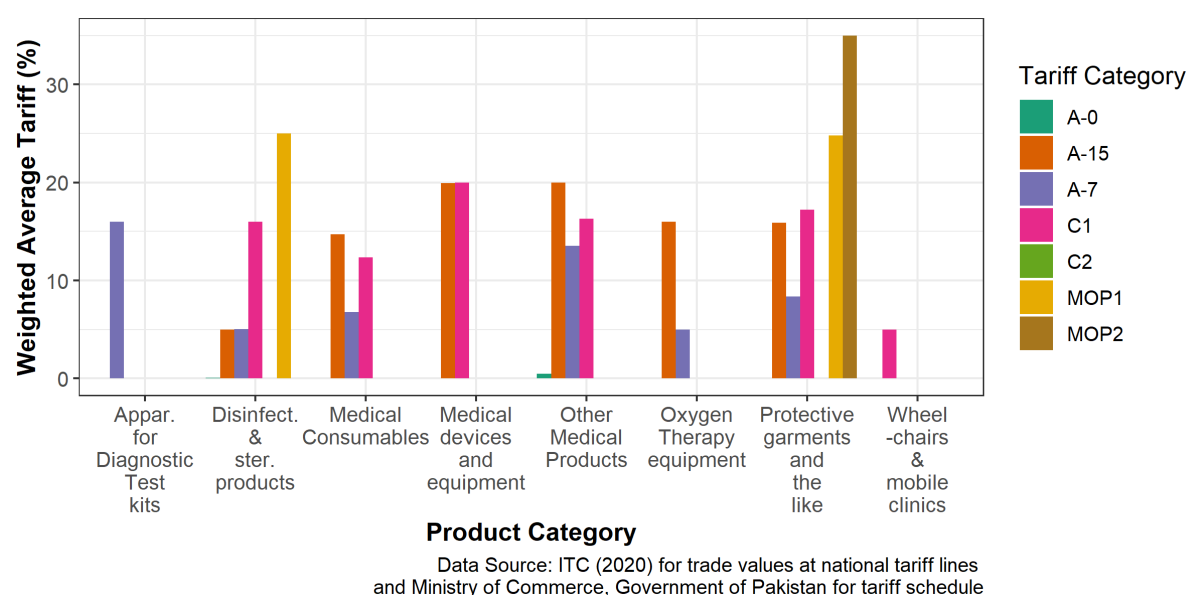


Data Source: ITC (2020) for trade values at national tariff lines and Ministry of Commerce, Government of Pakistan for tariff schedule

The weighted tariff rates for each tariff category within a specific COVID-19-related product category are presented in **Error! Reference source not found..** The weighted average tariff rate is calculated using the share of imports of a product at the national tariff line for each tariff category within a product category and the base rate. The protective garments and related products are the most protected, as tariff categories with the lowest concessions report

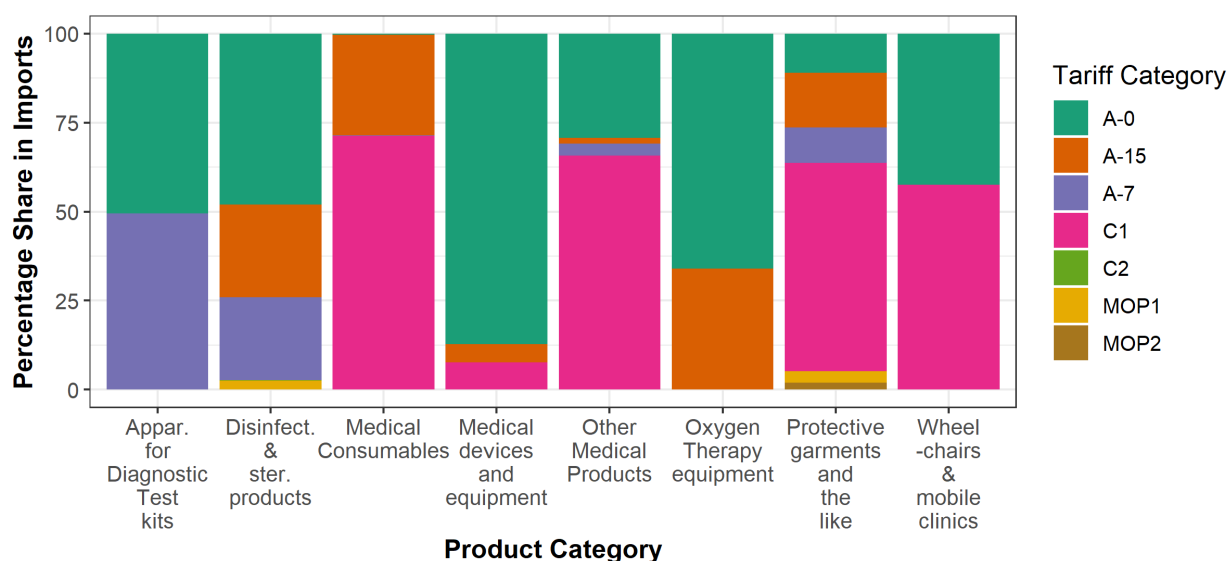
the highest weighted average tariff rates. With MOP1, MOP2 and C1, reporting a rate of 24.8 per cent, 35 per cent and 17.2 per cent, respectively, limited concessions are offered on the imports by Pakistan of protective garments and related products from China. The weighted average tariff rate for disinfectants and sterilization products is also relatively high, with tariff categories MOP1 and C1 reporting 25 per cent and 16 per cent, respectively. Tariff category C1 is also prominent for medical devices and equipment, at 20 per cent. It is expected that imports of apparatus for diagnostic test kits and oxygen therapy equipment from China will be mostly tariff-free in the next 15 years as the tariff reduces to zero. Pakistan will continue to apply tariffs at mostly the same rate on at least some products imported from China in all product categories except apparatus for diagnostic testing and oxygen therapy equipment.

Figure 40. Weighted average tariffs on COVID-19-related medical products by Pakistan on Chinese imports as per assigned category



The share of each tariff category across different COVID-19-related products is presented in **Error! Reference source not found..** The tariffs on the imports by Pakistan from China of all products at the tariff lines belonging to the apparatus for diagnostic kits will be reduced to zero by year 7. The tariffs on imports of oxygen therapy equipment by Pakistan from China will be reduced to zero by year 15. These are the only product categories to report a 100 per cent reduction in tariffs. About 87 per cent of the imports in medical devices and equipment will gain a tariff reduction to zero at the date when the Protocol enters into force and 5 per cent of imports will receive a reduction to zero in 15 years, while tariff rates will remain at 10 per cent for 7.7 per cent of the imports. The most protected categories that are likely to eventually record the lowest percentage of imports with zero tariffs are medical consumables, other medical products, protective garments and related products, and wheelchairs and mobile clinics. About 71.3 per cent of medical consumables, 65.7 per cent of other medical products, 58.4 per cent of protective garments and related products, and 57.5 per cent of wheelchairs and mobile clinics have a constant tariff rate as agreed at the base rate (C1).

Figure 41. Percentage share of imports by China of COVID-19-related medical products receiving tariff concessions by Pakistan per assigned category



Data Source: ITC (2020) for trade values at national tariff lines and Ministry of Commerce, Government of Pakistan for tariff schedule

A closer look at the data on the variants defined at the tariff level of products, such as HS 392690, HS 560394 and HS 842139, that are frequently imported by Pakistan from China, all face relatively higher levels of tariffs of more than 12 per cent, categorized at C1. This suggests that frequently imported products will continue to face higher tariff rates.

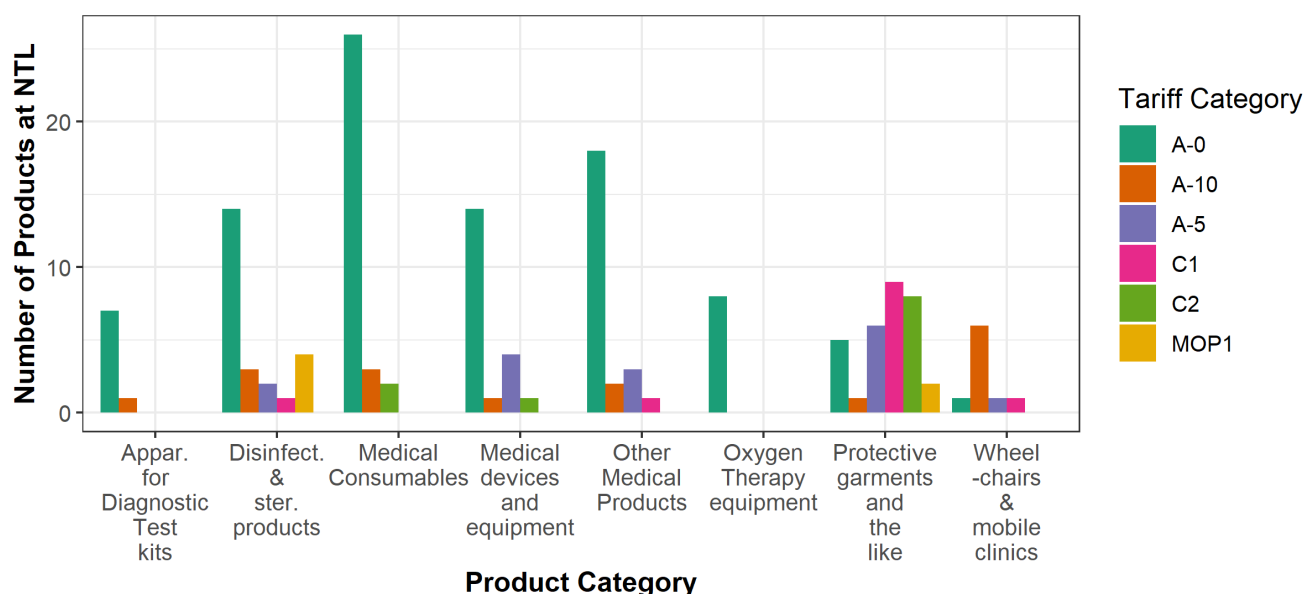
1. China's tariffs on Pakistani goods

The number of tariff lines in each product category for the assigned tariff category negotiated for imports of Pakistani goods by China is presented in **Error! Reference source not found.**³⁰ The majority of the products defined at the national tariff lines have zero tariffs from the Protocol date of entry into force for all categories (A-0), except protective garments and related products, and wheelchairs and mobile clinics. The majority of the protective garments and related products will either face tariffs fixed at the base rate (C1) or receive no tariff concession at all (C2). On the other hand, 11 out of 28 products will gain zero tariff rates by year 5, if not earlier. Furthermore, 9 out of 10 products belonging to wheelchairs and mobile clinics category will gain zero tariff rates by year 10, if not earlier. Therefore, China offers significant tariff concessions on Pakistani imports, with a high proportion of the products recording zero tariffs from the Protocol date of entry into force. Although not shown in the following figures, 100 per cent of the products imported by China from Pakistan are medical consumables, apparatus for diagnostic test kits, other medical products, medical devices and equipment, and oxygen therapy equipment record zero tariff rates from the date of entry into force by the Protocol (A-0). The same can be said for disinfectants and sterilization products, as only a marginal number of products will see tariff rates reduced to

³⁰ As presented in **Error! Reference source not found.**, the trade-weighted tariff rates on imports by China from Pakistan are zero for all categories except protective garments and related products, even prior to Phase II of the China-Pakistan FTA. Pakistan has received concessions in its exports of protective garments and the like in Phase II.

zero in year 5. On the other hand, although 64 per cent of the imports in protective garments and related products receive zero tariff rates from the date the Protocol enters into force, 15.5 per cent receive a fixed 20 per cent reduction in tariff rates in year 1, while 15.2 per cent of the imports receive no concessions. Furthermore, tariffs on 5 per cent of the imports will remain at the base rate.

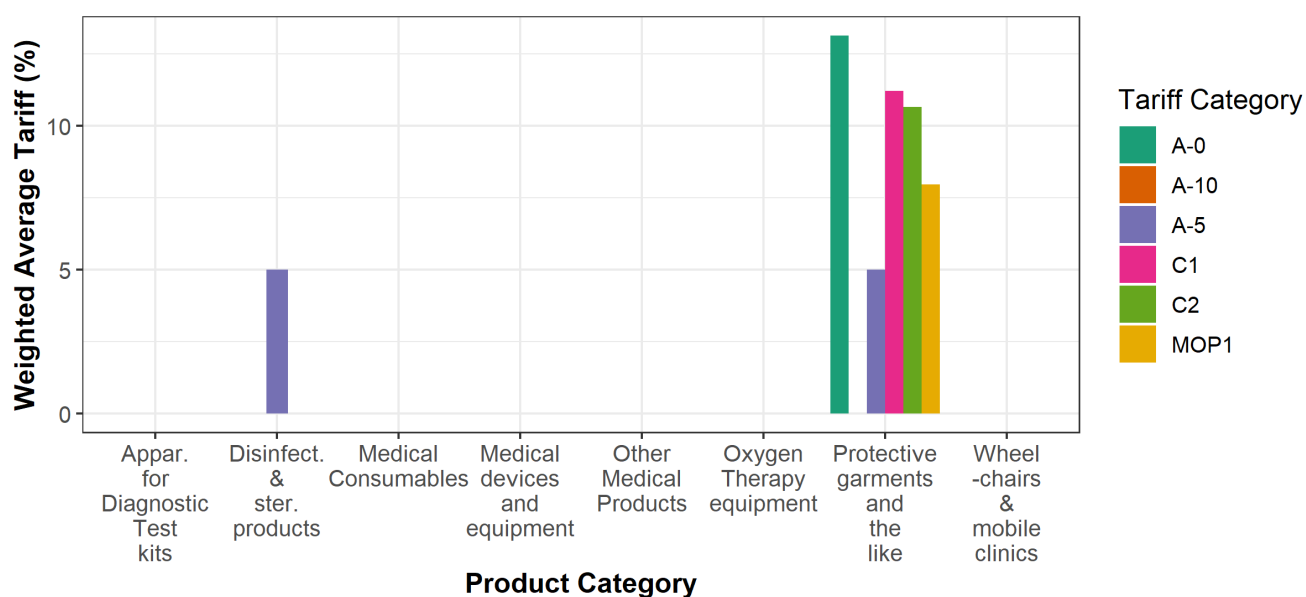
Figure 42. Number of COVID-19-related medical products at national tariff lines with tariff concessions by China on Pakistani imports per assigned category



Data Source: ITC (2020) for trade values at national tariff lines and Ministry of Commerce, Government of Pakistan for tariff schedule

The weighted tariff rates for each tariff category within a specific COVID-19-related product category are presented in **Error! Reference source not found..** The base rates for all product categories are zero except for disinfection and sterilization products as well as protective garments and related products. The tariff on disinfection and sterilization products will be reduced to zero by year 5. On the other hand, protective garments and related products is the only category for which positive tariff rates on all products imported by China from Pakistan will not be phased out. Tariffs on 19 out of 31 tariff lines will be not be phased out in the protective garments and related products category. The base rate on imports in tariff categories C1 and C2 is above 10 per cent. Interestingly, the average tariff rate as determined by the base rate on products belonging to the category that reports a tariff of zero at the date the Protocol comes into force (A-0) is 13.15 per cent. Therefore, the new phase is likely to result in a reduction in tariffs on imports from Pakistan by China of certain protective garments and related products, making it the only product category among all COVID-19-related medical product categories for which tariffs on imports are not to be phased out under the amended FTA.

Figure 43. Weighted average tariff on the COVID-19-related medical products reporting tariff concessions by China for imports from Pakistan per assigned category



Data Source: ITC (2020) for trade values at national tariff lines and Ministry of Commerce, Government of Pakistan for tariff schedule

The product defined at the national tariff line with the highest level of imports from Pakistan by China at more than US\$ 145 million is 22071000. It has a base rate tariff of zero, implying tariff-free access from Pakistan to China. There are certain variants of protective garments and related products that record more than US\$ 100,000 that face different tariff regimes. For example, although the base rates on certain variants at the national tariff line as defined by China, such as 61161000, 62160000 and 63079000, are at least 11.2 per cent, those products were set to receive zero rates from the date of entry into force by the Protocol. On the other hand, variants such as 62105000 gains a 20 per cent tariff concession in the base rate of 8 per cent in year 1, while 39262019 faces no concession in its base rate of 10 per cent. China offers easy access to its market as 83 out of 155 products defined at the national tariff line have zero tariffs as the base rate, while 10 such products with a positive base rate will report zero tariff rates from the date of entry into force by the Protocol. The above analysis also suggests that a small proportion of imports by China from Pakistan of COVID-19-related medical products show positive tariff rates in this new phase of the agreement. Unfortunately, Pakistan lacks the diversity in its export basket to take advantage of tariff concessions by China, as imports from Pakistan by China are heavily concentrated.

Lesson learnt from COVID-19-crisis management by Pakistan

A. Response by the Government

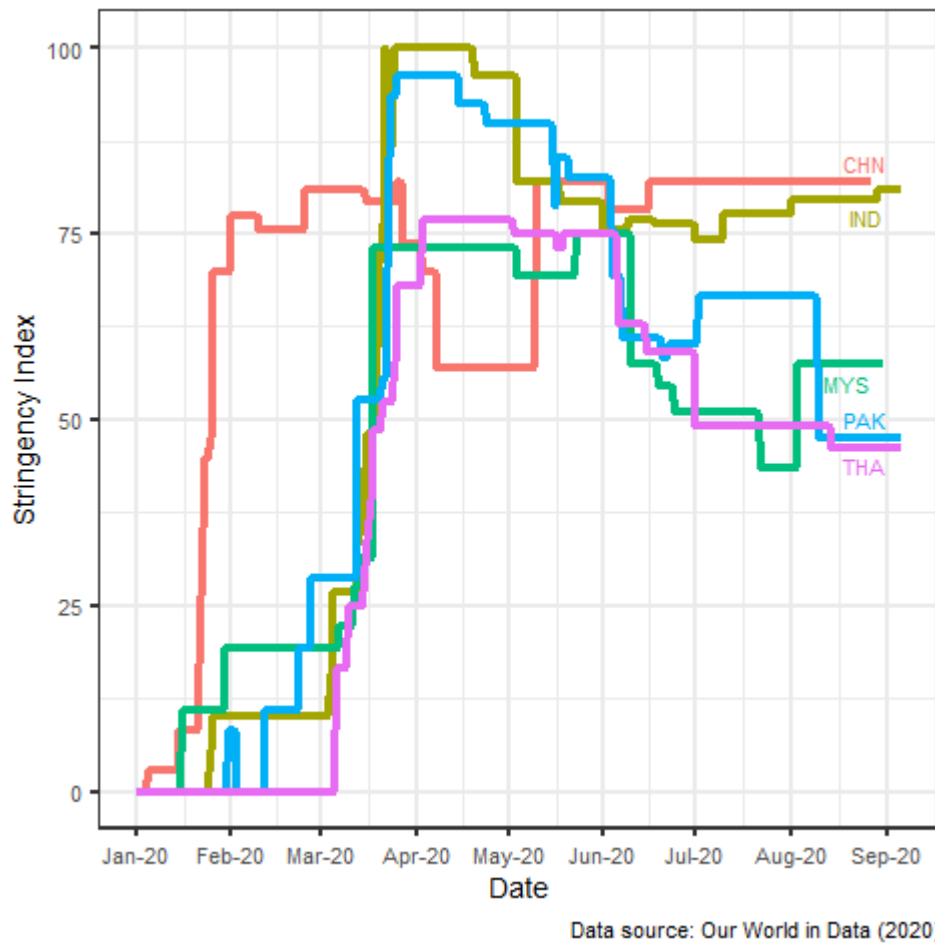
1. Lockdown

The Government of Pakistan's Stringency Index, as measured in *Our World in Data*, for the lockdown imposed across selected countries is presented in **Error! Reference source not found.**³¹ The higher the score, the stricter the response. Although Pakistan had taken measures to contain the spread of the virus starting in early February 2020, stricter measures involving school closures were first adopted on 27 February 2020. Ali (2020) stated that the first case of COVID-19 was officially reported in Pakistan on 26 February 2020. School closures were required at all levels until 15 September 2020, when the restrictions were relaxed for secondary schools, universities and colleges. Workplace closures were enforced on 23 March 2020. The peak of the lockdown remained effective from 26 March 2020 to 14 April 2020. The intensity of the lockdown was then gradually reduced, such that the marketplaces began opening in mid-May a few days before the Eid festival. The sharpest reduction in the intensity was observed on 10 August 2020 when several restrictions were relaxed.

Comparatively, China had the most intense lockdown starting in late January 2020 until late March 2020, when other selected countries began undertaking stricter measures to curb the spread of the pandemic. Although the measures are not as intense as those of the other selected countries, China has maintained the level observed since early May 2020. India started taking measures in late January 2020, which increased in intensity in March 2020. India imposed a complete lock-down on 22 March 2020, which ended on 19 April 2020. On the other hand, Malaysia and Thailand imposed closures with a lower intensity than that observed in Pakistan and India in mid-March 2020.

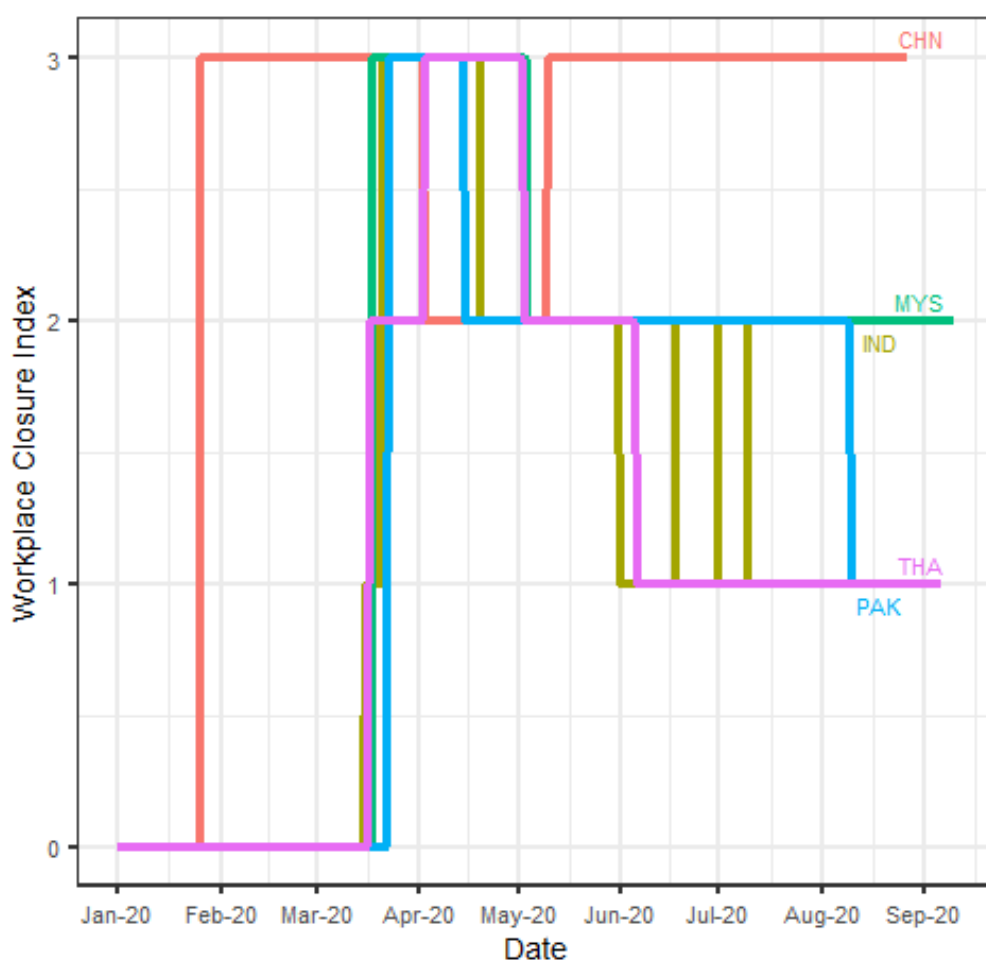
³¹The nine metrics used to calculate the Government Stringency Index are school closures; workplace closures; cancellation of public events; restrictions on public gatherings; closures of public transport; stay-at-home requirements; public information campaigns; restrictions on internal movements; and international travel controls.

Figure 44. Government Stringency Index for the intensity of lockdown in selected countries



The Workplace Closure Index is presented in **Error! Reference source not found..** Pakistan imposed a workplace closure requirement for all but key workers on 23 March 2020. This was relaxed on 15 April 2020 as it was only required for some workers. The index was reduced further on 10 August 2020 as workplace closure was only recommended rather than made a mandatory requirement. China imposed stringent workplace closure requirements on 26 January 2020, relaxed that particular rule on 3 April 2020 but only to re-impose stringent requirements on 10 May 2020. These measures remained in place until the end of August 2020. India has been more sporadic with its imposition of workplace closures, adopting strict measures initially on 21 March 2020, relaxing them to a requirement for some workplaces on 19 April 2020, but then oscillating between recommended and required for some workplaces from 1 June 2020 onwards. Malaysia also imposed strict measures for all but key workplaces to close on 18 March 2020. It relaxed the measures, requiring some workplaces to close in early May. Thailand also adopted strict measures requiring all but key workers to work from home in early April 2020. It relaxed the measures in early June 2020. In essence, only China has continued to adopt strict measures requiring all except key workplaces to close in at least one subregion. All other countries have relaxed their measures, with Pakistan and Thailand only recommending workplace closures.

Figure 45. Workplace Closure Index for selected countries



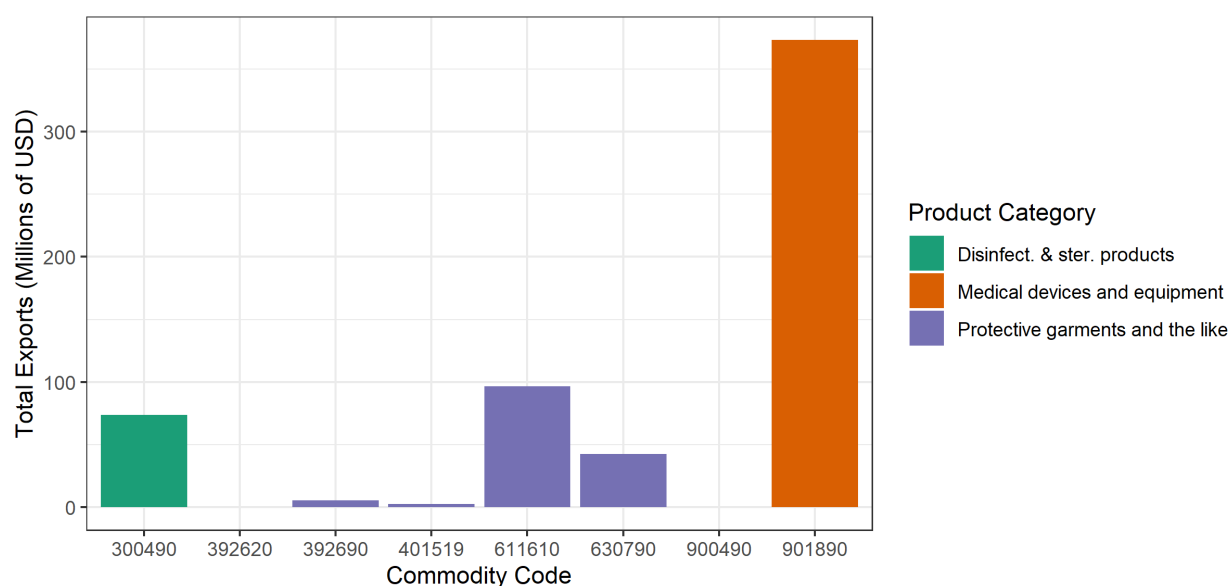
Data source: Our World in Data (2020)

2. Trade measures

Pakistan imposed a temporary export ban in 2020 on certain personal protection equipment and anti-malarial drugs due to COVID-19 through SRO 239(I)/2020 and SRO 297(I)/2020, respectively.³² The products facing the bans and their total value of exports are presented in **Error! Reference source not found..** HS 901890, covering medical devices and equipment, recorded exports worth US\$ 373 million in 2018. HS 300490, which includes anti-malarial drugs, recorded an export value of US\$ 73.5 million. HS 611610 and HS 630790, both covering protective garments and related products, reported exports worth US\$ 96.7 million and US\$ 42.3 million, respectively. It is important to note that the temporary ban was lifted by mid-September 2020 on all products, albeit gradually.

³² The HS Code for the products mentioned in each SRO was obtained from Global Trade Alert. The source is mentioned first followed by the weblink www.globaltradealert.org (accessed on 15 September 2020).

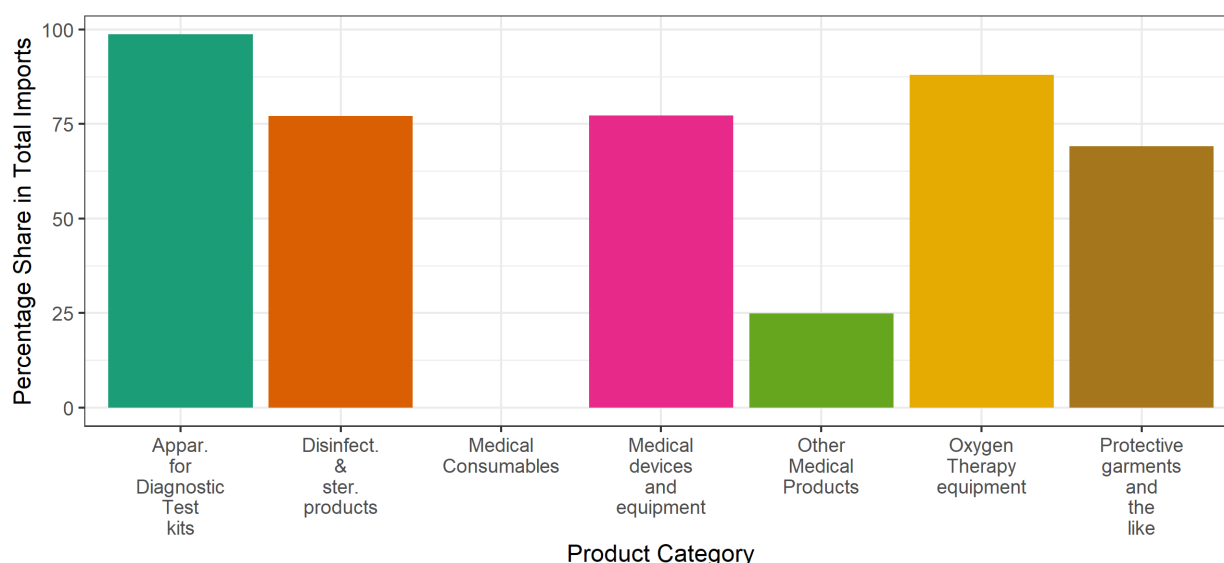
Figure 46. Total exports of COVID-19-related medical products in 2018



Data Source: Global Trade Alert (2020) for affected products, UN Comtrade (2020) for export values

Pakistan liberalized imports of several COVID-19-related medical products under the SROs 235(I)/2020, 318(I)/2020 and SRO 556(I)/2020. The last SRO extended the period for the notification in SRO 235(I)/2020, with an amendment in 318(I)/2020. The import tariffs on the imports of oxygen gas and oxygen cylinders under SRO 649(I)/2020 and the imports of Remdesivir under SRO 558(I)/2020 were also withdrawn. The percentage share of products receiving import concessions within each product category of COVID-19-related medical products in 2018 is presented in **Error! Reference source not found.** Apart from medical consumables, the share of imported products in 2018 that received concessions in all categories equalled 25 per cent or more. In 2018, 98.7 per cent of the imports of apparatus for diagnostic test kits, 88 per cent of imports in oxygen therapy equipment, 77.3 per cent of medical devices and equipment, and 77.1 per cent of imports of disinfectants and sterilization products received concessions. Furthermore, protective garments and related products, which are typically the most protected category, also received concessions for 69.2 per cent of the imports. This suggests that the Government of Pakistan gave considerable concessions to importers to ensure that a shortage of critical COVID-19-related medical products did not occur during the pandemic.

Figure 47. Total share of imports of COVID-19-related medical product categories in 2018 reporting import liberalization as a trade measure in response to COVID-19



Data Source: Global Trade Alert (2020) for affected products, UN Comtrade (2020) for import values.
Percentage share in total imports of product categories: Author's own calculation

3. Response by the State Bank of Pakistan

Table 3 provides a summary of the response, involving relevant measures, of the State Bank of Pakistan (SBP) to the pandemic. The listed currency is the Pakistani rupee (PKR).

Table 3. Selected interventions by the State Bank of Pakistan in response to the COVID-19 pandemic

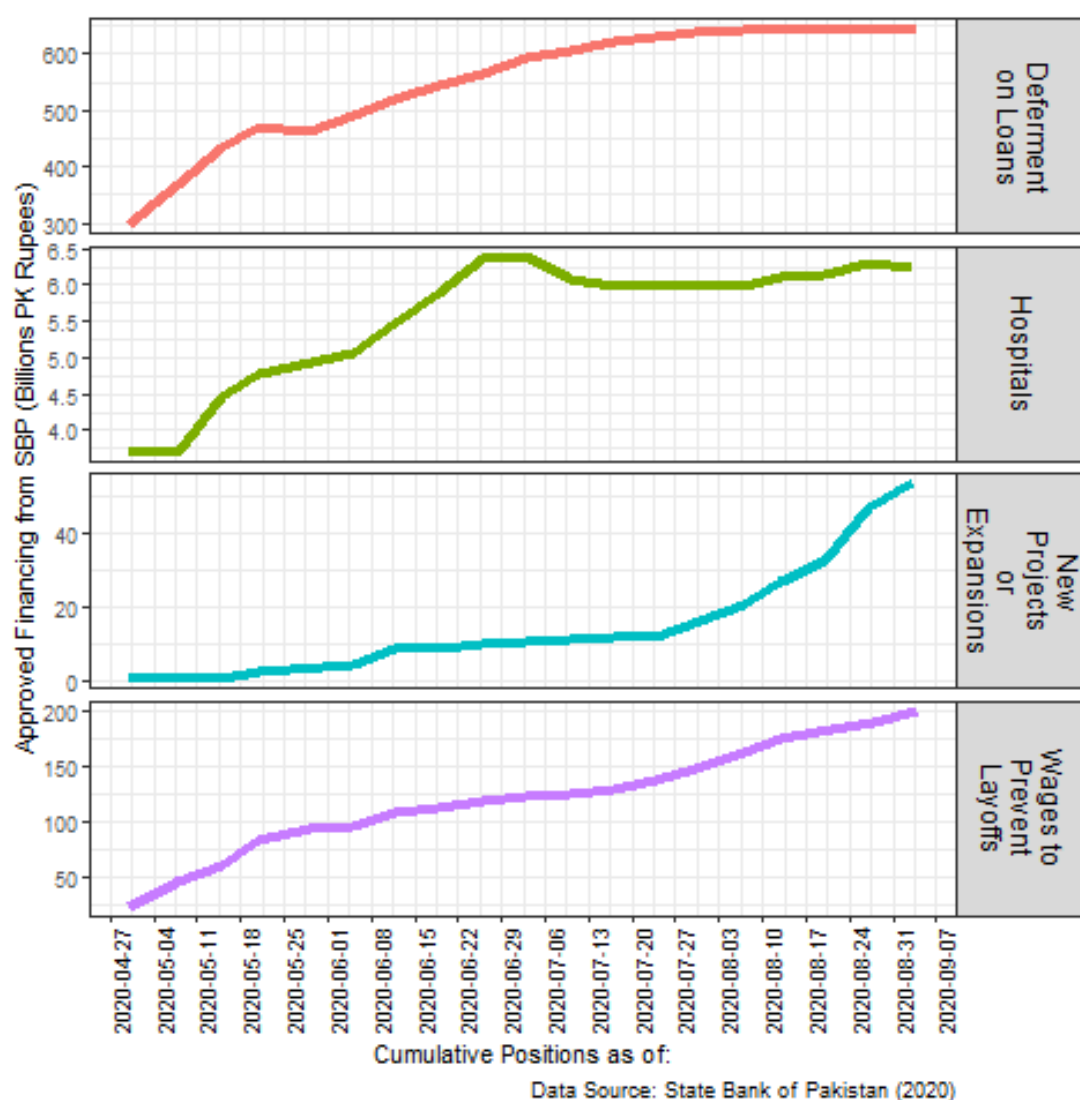
Scheme	Scope and eligibility	Financing criteria	Loan conditions
SBP Refinance Scheme to support employment and prevent layoff of workers	Wages and Salaries Bill for three months. Category A: Less than or equal to PKR 500 million (US\$ 3 million) Category B: More than PKR 500 million (US\$ 3 million)	Category A: 100% of wages and salaries for three months. Category B: PKR 500 million (US\$ 3 million) or 75 per cent of wages and salaries for three months, whichever is higher.	Category A: PKR 500 million (US\$ 3 million) Category B: PKR 1 000 million (US\$ 6 million)
Relief Package for Households, Businesses & Refinance Schemes through Deferment of Loans	Banks and DFIs will defer the payment of principal on loans and advances for one year. Restructured loans will not be treated as defaults.	Total amount of principal loans due over the next year were PKR 4,700 billion (US\$ 28 billion).	Three main conditions: (1) Request on or before 30 June 2020 (2) Loan is not 'non-performing' as of 31 December 2019 (15 February 2020 for microfinance banks) (3) The borrower continues to service

			mark-up payment as per agreed terms and conditions.
Temporary Economic Refinance Facility (TERF)	Long-term finance facility for the purchase of new imported and locally manufactured plants and machinery for the setting of new projects	Letters of credit (LCs)/Inland Letters of Credit (ILCs) established from the date of announcement of the scheme until 31 March 2021 will be eligible for the TERF.	PKR 5 billion per project (US\$ 30 million)
Hospitals	Long-term finance facility for the purchase of new/existing imported and locally manufactured medical equipment to be used for combating the COVID-19 pandemic. Also includes manufacturers of protective gear, ventilators, hospital beds etc. as well as hospitals serving patients other than those resulting from the COVID-19 pandemic.	Import Advance Payment and Import on Open Account, without any limit, for the import of medical equipment, medicines and other ancillary items for the treatment of the COVID-19 pandemic.	PKR500 million (US\$ 3 million) (per hospital/medical centre)

The amount of approved financing under different incentives provided by the SBP to businesses to alleviate their financial concerns due to the COVID-19 pandemic are presented in **Error! Reference source not found.** The data are considered up to early September 2020. More than PKR 640 billion (US\$ 3.86 billion) worth of principal payments was deferred for up to one year for 1.3 million businesses whose requests were approved. In addition, PKR 6.3 billion (US\$ 37 million) in financing was approved for 34 hospitals. An additional PKR 54 billion (US\$ 325 million) was approved for 99 new or expansion projects, while PKR 200 billion (US\$ 1.2 billion) was approved as a refinance scheme for wages to prevent layoffs for more than 2,500 businesses covering more than 1.4 million workers.³³

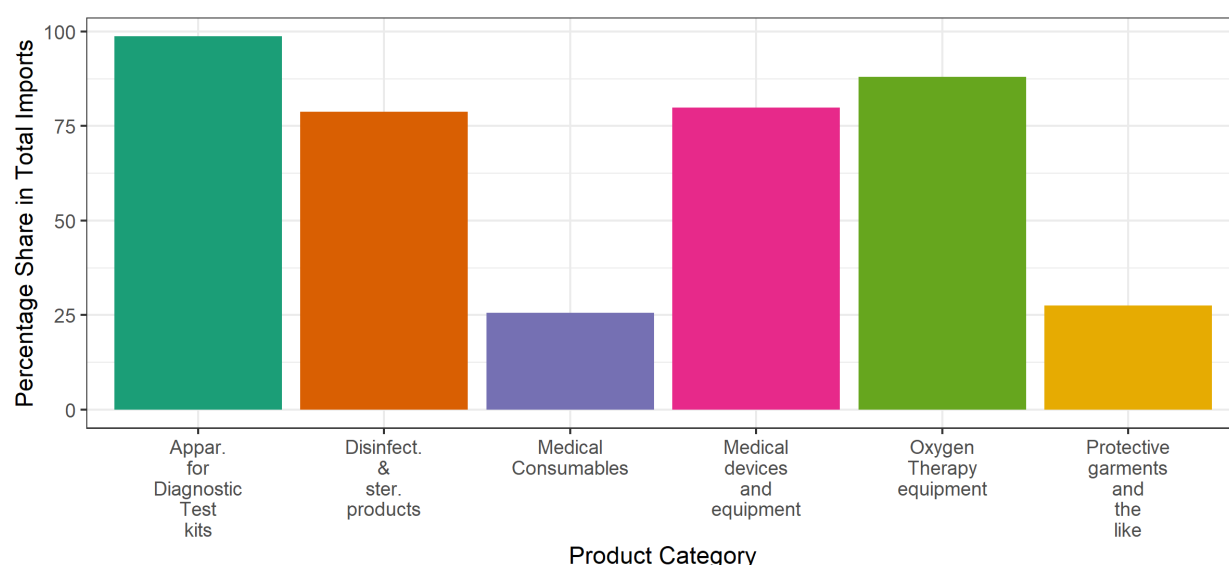
³³ One US dollar was approximately 166 Pakistani rupees on 31 August 2020.

Figure 48. Cumulative position of approved financing by State Bank of Pakistan for different incentive schemes



The SBP relaxed foreign exchange regulations to facilitate imports against advance payments and open accounts during the COVID-19 pandemic. Imports of medical equipment, medicines and other ancillary items for the treatment of COVID-19 patients were allowed. The list of products was extracted from Global Trade Alerts, and the impact on COVID-19-related medical products across different product categories is presented in **Error! Reference source not found..** More than three-quarters of total imports comprised apparatus for diagnostic tests, disinfectants and sterilization products, medical devices and equipment, and oxygen therapy equipment. The incentives for medical consumables as well as protective garments and related products covered less value of imports. Incentives for wheelchair and mobile clinic importers were not provided.

Figure 49. Relaxation of the Foreign Exchange Regulation offered by SBP as a trade measure in response to the COVID-19 pandemic



Data Source: Global Trade Alert (2020) for affected products, UN Comtrade (2020) for import values.
Percentage share in total imports of product categories: Author's own calculation

4. Ehsaas Emergency Cash Program

The Ehsaas Emergency Cash Program was launched on 1 April 2020 to target the economically vulnerable strata of Pakistani society by alleviating their hardships. A payment of PKR 12,000 (US\$ 72.3) per household was provided in cash to 12 million households. The total budget was PKR 144 billion (US\$ 867 million).

The beneficiaries were identified through a short message service (SMS) campaign. Potential recipients could check their eligibility by sending their Computerized National Identity Card (CNIC) number to a particular phone number. In addition, a portal was created where recipients could register themselves. More than 14.8 million beneficiaries have been served and a total of PKR 179 billion (US\$ 1.08 billion) was disbursed until 22 September 2020. The households were divided into the following five categories as determined on the Ehsaas website:³⁴

- **Category I.** Ehsaas Emergency Cash recipients include regular Ehsaas Kafaalat (another government programme that gives cash handouts to the most deserving and poorest women across the country). Total beneficiaries – 4.65 million; total amount disbursed – PKR 57.1 billion (US\$ 344 million);
- **Category II.** Ehsaas Emergency Cash recipients requested assistance through the 8171 SMS service and their eligibility was ascertained through the databases of the National Socioeconomic Registry 2010 and 2020. A higher eligibility threshold was

³⁴ The information on categories was extracted from https://www.pass.gov.pk/ecs/uct_all.html, provides Greater details on the strategies behind the disbursement for each category are available at <https://www.pass.gov.pk/Document/Downloads/EhsaasEmergencyCashReportJuly212020.pdf>.

used to identify the families remaining within the national poverty line. Total beneficiaries – 3.63 million; total amount disbursed – PKR 43.5 billion (US\$ 262 million);

- **Category III.** recipients include individuals identified by provincial governments. Their mode of identification was outlined in a process that has been approved and shared publicly before the commencement of the Ehsaas Emergency Cash operations. Total beneficiaries – 3.1 million; total amount disbursed – PKR 37.6 billion (US\$ 226 million);
- **Category III-A.** This category enables provinces to allocate their budgets for additional beneficiaries who have been identified by respective provincial governments. Their mode of identification is the same as for Category III. Total beneficiaries – 580,000; total amount disbursed – PKR 7 billion (US\$ 42 million);
- **Category IV.** Beneficiaries of Ehsaas Emergency Cash comprise individuals who had applied through the web-based portal hosted on the Prime Minister's website. The Prime Minister's Ehsaas Labour portal enabled those affected by COVID-19 job/livelihood loss to seek Ehsaas Emergency Cash assistance. This category is funded jointly by Prime Minister's COVID-19 relief fund and BISP.³⁵ The existing principles and processes that were deployed for Ehsaas Emergency Cash Category III were fully applied to this category, except that provincial population shares/quotas maintained for Category II and III, were not followed in this category. The Prime Minister authorised Ehsaas Emergency Cash for all those who were declared eligible in this category, rather than mandating population shares, to accommodate the maximum number of deserving individuals. Total beneficiaries – 1.18 million; total amount disbursed – PKR 14.2 billion (US\$ 85 million);
- **Category V** was created to cater to the spillover of eligible lists of Categories II and III. The methodology of Category III was applied. Total beneficiaries – 1.63 million; total amount disbursed – PKR 19.8 billion (US\$ 119 million).

5. Sehat Insaf Program (Social Health Protective Initiative)

Although this programme was launched before the COVID-19 pandemic, its purpose is to reform social welfare by providing underprivileged citizens with access to basic health care without any financial payments. It is expected that 14 million families will be enrolled in the programme and they receive benefits of up to PKR 720,000 (US\$ 4,500) annually in 150 hospitals across Pakistan. So far, 6.9 million families have been enrolled and 1.2 million hospital visits have been reported.³⁶

³⁵ The Prime Minister's COVID-19 Relief Fund is an appeal for donations from the Pakistani diaspora as well as domestic donors to assist the Government in its fight against COVID-19.

³⁶ See details at <https://www.pmhealthprogram.gov.pk/>.

B. Conveying the Government of Pakistan's message to the people

The National Command and Operation Centre (NCOC) was set up as a central administrative authority to implement the decisions of the National Coordination Committee (NCC) on COVID-19-related matters (table 4).³⁷ The purpose of the centre is to ensure a one-window operation to collect and process information on the pandemic across the country. Recommendations based on real-time projections for the right policy interventions would be submitted to the NCC, using the data and information collected from various sources across the country. The NCOC setup the following information technology (IT) initiatives to tackle the pandemic.³⁸

Table 4. IT Initiatives by NCOC in response to COVID-19

Initiative	Description
Resource Management System	The IT framework to map credible health resources. The system maps 4,000 hospitals around the country to establish need assessments and capacity enhancement.
Smart Lockdowns	Aimed at restricting the movement of the maximum number of infected persons. Hotspots are identified through an app and the purpose is to limit local transmission of the disease. As city-wide lockdowns are socially and economically infeasible, smart lockdowns allow a targeted approach by identifying areas where the disease is more prevalent.
<i>Pak Neghayban</i> app	This provides information on real-time availability of hospitals and the availability of oxygen and ventilators within proximity. It is aimed specifically at emergency responders.
Integrated Disease Information Management System (IDIMS)	Real-time data exchange integrated across all provinces of Pakistan. It allows advanced data analytics and information on the implementation of smart lockdowns.
National Helpline-1166 and WhatsApp Chatbot (+92300 1111166) for Healthcare Workers	Health-care workers can lodge complaints with the government authorities concerned. The Ministry of National Health Services Regulations and Coordination (NHSRC) handles the complaints and forwards them to relevant federal and provincial government officers for action.
The COVID-19 Telehealth Portal	A National Telehealth Portal through which doctors in Pakistan can provide free-of-charge consultations for patients around the country. This is discussed in greater detail below.
1166 (<i>Sehat Tahaffuz</i>)	A helpline to provide health-related information. Immediate assistance is available on the helpline.

The NCOC also setup other initiatives as listed in table 5.

³⁷ The NCC on the COVID-19 pandemic is a high-level committee comprising federal ministers, provincial Chief Ministers, the Surgeon-General of the Pakistan Army and various military officers. The Special Assistant on Health Services is designated as its convener and it is headed by the Prime Minister.

³⁸ The comprehensive list of IT initiatives established by NCOC is available at <https://ncoc.gov.pk/govt-initiatives.php>.

Table 5. Other Initiatives by NCOC in response to the COVID-19 pandemic

Initiative	Description
Isolation Hospitals and Infectious Treatment Centre (IHITC)	State of the art 250-bed hospitals were constructed in the capital, Islamabad, in 40 days to diagnose and treat infectious patients.
Community mobilization	Community mobilization through an established Rural Support Program ensures awareness, assistance in trace and quarantine program, disinfection and data collection among other activities in 66 districts across Pakistan.
Prime Minister's Relief Fund	The Prime Minister's COVID-19 Pandemic Relief Fund 2020 was set up to seek donations to provide health services and cash handouts to the most destitute of the population.
We Care	The Ministry of NHSRC launched this campaign to protect and support health-care workers. Personal protective equipment, orientation towards using such equipment and a conducive environment of care and support is provided to health-care workers. This programme also focuses on sensitizing the general public not only by creating awareness in terms of their behaviour towards health-care workers during hospital visits, but also by ensuring a reduction in infection rates in the process.
Tiger Force	A relief force of volunteers to distribute food to the poor and create awareness on the COVID-19 pandemic was created in April 2020.
Ehsaas	Emergency Cash Program. This has been discussed above in the subsection on the Ehsaas Emergency Cash Program.
<i>Yaran e Watan</i>	A joint effort of the Ministry of NHSRC and Ministry of Overseas Pakistanis and Human Resources (MOPHRD) Development to raise support from Pakistani diaspora and foreign-based health organizations.

Several Standard Operating Procedures (SOPs) and Guidelines were also provided, but not limited to schools, universities, businesses, restaurants, religious congregations, transportation services, parks and other recreational areas. These SOPs ensure social distancing practices, wearing a facemask and limiting the number of people served at one time. The NCOC also provided guidelines on testing and quarantining infected patients. Advisories on the usage of disinfectants as well as ethical health care were also issued.

In addition, the NCOC has issued public service messages in the form of images and videos to raise awareness across the country. The NCOC has also provided a contact number to lodge complaints against businesses not following the SOPs.

C. National Telehealth Portal

Pakistan was the first country in the world to launch a Telehealth Portal, free of cost and through WhatsApp. Digital Pakistan and the Ministry of National Health Services, Regulations and Coordination (NHSRC) run the portal.

The interview with Ms. Hannia Zia, Google Product Manager, highlighted the concept of the portal, its benefits and the challenges faced by the administrators of the portal. Ms. Zia played a key role in setting up the portal. The answers to the questions are listed in Appendix C. The responses are summarized below.

Ms. Zia discussed the workings of the Telehealth Portal for remote consulting. She also launched a Messenger chatbot and a Whatsapp chatbot in seven languages in order to facilitate awareness of the pandemic. The challenges she faced included the degree of documentation required from doctors during the registration process as well as the problems caused by the listing of fake patients. Furthermore, too many patients and too few doctors signed up in the early stages, leading to challenges in matching patients with doctors. This was resolved by seeking help from forums that include their own volunteer panels of doctors. Doctors were also reluctant to share their personal Whatsapp numbers with the patients. Number identification masking services were included but that required doctors to pay for the calls from their own pocket. In addition, as the data of patients were being stored, the service had to be done on a local server.

Ms. Zia mentioned the importance of high-level involvement in this project, with the Prime Minister Imran Khan himself inaugurating the portal. This led to its legitimacy. Data privacy is not a major concern and concerns regarding data breaches were reduced as all possible attempts were made to ensure that the data were transferred in a secure way.

1. Other digital medical services in Pakistan

Ittefaq and Iqbal (2018) found that there had been an increase in the number of digital services in the health sector during recent years. MARHAM is a popular Facebook app used for connecting doctors with patients. Patients can book appointments through Facebook. There are also opportunities for online consultations. MARHAM also allows users to ask questions regarding health issues, which are responded to by health-care experts. The doctors on the platform are carefully vetted and reviewed by the patients. There are many e-commerce related websites that focus solely on medicines. They offer discounted medicines and optimal delivery times to their users.

Another service with immense potential is medical transcription services from Pakistan. There is significant potential from the United States and Canada. The Small and Medium Enterprise Development Authority (SMEDA) has conducted a pre-feasibility survey for businesses in this sector.³⁹ It recognizes an internal rate of return of 61 per cent and a payback period of 2.9 years. Critical factors include technical skills and knowledge of entrepreneurs, a thorough understanding of the United States health-care industry, availability

³⁹ See details at <http://www.commerce.gov.pk/wp-content/uploads/pdf/medical-transcription.pdf>.

of trained manpower, an understanding of the processes and procedures in the industry and incorporation of the latest productivity tools.

An analysis of how to make regional integration support Pakistan's achievement of SDG 3 and effective health-crisis management

Pakistan has a poorly developed local health sector infrastructure. With 2.9 per cent of its gross domestic product (GDP) applied to current health expenditures, as measured by World Development Indicators, the capacity in the health sector is limited in dealing with a pandemic. Fortunately for Pakistan, the number of cases and deaths reported due to the COVID-19 pandemic has been lower than in other regional countries, such as India and the Islamic Republic of Iran. The pressure on the local health sector is not as large as was expected with a higher prevalence rate. This chapter analyses the number of hospitals, dispensaries and beds across four provinces and the Federal Areas of Pakistan. Although Punjab has the highest population among the four provinces analysed, it has a smaller number of hospitals and dispensaries than Sindh, the second-largest province in Pakistan. However, it has the highest number of hospital beds across all provinces. Therefore, the hospitals in Punjab have a larger number of beds per hospital but may not necessarily be located in more remote areas. All provinces report roughly similar values for the number of beds per 1,000 people. The Federal Areas reported the highest number of hospital beds per 1,000 people. Furthermore, Pakistan has about 233,000 registered doctors and 112,000 registered nurses. In addition, a significant number of doctors trained in Pakistan have migrated to developed countries.

Different response measures were adopted by Pakistan to contain the spread of the virus. Pakistan receives a significant volume of aid from several western Governments and multilateral donor agencies, such as the United States Agency for International Development (USAID), the Department for International Development (DFID) Pakistan, the World Bank and specialized agencies of the United Nations. According to the World Bank's World Development Indicators, Pakistan received net official development assistance of US\$ 1,362,000 in 2018. That amounted to US\$ 6 per capita and 0.4 per cent of gross national income (GNI). Pakistan also has a large number of non-profit organizations involved in the health sector such as the Edhi Foundation, Fatimid Foundation and Ehsaas Foundation, to name but a few. Pakistan has also undertaken various regional cooperation strategies such as the Central Asia Regional Economic Cooperation (CAREC) 2030 Program Results Framework which involves health-sector integration through SAARC. The latter involved video conferences between the heads of state as well as health ministers.

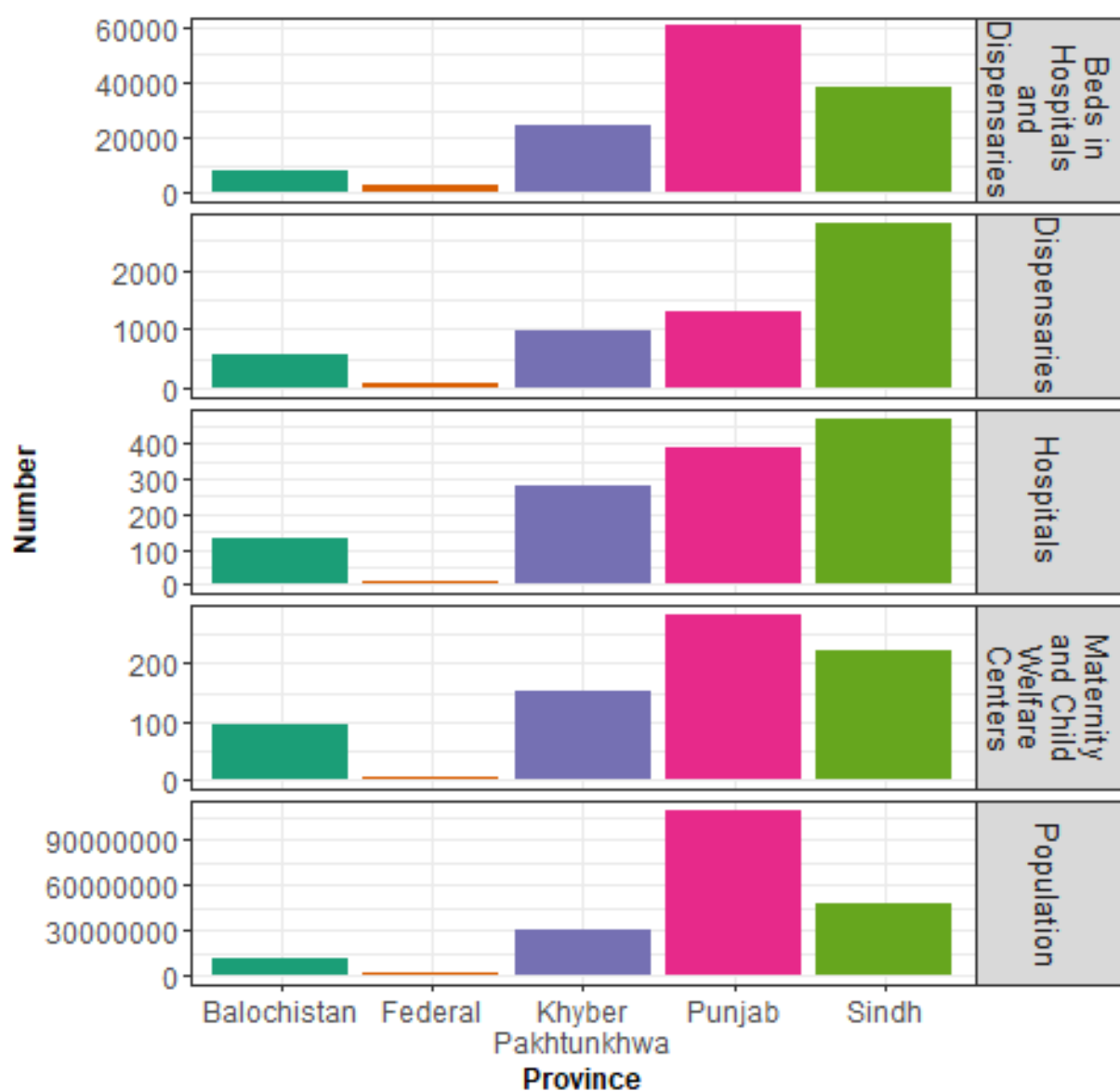
ASEAN has a relatively more successful regional integration strategy that involves deeper cooperation between its members than the cooperation strategies involving Pakistan. ASEAN Plus Three undertook various cooperative measures – including meetings of senior health officials and creating networks between member public health emergency operations and a field epidemiology training network – to combat the spread of the pandemic across the South-East Asian and the East Asian regions. Furthermore, China has developed strategies to make use of digital technologies in order to not only obtain better information on the spread of the pandemic but also to help of data integration provided by Governments, hospitals and private sector information to tackle the pandemic. Last, the European Union and New Zealand are two examples of developed regions that have integrated the use of technology into their health services. Developed countries are more likely to ensure data privacy and concerns of confidentiality. The telehealth services of the European Union and New Zealand are briefly discussed below.

A. Local health sector analysis

Pakistan has a poorly developed health sector infrastructure. According to the Pakistan Economic Survey 2019-2020, the cumulative health expenditures in fiscal year 2019 increased 1.3 per cent from PKR 416.5 billion (US\$ 3.42 billion at the conversion rate of PKR 121.5 to US\$ 1 on 29 June 2018) in FY2018 to PKR 421.8 billion (US\$ 2.63 billion at the conversion rate of PKR 160.5 to US\$ 1 on 28 June 2019). The total development expenditure was PKR 58.6 billion (US\$ 366 million at the conversion rate of PKR 160.5 to US\$ 1 on 28 June 2019) and the total current expenditure is PKR 363.1 billion (US\$ 2.27 billion at the conversion rate of PKR 160.5 to US\$ 1 on 28 June 2019). Current health expenditure as a percentage of GDP, as reported by World Development Indicators, was 2.9 per cent in 2017. The current expenditure is for day-to-day recurring expenditures, while development expenditures are to improve knowledge, skills and productivity in a particular sector. This is lower than the South Asian average of 3.5 per cent. Thailand, Malaysia and China reported 3.7 per cent and above.

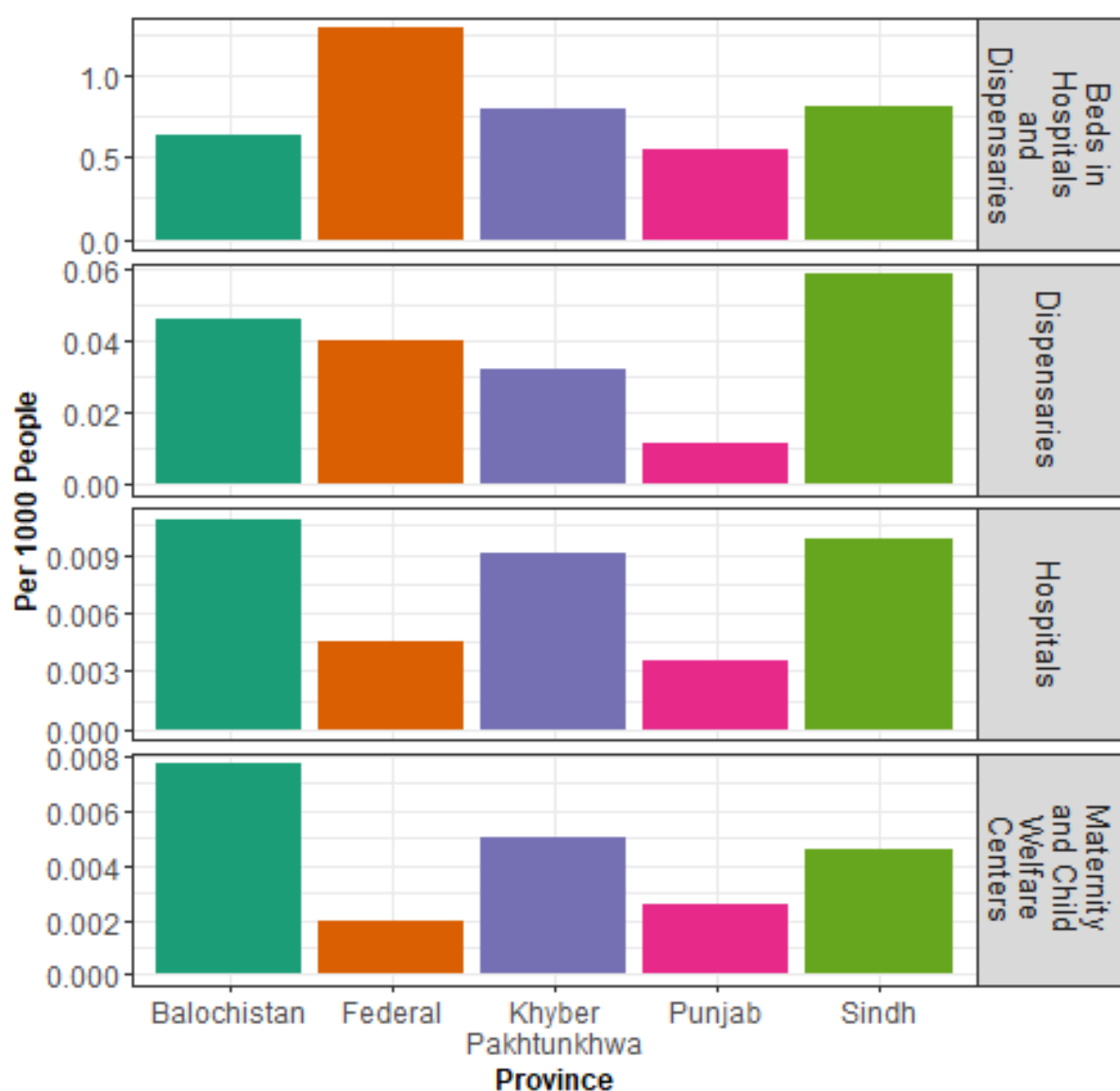
The indicators for the health sector-related infrastructure for Pakistan at the provincial level are presented in **Error! Reference source not found.** The four provinces of Pakistan, listed by size of the population are Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Baluchistan. Sindh experienced the highest number of the COVID-19 cases and deaths, followed by Punjab, KP and Baluchistan by the end of August 2020. The Federal Area includes the capital territory of Islamabad. Although Punjab has the highest number of beds in hospitals and dispensaries, Sindh has the highest number of hospitals and dispensaries in the country. KP follows Punjab and Sindh across all indicators. Baluchistan, as the least populated province in Pakistan, has a smaller health sector-related infrastructure than the other provinces. Dispensaries are set up to provide basic primary care and may have only one or two doctors on duty. They are typically located in areas where hospitals are not easily accessible. They provide cheap and basic health care to the poorer population.

Figure 50. Indicators for health sector-related Infrastructure of Pakistan at the provincial level, 2019



The size of the health sector-related infrastructure in terms of the population of each province is presented in **Error! Reference source not found.** Sindh has the highest number of dispensaries per 1,000 people, while Baluchistan has the highest number of hospitals. The Federal Area has the highest number of beds per 1,000 people. Interestingly, Punjab has the lowest number of hospitals and dispensaries as well as beds per 1,000 people. Punjab has the highest population density among the four provinces. As the population is concentrated within certain locations, the likely need to build hospitals and dispensaries in more remote areas is low.

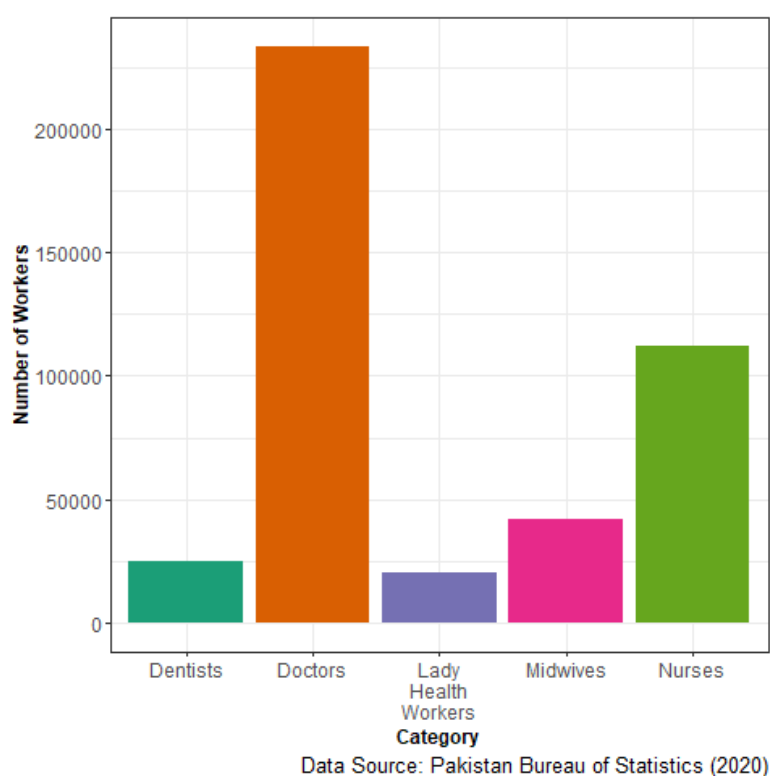
Figure 51. Indicators per 1,000 people for health sector-related infrastructure for Pakistan at the provincial level, 2019



Data Source: Pakistan Bureau of Statistics (2020)

The total number of medical and paramedical workers in Pakistan in 2019 is presented in **Error! Reference source not found.** Pakistan had more than 233,000 doctors and 112,000 nurses in 2019. It is important to note that a significant share of doctors trained in Pakistan has migrated abroad as discussed in the previous chapter.

Figure 52. Registered medical and paramedical personnel in Pakistan, 2019



B. Cross-country evaluation of best practices

Pakistan and WHO

The role of foreign assistance in developing the health sector of Pakistan is highlighted in the WHO Country Cooperation Strategy.⁴⁰ Pakistan receives a significant volume of aid from several western Governments and multilateral donor agencies. Pakistan also has a large number of non-profit organizations involved in the health sector. However, a major proportion of the health expenses are paid by those receiving medical services. The United Nations Country Team coordinates bilateral and external donor programmes that participate in One United Nations joint programme on health. WHO holds the chairmanship of the Health, Population and Nutrition Partners Group, a coordination platform aimed at streamlining donor funding.

The agenda for the WHO Country Cooperation Strategy for Pakistan involves seven strategic priorities. These priorities include communicable disease control that targets an improvement in routine immunization programmes and emergency preparedness. Furthermore, priority is given to effective response and disaster risk management ensuring that the health emergency management information system, as well as guidelines and standard operating procedures in response to a health emergency, situate remain up-to-date. The priorities also involve

⁴⁰ Available at https://apps.who.int/iris/bitstream/handle/10665/136607/ccsbrief_pak_en.pdf?sequence=1&isAllowed=y.

partnerships, resource mobilization and coordination between the different donors supporting the health sector.

C. Pakistan and regional cooperation

Pakistan is a member of at least two major regional partnership programmes that can help boost regional cooperation in the health sector – Central Asia Regional Economic Cooperation (CAREC) and SAARC. The CAREC 2030 Program Results Framework mentions the increase of regional cooperation in health as an important outcome of human development efforts in the region.⁴¹ It aims to control pandemics and non-communicable diseases by setting up health-related surveillance systems for pandemic communicable diseases and promote trade in health services and e-medication.

SAARC has a SAARC Tuberculosis and HIV/AIDS Centre (STAC) which was established in 1992 to play an important role in the prevention and control of tuberculosis in the region.⁴² SAARC Health Ministerial Meetings were regularly held between 2003 and 2012. An emergency meeting was held in April 2003 to deal with the Severe Acute Respiratory Syndrome (SARS) epidemic. An important agenda of the meetings included tackling the spread of communicable diseases and setting up surveillance systems as well as rapid deployment of health services across the region. A Technical Committee on Health and Population Activities was first convened in 2005. It also placed emphasis on disease surveillance and monitoring as well as an early warning system.

The leadership of the SAARC countries have recognized the impact of communicable diseases and a need for a regional strategy to combat them. They have sought to ensure a collective, systematic and coordinated approach towards disease surveillance in the region.

High-level video conferences were held in March and April 2020 by SAARC member countries, where members not only made pledges to create a fund to fight the virus, but also discussed several issues related to cross-border cooperation between the countries. However, due to political tensions between two important members, cooperation between the member countries will likely remain limited.

Other regional cooperation arrangements, such as the Economic Cooperation Organization (ECO) and the D-8 Organization for Economic Development, that involve Pakistan have either issued guidelines or taken initiatives to combat the virus; however, the arrangements need to be further enhanced.⁴³ Wardak (2020) reported that a Special Session of the D-8 Commission, co-chaired by Turkey and Bangladesh, was held virtually in August 2020. The secretary-general provided an update on the initiatives and steps taken by the Social Programme Office to provide support and cooperation among member States. Pakistan

⁴¹ Available at <https://www.carecprogram.org/uploads/2018-CAREC-Program-Results-Framework.pdf>.

⁴² Available at http://globalsummitryproject.com.s197331.gridserver.com/archive/saarc/saarc-sec.org/areaofcooperation/detail547f.html?activity_id=11.

⁴³ ECO member States comprise Azerbaijan, Afghanistan, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Pakistan, Turkey, Tajikistan, Turkmenistan and Uzbekistan. The D-8 Organization for Economic Development member States comprise Bangladesh, Egypt, Indonesia, the Islamic Republic of Iran, Malaysia, Nigeria, Pakistan and Turkey.

highlighted its efforts to contain the economic and health impact of the COVID-19 virus. The ECO has issued guidelines to ensure free passage of essential medicine and food by recommending that border checkpoints between member States should remain open for cargoes containing medicines and food supplies.⁴⁴ It also recommends the use of ‘green lanes’ at international checkpoints to reduce border delays.

D. Best practices in ASEAN

Since its establishment, ASEAN has undertaken several health emergency programmes to prevent the spread of non-communicable diseases. ASEAN health cooperation is supported by the ASEAN Socio-Cultural Community (ASCC) pillar.

As recommended by ASEAN Vision 2025 and the subsequent ASEAN Socio-Cultural Community Blueprint 2025, ASEAN countries adopted the ASEAN Post-2015 Health Development Agenda (APHDA), which involves shared goals, strategies and priorities, and the health sector programmes between 2016 and 2020. The governance structure involves two main bodies: (a) the ASEAN Health Ministers’ Meeting (AHMM), which is convened every two years as well as holding special meetings that are convened to discuss urgent matters; and (b) Senior Officials’ Meetings on Health Development (SOMHD), which oversees the implementation of APHDA which are convened at least once a year, with special meetings called in the event of urgent matters.

The APHDA involves 42 strategic measures. The Agenda of Health Cooperation will focus attention and resources on 20 health priorities divided into four health clusters – (a) promoting health lifestyles, (b) responding to all hazards and emerging threats, (c) strengthening health systems and access to care, and (d) ensuring food safety.

The most relevant to the COVID-19 pandemic is (b) responding to all hazards and emerging threats. This programme not only involves alignment with the SDGs but also includes strategies to mitigate health hazards and ensure better disaster health management.⁴⁵

Furthermore, the ASEAN Plus Three Field Epidemiology Training Network (ASEAN+3 FETN) was formed as a network among field epidemiology training by ASEAN Plus Three countries, i.e., China, Japan and the Republic of Korea. The purpose is to: (a) strengthen regional clinical expertise through professional organization networks, regional research institutions, exchanges of experts and information sharing; and (b) strengthen cooperation through sharing of information and experiences in order to prevent and control infectious diseases related to global warming and climate change, and natural and man-made disasters.⁴⁶

The COVID-19 pandemic response by ASEAN Plus Three, in its efforts to combat the spread of the disease, included establishing a hotline between ASEAN members. A mechanism was introduced by SOMHD aimed at reinforcing national public health responses.

⁴⁴ See http://www.eco.int/general_content/88409-COVID-19-Advisory.html?t=General-content.

⁴⁵ More details on Health Cluster 2 work programme are available at <https://asean.org/wp-content/uploads/2017/02/Responding-to-All-Hazards-and-Emerging-Threats.pdf>.

⁴⁶ See http://www.aseanplus3fetrn.net/read_more_pdf/FETNP1-10.pdf.

Representatives of the ASEAN EOC Network for Public Health participated in the meetings.⁴⁷ Furthermore, the role of the ASEAN BioDiaspora Virtual Centre (ABVC) for Big Data Analytics and Visualization was to create a real-time risk assessment tool to determine the disease outlook as well analyse the dangers of the outbreak from importation of the disease.

A joint statement was made by Health Ministers of ASEAN. The statement focused on enhancing cooperation between the member states, the development of regional guidelines, exchanging of data, effective and transparent public communication as well as promotion of the use of digital technologies to reach the maximum number of the population.⁴⁸ Overall, ASEAN had a stronger and coherent collective response than the SAARC member countries, between which collaboration is much lower.

E. Linking experience in China

China was the first country to experience the impact of the COVID-19 pandemic. According to a report published by The Rockefeller Institute, “Tackling the COVID-19 pandemic through Integrating digital technology and public health: Linking experiences in China to the world”, China was successful in containing the spread of the outbreak through multi-level governmental efforts and leverage of technological solutions. Digital technology was used to mitigate the spread of the virus. The aforementioned report further mentions that China’s President, Mr. Xi Jinping, emphasized the role of digital technology to keep society functional as well as trace and test individuals suspected of causing the COVID-19 pandemic. The policies introduced involved creating Internet-based hospitals to diagnose and treat patients to ensure that personal information remains protected and that big data are utilized. Digital technology was also used to ensure a fast response. This involved assisting the Government in data collection to support decision-making as well as tracking high-risk groups, so that the spread was contained. Initiatives such as Digital Health China recognized that a lack of timely and integrated data on health could inhibit efforts to contain the virus. It provided solutions for monitoring the health of residents of a region, collecting clinical data from hospitals and providing Cloud services to ensure data integration. Digital technology also plays an important role in epidemiological studies as it can assist in complex research using terabytes-worth of information. Projections of the scale and prevalence of the outbreak can be studied as well as drugs and vaccines developed for the COVID-19 pandemic can be accelerated with the help of big data.

Pakistan is also learning from the experience of China. As noted in chapter 2, NCOC has introduced several measures similar to those of China to tackle the spread of the virus.

F. eHealth and COVID-19 in the European Union

The European Union introduced mobile tracing and warning applications that informed citizens of their proximity to infected patients and encouraged citizens to inform health

⁴⁷ See https://asean.org/?static_post=updates-asean-health-sector-efforts-combat-novel-coronavirus-covid-19.

⁴⁸ See <https://asean.org/storage/2020/09/Joint-statement-of-AMRI-for-COVID-19-Adopted-AMRI-25Aug20.pdf>.

authorities and ask them for support.⁴⁹ The European Union countries and the European Commission have allowed Europeans to travel with a single app using European Union -wide system interoperability. The identity of an infected person remains anonymous. It is important to note that the apps comply with the General Data Protection Regulation (GDPR) and ePrivacy Directive, which ensure trustworthiness as they guarantee sufficient protection of personal data and limitation of intrusiveness.⁵⁰

The European Union also provides electronic cross-border health services where citizens can obtain their medicines from pharmacies located in different countries across the European Union, and can also transmit patient summaries to doctors across the European Union.⁵¹ By 2025, the services will be available in 25 European Union countries. Currently, the services are available in a limited number of countries. The eHealth Digital Service Infrastructure (eHDSI) facilitates the cross-border exchange of health data. The European Commission provides information, communication and technology (ICT) infrastructure. Countries can connect their national portals to National Contact Points for eHealth (NCPeH) while also receiving financial assistance. An expert group as well as a management board have been set up to ensure operational and tactical decisions.

G. National Telehealth Service in New Zealand

The Ministry of Health in New Zealand launched a national telehealth service in 2015 to act as a clinical and technology platform for service integration and innovation in virtual digital health services.⁵² The purpose was for it to be a trusted part of the health-care system that: (a) offers a confidential and reliable source of advice; (b) facilitates ensuring the right person delivers the right care at the right time; (c) increases the cost-effectiveness of the health-care system; (d) reduces demand; and (e) has the flexibility to adapt and develop over time.

The services are free of charge and available 24/7 on every day of the year through phone, text, webchat and email. The service embraces several principles, with one of them stressing patient privacy and confidentiality. This is key to ensuring that patients find the system trustworthy. The agreement for services between the Ministry of Health and the service provider has confidentiality requirements as an aspect of its terms and conditions. It restricts the sharing of data with third parties.

There were more than 634,000 contacts (where one service user contacted with National Telehealth Service) to the national telehealth services in the 12 months up to 30 June 2018. In that period, registered nurses gave health advice to around 290,000 people; more than 30,000 people started their quit-smoking journey, and more than 60,000 people were given support from the mental health counselling team.

⁴⁹ See https://ec.europa.eu/health/ehealth/covid-19_en.

⁵⁰ See https://ec.europa.eu/commission/presscorner/detail/en/ip_20_669.

⁵¹ See https://ec.europa.eu/health/ehealth/electronic_crossborder_healthservices_en.

⁵² See <https://www.health.govt.nz/our-work/national-telehealth-service>.

H. Surveying health-related sectors on COVID-19 and digital integration

A survey was conducted in collaboration with the Sustainable Development Policy Institute (SDPI) on 15 private and public health service providers as well as five private sector companies working in sectors related to health, to gauge the readiness of digital technology adoption during the COVID-19 pandemic. The health service providers believe that there is a significant benefit to be gained from regional integration with Asian countries, as it will provide more customers and cheaper inputs, machinery and equipment for health sector. Several of the health service providers were directly involved in improving the quality of the health sector, with a few of them also regulating the quality of goods and services. The main points gained from the survey were that social media platforms and websites, together with other digital technologies, such as SMS and WhatsApp, are commonly used by the health sector providers to communicate with the public. The providers were also of the view that telehealth programmes will be extremely beneficial in catering to the poorest population in Pakistan. There is a widely favourable view on the adoption of digital technology in the health sector. The proportion of firms that reported either positively or negatively on the impact of digital technologies in boosting health-worker density across the poorer population of Pakistan were almost equally weighted. Digital technologies can help to improve the delivery of health services across Pakistan through Geographic Information Systems (GIS) so that the areas most in need of particular services are prioritized. Fundamentally, geocoding and mapping facilities are useful in determining the population most need of medical services across the country.

National Action Plan to achieve SDG 3

Table 6 presents a national action plan that can help policymakers devise a strategy to ensure a more effective delivery of health services in Pakistan. The following information presents the actions that policymakers may take, the constraints that they are likely to face that require the specific action and the proposed corrective measures needed to ensure that their actions are effectively implemented. The major categories include trade-related measures, the foreign flow of health services, government response to the COVID-19 pandemic, and a national telehealth programme and digital technologies to improve health service delivery.

The actions on trade-related measures include recommendations to improve trading relationships for health-related products and services, reduce tariff rates on imports, and adopt non-tariff measures to ensure poor quality products that can be dangerous to the health and safety of consumers are not imported as well as produced in Pakistan. Other measures include: taking advantage of the benefits of tariff concessions provided by China to Pakistani exporters on medical products; removing certificate requirements and other procedures that delay exports; reconsidering the minimum export price restriction on exports of surgical instruments; and on-time implementation of the National Single Window (NSW) lead by Pakistan Customs.

The actions on foreign flow of health services include: facilitating foreign-trained health workers to practice in Pakistan; increasing scholarship opportunities in foreign medical colleges for Pakistani medical students; increasing the flow of medical tourists into Pakistan; and improving data collection on the flow of services. The actions on improving government response to the COVID-19 pandemic include better adherence to standard operating procedures (SOPs) and using contact-tracing apps to collect information on COVID-19 patients. The actions regarding the national telehealth programme involve increasing the number of doctors, reducing the number of fake doctors, raising concerns regarding the protection of data privacy and ensuring participation of foreign-trained medical doctors in the programme. Last, the actions on ensuring the use of digital technologies to improve the delivery of health-sector services include better communication between hospitals and emergency medical responders as well as digitally mapping areas in order to cater for those areas that are most in need of medical services.

Table 6. National Action Plan to achieve Sustainable Development Goal 3

No.	Action	Constraints	Proposed corrective measures
Trade-related measures			
1	Improve trading relationships with ASEAN countries for the trade of health-related products and services.	Low number of preferential agreements with regional trading partners, bias towards Western markets for exports, low interaction of trade missions in ASEAN countries, lack of trade linkages with the ASEAN health sector can create challenges for	The Ministry of Commerce (MoC) must seek more trade agreements involving regional countries, particularly with ASEAN countries. Increase the role of trade officers in ASEAN countries in marketing health-

		health sector businesses.	related products and promote trade exhibitions in the ASEAN region involving the health sector. Furthermore, the capacity-building of trade officers posted abroad is essential to ensure that they provide their services more efficiently. This will entail on-the-job training as well as greater awareness of trade-related opportunities and challenges. FTAs must also include chapters concerning the flow of services in the health sector.
2	Eliminate the use of tariffs as a revenue generating tool	The low tax to GDP ratio, at 11 per cent as reported by the Federal Bureau of Revenue (FBR) in fiscal year 2020, forces the Government to adopt tariffs for revenue-generating purposes. However, high tariffs can lead to under-invoicing and lack of trade. The SRO culture can lead to uncertainty as well. Furthermore, the tariffs imposed on certain health-related products by ASEAN countries on Pakistani imports is higher than the average tariffs.	The National Tariff Commission (NTC) must rationalize tariffs on medical products and bring them to par with that of regional trading partners, particularly ASEAN countries. This will help to improve competitiveness and the possibility for a bilateral reduction in tariffs. The federal Bureau of Revenue (FBR) should increase direct tax collection from health-service providers rather than focus on custom and import duties on necessary imports.
3	Adopt the use of non-tariff measures to regulate the quality of imports and domestic production in order to improve health and safety of consumers	Pakistan reports a lower frequency index (percentage of products facing NTMs) and coverage ratio	Empower Pakistan Standards and Quality Control Authority (PSQCA) by increasing their ability

	<p>as well as ensure that poor quality health products do not proliferate in Pakistan. This should apply to all goods, both domestically produced and imported. This is necessary, given the nature of health products.</p>	<p>(percentage of imports reporting NTMS) on NTMs than several of its counterparts, as highlighted in the study. Weak checks on the quality of domestic production can have a negative impact, reducing the demand for Pakistani products abroad. Lack of technical requirements on imports can also lead to the import of substandard medical products, in turn leading to dangerous products.</p>	<p>to fine and punish suppliers of substandard products through legal powers. Improve liaison between PSQCA and MoC. Increase collaboration between the Drug Regulatory Authority of Pakistan (DRAP) and PSQCA to ensure that there is no overlapping of procedures. This is the case for personal care items, which can also be used for medical purposes. Review technical requirements to make sure that the health and safety of consumers are prioritized. Furthermore, provide training for exporters and importers regarding the role of standards and quality control in trade. Strict adherence to the aforementioned measures must be ensured for domestic producers as well.</p>
4	<p>Take advantage of benefits from the reduction in tariffs offered by China on imports from Pakistan</p>	<p>The lack of capacity to export products, the inability of exporters to cater to the Chinese markets and limited trade linkages between Chinese health-service providers reduce demand for Pakistani health-sector products in China. This can reduce bilateral trade in health-related products. China has provided concessions on medical product imports from Pakistan. However,</p>	<p>Introduce the upgrading of the health sector as an important component of the China-Pakistan Economic Corridor (CPEC). This will help to improve trade-related issues faced by Pakistan and improve the domestic health sector. The MoC and CPEC Authority can collaborate in identifying the products with the</p>

		Pakistan may not be tapping into the potential, as exports to China remain limited.	highest potential.
5	Remove the requirement of no-objection certificate (NOCs) for each consignment of exports of pharmaceuticals when the license is already issued.	Add delays for exporters of pharmaceutical products, particularly when exports are time-sensitive.	DRAP provides licences to exporters. Once a licence has been issued, it should automatically allow exporters to export a certain amount of pharmaceutical products for a certain period. This will also reduce the need for multiple documentation.
6	Reconsider the minimum export price (MEP) on surgical instruments	The MEP is imposed to reduce under-invoicing in exports. However, it can work as a quantitative restriction on trade. It can deter exporters from setting competitive prices. The list of products facing minimum export price restrictions is included in the Export Policy Order 2020. A recently published book by the faculty members at the Institute of Business Administration (IBA), “Policy Response During Challenging Times: Insights from the Federal Budget 2020-2021 and the Way Forward”, highlights the high unit values faced by exporters of surgical instruments as they lose competitiveness against exporters in regional countries (Zaidi and others, 2020).	The MoC should introduce proactive steps in collaboration with trade associations and businesses in order to improve the quality of output. The minimum export price is unlikely to be needed with an improvement in the quality of output, reducing the need to export at low prices.
7	On-time implementation of the National Single Window (NSW) System	Currently, several agencies are involved in the trade procedures and process. A trader is required to submit	Pakistan Customs, as the lead agency, needs to implement the NSW at the scheduled time. This will also

		documents to different agencies, which can be costly and cause time delay.	help with electronic filing of documents related to NTMs. Furthermore, capacity-building programmes for all stakeholders to take advantage of NSW must be introduced. This will help to improve facilitation and its efficacy.
Foreign flow of health services			
8	Increase opportunities for Pakistani-origin health-service providers abroad to practice in public sector hospitals in Pakistan through exchange programmes, telehealth programmes and facilitation services by foreign-trained doctors for Pakistani diaspora in advanced countries	Delays in licensing and registration of foreign doctors can deter them from practising in Pakistan. Applications for NOCs from the Ministry of National Health Services, Regulations and Coordination can take at least 30 days to issue. ⁵³ Furthermore, the Pakistan Medical Commission (PMC) (formerly known as the Pakistan Medical and Dental Council (PMDC ⁵⁴) requires foreign doctors to take the National Examination Board tests before practising in Pakistan. There is a lack of specialist doctors in Pakistan. Doctors trained abroad face challenges in practising in Pakistan as they have to undergo examinations, which may discourage them from returning.	Increase collaboration between Pakistani diaspora organizations and local health institutes to improve the flow and create a network of recognized foreign accreditations. <i>Yaran –e-Watan</i> , an initiative of the Ministry of National Health Services, Regulations and Coordination facilitates telehealth services by connecting Pakistani health institutes providing consultations and counselling to the Pakistani diaspora. The Ministry of Interior must make it easy to issue visas to health-care service providers. PMDC and the Ministry of National Health Services, Regulations and Coordination can

⁵³ See <http://www.nhsrsc.gov.pk/SiteImage/Downloads/SOPsforforeignnationals.pdf>.

⁵⁴ In order to maintain consistency throughout this report, the Pakistan Medical Commission is referred to as the Pakistan Medical and Dental Council. PMDC was replaced by PMC in September 2020.

			provide foreign health workers with temporary registrations and permits without significant delay. This can increase the availability of specialist doctors focusing on rarer diseases. Doctors trained by foreign medical colleges and universities must be assisted through an easier examination process that does not deter them from returning to Pakistan and practising locally.
9	Increase scholarships for doctors and nurses to pursue specializations at well-reputed foreign medical schools	Lack opportunities to apply for scholarships. Certain scholarships are routed through the Higher Education Commission (HEC). The lack of expedient visas is a major issue as it reduces the incentives for those seeking scholarships abroad. The stringent and lengthy examination requirements for students returning and willing to practice locally can deter them from returning once their training or education period ends.	PMDC must provide more opportunities for scholarships and recognize more universities. Collaboration with well-reputed foreign universities to introduce their courses and training programmes locally. Furthermore, medical students must also be assisted with visa issuance to ensure that the brightest students achieve the highest-quality education. In addition, students must be assisted in terms of the examination processes and in starting their practice on their return, so that they can do so without a time delay. The examination process for students returning after foreign training

			must be made smoother without significant time delay.
10	Increase the inflow of medical tourists	There is no visa category for medical tourism in Pakistan. ⁵⁵ Few hospitals have international accreditation.	The Ministry of Interior introduced a visa category specifically for medical tourists in early February 2021. The issuance of the visa has to be expedited as well in order to ensure those seeking services of medical facilities in Pakistan do not face time delays. Federal and provincial health ministries must work towards increasing the number of hospitals that have foreign accreditations to ensure they meet recognized standards.
11	Improve availability of data on the flow of health services	Data on health service flows between Pakistan and different foreign countries are limited and non-standardized. Different agencies such as the Pakistan Bureau of Statistics (PBS), State Bank of Pakistan (SBP), and PMDC are involved in calculating data for various flows. Currently, trade agreements do not involve the sharing of data on health services.	Data must not only be standardized but also verified with different stakeholders. Also, a single repository is necessary for services data, similar to that for trade data. Disaggregation of services data is also needed. Pakistan can also seek participation in international data registries, participate in international alliances for health services and include conditions on free-

⁵⁵ The Government approved the introduction of this category in February 2021. However, it did not officially appear as a category on the official visa platform hosted by the Ministry of Interior until mid-February 2021.

			<p>flow data as part of trade agreements. Pakistan and China do have conditions regarding electronic data sharing of customs data. However, the MoC needs to be involved in ensuring agreements include the sharing of services data. Pakistan and China must also consider agreements on the exchange of health services in addition to goods under the FTA. This will ensure that Pakistani students interested in pursuing medical education enrol in officially recognized medical colleges in China.</p>
Government response to the COVID-19 pandemic			
12	<p>Increase the adherence to government-issued standard operating procedures (SOPs). These include maintaining mask-wearing and social distancing protocols. Also, ensure hygiene standards are adopted and strictly followed in commercial and industrial locations.</p>	<p>The lack of a local government with elected representatives is a major constraint to enforcement. The 18th amendment, which empowered provincial governments on health issues, has led to a complex relationship between the federal and provincial governments, particularly in Sindh province.</p>	<p>Given the current political setup, the National Command and Operation Center (NCOC) must empower district-level representatives to enforce SOPs and ensure that law enforcement agencies are enforcing them. Businesses violating SOPs must be fined more severely to deter violations.</p>
13	<p>Increase the prevalence of contact-tracing apps created by the National Information Technology Board (NITB)</p>	<p>The low rate of smartphone penetration and Internet connectivity is likely to result in low participation in such apps. Also, individuals with smartphones may not be willing to download and</p>	<p>Empower district-level representatives to collect and enter data into such apps on areas that are currently reporting positive cases. Use volunteers to assist in contact</p>

		use the app.	tracing and convince suspected COVID-19 cases to be tested for the virus. This contact tracing app can be further used to develop a national strategy to administer vaccinations, as it can pinpoint high-risk areas.
National Telehealth Programme			
14	Increase the number of doctors joining the programme	Initially, the documentation requirements for checking the authenticity of doctors was too stringent. Lack of doctors willing to volunteer can create severe backlogs and place a burden on the few participating doctors.	Collaborate with associations (e.g., the Association of Physicians of Pakistani Descent in North America (APPNA) and medical schools to promote doctors signing up for the programme. The Ministry of National Health Services, Regulations and Coordination must simplify the documentation process for doctors who are well-reputed and employed by accredited health facilities. In addition, it must provide incentives for young doctors to sign up for the programme. Artificial intelligence and machine learning – with assistance from IT companies and software developers as well as the involvement of the Ministry of Information Technology and the Telecommunication (MoITT), the National Information

			Technology Board (NITB) and Pakistan Telecommunication Authority (PTA) – can be used to diagnose problems with less serious conditions and offer simple treatments, while more serious conditions are referred to more experienced doctors.
15	Restrict the number of fake doctors from signing up on the portal	On the other hand, there is an issue where unlicensed doctors may register and provide medical advice. Often, medical clinics and health service providers may be registered without due diligence. This will lead to poor quality of delivery. In addition, there is a risk that licensed doctors may use the service to promote their commercial interests.	Quality checks, with assistance from the Ministry of National Health Services, Regulations and Coordination and PMDC, need to be implemented. They must not be a burden but must eliminate scrupulous elements from the system. Together with patient feedback, a check must be made for doctors seeking to promote their commercial interests. Doctors found doing so should be blacklisted from all such services in Pakistan.
16	Tackle major concerns on data privacy	Health-care workers and patients may be reluctant to share their contact details on the system. Patients may not want their data to be stored on foreign servers. There is a risk of data being extracted for malicious intent.	Although WhatsApp calls may not be masked and patients may end up receiving contact details, masking services are available with telecommunication companies. However, that will result in out-of-pocket payments by doctors. Although it may not guarantee data

			<p>protection, local servers are being utilized to store patient data so that it remains within the location borders (data localization). The Ministry of Information Technology and Telecommunications can enhance policies on data privacy and ensuring patient rights. The Ministry of Law and Justice will also need to play a facilitation role. Ensuring that data are securely transmitted using encryption and that full efforts are made to protect the identity of the patients, is also recommended.</p>
17	Increase participation by foreign doctors in order to improve the diversification of skills	As foreign doctors may not have a PMDC number, they are not legally allowed to practice in Pakistan.	<p>The National Telehealth Portal developers, with the assistance from the Ministry of National Health Services, Regulations and Coordination as well as Digital Pakistan (under the Ministry of Information Technology and Telecommunications) are tapping into the <i>Yaran e Watan</i> initiative database to increase connectivity with the Pakistani diaspora in the health sector.</p>
Digital technologies to improve health service delivery			
18	Sharing of data between different hospitals, dispensaries and emergency responders	Lack of Internet connectivity and smartphone penetration	Critical time can be saved if emergency health responders are

		may limit data sharing between different health centres as well as emergency responders.	informed about the availability of hospital beds and treatment facilities in their localities. This information should be improved with the use of digital technologies, which can be promoted by the National Information Technology Board. Responders at Sehat Tahaffuz 1166 Helpline, supported by foreign donors, can be provided with real-time data to pass on to emergency responders/paramedics across the country.
19	Increase mapping of areas where different diseases are prevalent, so that the right medical services are delivered, particularly in remote areas.	Due to the inability to test and detect diseases in rural areas, mapping is likely to be restricted. Furthermore, social structures and inhibitions with regard to being a disease carrier may prevent people from testing.	Use district-level health officers and volunteers, coordinated by federal and provincial health ministries to ensure people with symptoms are tested and disease prevalence is detected. Geographic Information System (GIS) mapping can be used to improve the effectiveness of health service delivery across Pakistan with the assistance of Digital Pakistan and the Ministry of Information Technology and Telecommunications. It can assist planners to determine areas where health services are inaccessible.

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Appendix A. List of COVID-19 related medical products categorized at the six-digit HS code and their respective product categories and product labels

Product categories	Commodity HS Codes	Product label
Apparatus for diagnostic test kits	300210	COVID-19 Test kits
	382100	Swab and viral transport medium set
	382200	COVID-19 test kits
	902780 (*)	COVID-19 Diagnostic test instruments and apparatus
Disinfectant and sterilization products	220710	Alcohol solution
	220890	Alcohol solution
	284700	Hydrogen peroxide in bulk
	290512	Propan-1-ol (propyl alcohol) and propan-2-ol (isopropyl alcohol)
	291511	Formic acid and its salts
	291512	Formic acid and its salts
	291821	Salicylic acid and its salts
	300490	Hydrogen peroxide presented as a medicament
	380894	Hydrogen peroxide put up in disinfectant preparations for cleaning surfaces
	841920	Medical, surgical or laboratory sterilizers, including autoclaves
	853949	Ultra-violet lamps
	853950	Ultra-violet LED lamps
	854370	Ultra-violet irradiation equipment for disinfection purpose
Medical devices and equipment	732490	Kidney basins
	841319	Infusion pump, with or without accessories
	901811	Electrocardiograph (ECG) machines
	901812	Ultrasound machines
	901890	Various medical equipment such as forceps, stethoscopes, intubation kits
	902212	Computed tomography (CT) scanners
	902519	Infrared thermometers/digital thermometers
	902820	Electronic drop counter, IV fluids
Medical consumables	280440	Medical oxygen
	300510	Surgical tape
	300590	Wadding, gauze, bandages, cotton sticks and similar articles
	300670	Conductive gel for use in an ECG or ultrasound procedure
	340111	Soap
	340120	Soap
	340130	Liquid or cream hand or skin washes put up for retail sale
	370110	X-Ray film or plates, flat
	370210	X-Ray film or plates, in rolls

	392329	Plastic hazardous waste disposal bags
	560311	Absorbent pads of non-woven textiles for hospital beds
	560312	Absorbent pads of non-woven textiles for hospital beds
	560313	Absorbent pads of non-woven textiles for hospital beds
	560314	Absorbent pads of non-woven textiles for hospital beds
	560391	Absorbent pads of non-woven textiles for hospital beds
	560392	Absorbent pads of non-woven textiles for hospital beds
	560393	Absorbent pads of non-woven textiles for hospital beds
	560394	Absorbent pads of non-woven textiles for hospital beds
Other medical products	630622	Tents for setting up field hospitals, including temporary canopies
	630629	Tents for setting up field hospitals, including temporary canopies
	701710	Laboratory, hygienic or pharmaceutical glassware
	701720	Laboratory, hygienic or pharmaceutical glassware
	701790	Laboratory, hygienic or pharmaceutical glassware
	731100	Empty medical gas cylinders, portable, for oxygen, fitted with a valve, and a pressure and flow regulator
	761300	Empty medical gas cylinders, portable, for oxygen, fitted with a valve, and a pressure and flow regulator
	842139	Pressure Swing Adsorption (PSA) oxygen plant for a central oxygen supply system of medical grade oxygen.
	842489	Decontamination /sanitizing tunnels or chambers
Oxygen Therapy Equipment	940290	Medical or surgical furniture
	901819 (*)	Pulse oximeters
	901839 (*)	Oxygen delivery devices to supply oxygen from the device to the patient
	901920	Medical ventilators (artificial respiration apparatus)
Protective garments and the like	902680	Flowmeter, Thorpe tube for oxygen 0-15L/min
	392620	Protective unisex garments made of plastic sheeting, textile reinforced plastics or textile backed plastics.
	392690 (*)	Plastic face shields
	401511	Surgical rubber gloves
	401519	Other rubber gloves
	401590	Protective unisex garments made of rubber sheeting, textile reinforced rubber or textile backed rubber.
	401699	Boot covers/overshoes – made of plastic or rubber, disposable
	481850	Paper or cellulose garments and clothing accessories such as disposable paper hospital gowns, paper shoe covers etc.
	481890	Boot covers/overshoes – made of cellulose/paper, disposable
	611610	Knitted or crocheted gloves which have been impregnated or covered with plastics or rubber
	621010	Protective garments for surgical/medical use made up of felt or non-woven textiles whether or not impregnated, coated, covered or laminated
	621040	Men's protective garments for surgical/medical use made

		of woven textiles of that are impregnated, coated, covered or laminated with plastics
	621050	Women's or unisex protective garments for surgical/medical use made of woven textiles of that are impregnated, coated, covered or laminated with plastics
	621142	"Scrub tops"
	621600	Textile gloves that are not knitted or crocheted
	630790 (*)	Textile face-masks, without a replaceable filter or mechanical parts, including surgical masks and disposable face-masks made of non-woven textiles
	650500	Disposable hairnets
	900490	Protective spectacles and goggles
	902000	Gas masks with mechanical parts or replaceable filters for protection against biological agents
Wheelchairs & mobile clinics	870590	Mobile clinic vehicles
	871310	Wheelchairs
	871390	Wheelchairs

Note: The above product categories are derived from the joint WCO/WHO HS Classification List for the COVID-19 Medical Supplies 3.0 Edition. As the list is presented in HS 2017 classification while trade data from Comtrade is extracted in HS 2012 classification, the above list is converted into the latter using a correspondence table. Only those products defined at the HS six-digit level are included in the above list. Some products belong to multiple categories and are denoted by (*). They are placed in the more relevant category, which provides a more specific categorization. The more specific categories include apparatus for diagnostic test kits, oxygen therapy equipment and protective garments and related products, in which the products listed all cater to similar purposes. The more general categories are medical devices and equipment, other medical products and medical consumables. These categories include a wider range of products catering to different purposes and needs.

Medical consumables include disposable variants of disinfectants and sterilization products such as soap, variants of protective garments and related products, such as single use drapes (HS 63790), urine bags and body bags (HS 392690), variants of oxygen therapy equipment such as needles (HS 901839) and single-use disposable intubation kits (HS 901890). Medical devices and equipment include variants of diagnostic kits, such as colorimetric end tidal CO2 detector (HS 902780), and variants of oxygen therapy equipment, such as multiparametric patient monitoring devices (HS 901819).

Appendix B. List of ASEAN and SAARC members

Regional Trade Blocs	Member countries (ISO codes in parenthesis)
Association of Southeast Asian Nations (ASEAN)	Brunei Darussalam (BRN), Cambodia (KHM), Indonesia (IDN), Lao People's Democratic Republic (LAO), Malaysia (MYS), Myanmar (MMR), Philippines (PHL), Singapore (SGP), Thailand (THA) and Viet Nam (VNM).
South Asian Association for Regional Cooperation (SAARC)	Afghanistan (AFG), Bangladesh (BGD), Bhutan (BTN), India (IND), Maldives (MDV), Nepal (NPL), Pakistan (PAK) and Sri Lanka (LKA).

Appendix C. National Telehealth Portal

Hannia's bio

Hannia worked on Chrome OS in Silicon Valley, launching the [Pixelbook](#) and the lowest latency stylus solution (patented). She then moved to Switzerland to build data analysis tools and pipelines for Google Maps. After that, Hannia worked on Google Payments and Next Billion users in Singapore. Hannia is responsible for launching the [Google Pay app in Singapore](#), partnering with banks. Hannia also works on advising regulators on building payment systems, for which she recently published a [White Paper](#) endorsed by the World Bank and received a patent for the design.

Most recently, Hannia took a sabbatical from Google and volunteered at Digital Pakistan with Special Assistant to Prime Minister Tania Airdus. To facilitate the awareness of the pandemic, Hannia launched a Messenger chatbot and a WhatsApp chatbot in seven languages. She then launched a telehealth platform for doctors to do remote consultations during the COVID-19 crisis.

Hannia studied Computer Science and Psychology at Yale University.


The following are the questions that Hannia was asked regarding the National Telehealth Portal.

Question 1. Please briefly tell us the scope of the Telehealth Portal and its major objectives.

Answer: The scope of the portal was free telehealth services for Pakistanis with volunteer doctors, for the COVID-19 diagnosis.

Patients come in through a WhatsApp bot. They ask to speak to a doctor. They go through a screening questionnaire, where we ask them about symptoms such as fever, cough, difficulty breathing and contact with a COVID-19 positive person. Based on the questionnaire, they are scored as low risk, medium risk or high risk.

Doctors sign up on www.telehealth.gov.pk. They submit a copy of their Computerized National Identity Card (CNIC) and their Pakistan Medical and Dental Council (PMDC) number. That PMDC number is looked up on the PMDC website and verified that it is a valid number. Then the doctor is approved and can start seeing patients in the queue. A patient is assigned to a doctor based on the chronological order, with high-risk people getting greater preference. The patient's details, such as name and answers to the questionnaire, are shared with the doctor. The doctor gives consultation and fills out the details and submits it in our system.



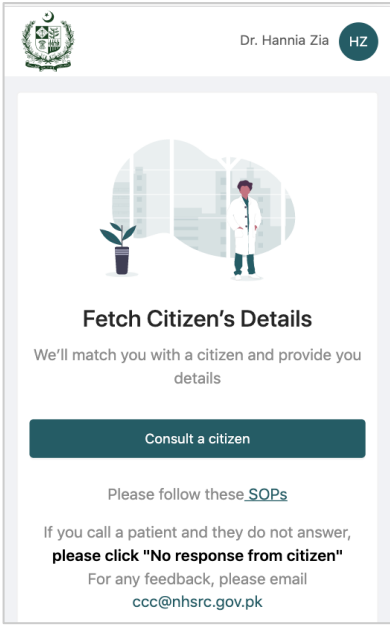
Welcome to the COVID-19 Telehealth Portal

Continue with Facebook

Continue with Google

[How it Works](#)
[Privacy Policy](#) [Terms and Conditions](#)

Doctors in Pakistan can sign up to volunteer their time for a free consultation with patients. Pakistanis can fill out a Corona screening questionnaire on Whatsapp +92 300 1111166 and opt to speak to a doctor.



Dr. Hannia Zia HZ

Fetch Citizen's Details

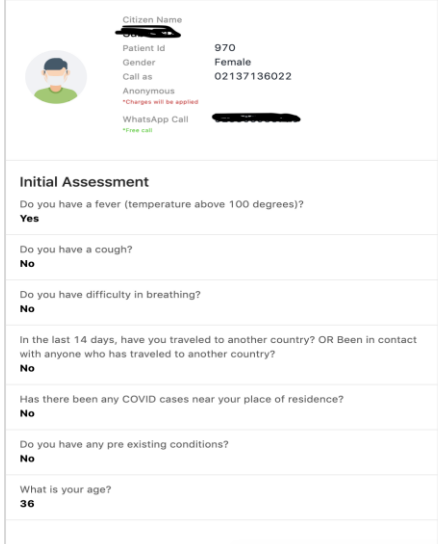
We'll match you with a citizen and provide you details

Consult a citizen

Please follow these [SOPs](#)

If you call a patient and they do not answer, please click "No response from citizen"

For any feedback, please email ccc@nhsrc.gov.pk



Initial Assessment

Do you have a fever (temperature above 100 degrees)?
Yes

Do you have a cough?
No

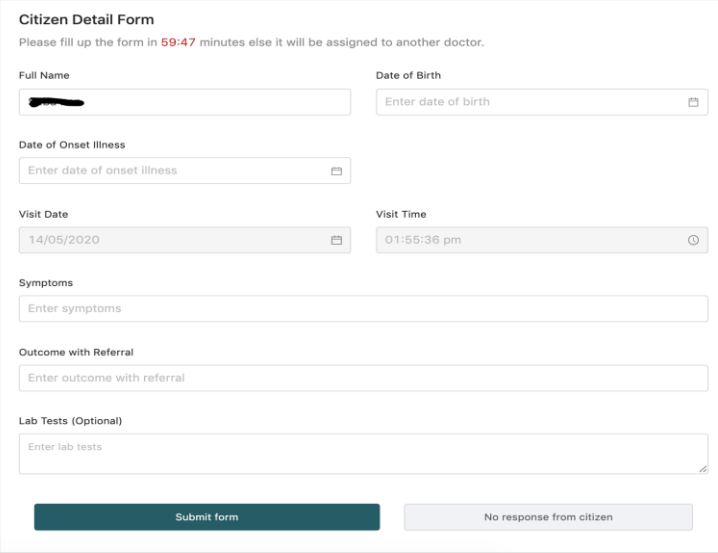
Do you have difficulty in breathing?
No

In the last 14 days, have you traveled to another country? OR Been in contact with anyone who has traveled to another country?
No

Has there been any COVID cases near your place of residence?
No

Do you have any pre existing conditions?
No

What is your age?
36



Citizen Detail Form

Please fill up the form in 59:47 minutes else it will be assigned to another doctor.

Full Name: [Redacted] Date of Birth: [Enter date of birth]

Date of Onset Illness: [Enter date of onset illness]

Visit Date: 14/05/2020 Visit Time: 01:55:36 pm

Symptoms: [Enter symptoms]

Outcome with Referral: [Enter outcome with referral]

Lab Tests (Optional): [Enter lab tests]

Submit form No response from citizen

Question 2. What were the major challenges you faced at the time of the designing and implementation of the portal?

Answer: At first, we asked for too much documentation from the doctors. We asked for CNIC front, CNIC back, a selfie with CNIC, a medical degree certificate and a PMDC certificate. So very few doctors were converting to the funnel. Then we reduced the requirements to just PMDC number and CNIC front. That increased our funnel.

Another issue was what data to collect from patients. We wanted fewer spam patients, so initially we asked for CNIC and address. However, patients did not want to share this because they were worried that the Government would trace them, so we removed this requirement. This did mean we got more spam patients or children filling out the form for fun. In the future, we wanted to screen these people before handing them over to the doctor.

At launch, we had a bug in our system where the same patient was being reassigned to doctors over and over again. So, we had to fix this bug. We also had issues with patients not answering the phone call. Therefore, we needed to reassign those patients into the queue.

After launch, we had many patients sign up but not enough doctors. So the patient queue was very long and doctors were not volunteering enough time. Therefore, we re-engaged doctors with SMS. We later got 10 permanent doctor volunteers from the Insaaf Doctors Forum (a forum for doctors managed by the ruling political party) to go down the queue and manage it.

Question 3. What are the major limitations in ensuring maximum outreach to healthcare workers? How do you tackle the lack of digital connectivity in rural areas?

Answer: We decided to utilize a WhatsApp solution to ensure maximum outreach, as people in Pakistan have trouble downloading an app or using a website. Many telecommunication companies offer free or low-cost WhatsApp plans. Also, the doctor can do a WhatsApp call or a regular call.

That being said, people still needed to be somewhat literate to use the WhatsApp bot. We made it available in seven languages, but 40 per cent of our usage was in Urdu (the national language in Pakistan).

We did not have a good plan to maximize outreach to health-care workers. The Prime Minister launched the event, with the Tiger force volunteers and Facebook group outreach, mediated by Insaaf Doctors Forum. However, from the first two, we got a great number of spam doctors who weren't legitimate - out of 5,000 people who signed up, only 500 had valid PMDC numbers.

We did not focus specifically on rural areas.

Question 4. Healthcare workers are likely to be hesitant in sharing their details on an online portal given the lack of documentation in the sector. How do you plan to tackle this challenge?

Answer: Because our portal was a government portal that was inaugurated by the Prime Minister, it gained much more legitimacy. Doctors were willing to share their CNIC and PMDC number. However, they were concerned because if they made a WhatsApp call to someone, their personal WhatsApp would be shared with the patient. If they made a regular call, we gave them a masking service to mask the phone number. However, for this, they had to pay out of their own pocket.

Question 5. What are some of the regulations involved in setting up the portal? As the accuracy of the data can also come in question, what measures were taken to ensure that data on health-care services is accurate? Are there protocols to monitor the quality of the data?

Answer: We have not reached that phase of the project.

We had to be careful about collecting patients' data. We had to make sure the data were stored on a local Cloud, not on Amazon Web Services (AWS) as was our first implementation.

We gave the World Health Organization SOPs to the doctors to follow in diagnosing COVID-19 cases.

Question 6. What are your thoughts on the data-sharing regulations in Pakistan pertaining to the information flow likely to take place in a portal? Is data leakage a

major concern for such a portal? What measures are common in Pakistan to prevent such breaches?

Answer: Data leakage was not a huge concern. Infobip was our bot service provider, which is a well-known entity and has good security. The website was built by VentureDive in a very secure way. We took precautions to build it securely, given that the Government of Pakistan initiatives is often DDOSed (distributed denial of services, which is an attack to disrupt normal internet traffic, or targeted by hackers).

Doctors could only see the details of the patients assigned to them. Doctors were manually vetted by volunteers.

Question 7. One of the most important facets of an online portal is that it has the potential to include foreign health-care workers for consultations and services otherwise unavailable in Pakistan. Tell us briefly whether the regulatory landscape in Pakistan currently allows such exchanges in the health sector? Any suggestions on improving the regulatory landscape to ensure such exchanges take place in the future through a portal.

Answer: This seems fine and allowed. We wanted to include foreign doctors but the vetting process was more complex because they did not have a PMDC number. So, we partnered with yaranewatan.gov.pk to vet foreign/diaspora doctors and give them access to our portal. In addition, we want to do language matching in the future, e.g., patients who prefer Urdu get an Urdu-speaking doctor.

Question 8. As sharing health data is required in the context of the management of a pandemic, it could have privacy implications beyond the duration of the COVID-19 pandemic, particularly if the data are retained. What is your view about these concerns? Do you have any suggestions for building a proper regulatory landscape to ensure that sharing health data will not be harmful to an individual's broader right to privacy?

Answer: This was not a huge concern. Privacy is not at the top of the minds of Pakistanis. They are willing to give up this privacy for access to free services, such as a free consultation. Also, Pakistanis are used to sharing their NIC number with many entities (government and private), so technically anyone could find out where they live or even find a linked phone number to their NIC (30 per cent of NICs have a linked phone number).

If patient data are shared, the data should be shared anonymously, by removing personal identification information. However, for some situations, we do need factors such as location data, e.g., for hotspot maps of the pandemic.

Note

United Nations
Economic and Social Commission for Asia and the Pacific
Trade, Investment and Innovation Division
United Nations Building, Ratchadamnoen Nok Avenue
Bangkok 10200, Thailand
Email: escap-tiid@un.org
www.unescap.org