



SOUTH ASIA'S CRITICAL MEDICAL IMPORTS: PRODUCTS, SOURCES AND VULNERABILITIES

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South Asia Scan

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South Asia's Critical Medical Imports: Products, Sources and Vulnerabilities

Amitendu Palit

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Executive Summary

COVID-19 has highlighted the significance of access to critical medical items to tackle the pandemic. National healthcare systems in South Asia have been struggling to secure sufficient access to these items following their huge demand. The region has a strong dependence on imports in this regard. This South Asia Scan studies the regional patterns and characteristics of imports of several critical medical items across the categories of medical equipment, chemicals and protective gear. It also identifies the key import sources for the region and individual regional economies.

The import pattern draws attention to the overt dependence of all economies on a few sources. The dependencies vary across items but are generic for all economies. All economies are found to be sourcing for more than half of the most critical medical imports from the top three sources. China is a prominent source for the region, including for the largest economy, India. India, on the other hand, is a prominent source of imports for most of the rest of the region.

The ostensible imperative for the region is to diversify its sources of procurement of imports. Otherwise, the region, and particularly the smaller economies, will face difficulties in ensuring sufficient supplies during future outbreaks of infectious disease. This Scan argues that the vulnerability should encourage the region to actively engage in efforts that aim to enhance the resilience of medical item supply chains.

Introduction

The outbreak of the COVID-19 pandemic has drawn attention to the capacities of national healthcare systems to tackle the pandemic. These capacities are determined by the access of the systems to critical medical items. The latter comprise medical equipment, chemicals and personal protective bodywear. These are essential to diagnose COVID-19 symptoms and treat infected patients; sanitise hospitals, clinics, households and public places; and protect frontline healthcare staff from contracting the infection.

Very few national healthcare systems in the world are self-sufficient in all three categories of critical medical items. Given the scale and rapid progress of COVID-19 infections, healthcare systems across the globe have repeatedly experienced inadequacies in the availability of these critical medical items. South Asia has not been an exception in this regard.

With the pandemic affecting thousands in India, Pakistan, Bangladesh and the rest of the region, national healthcare capacities have been stretched to their utmost in treating patients and ensuring prevention. The availability of various critical medical items has been essential in the struggle to manage the situation.

This South Asia Scan is an attempt to study the imports of critical medical items by the South Asian region. A close look at the nature and character of these imports for the region as a whole, as well as for individual countries, reveals insights on specific import dependencies across the items. The analysis also helps to identify countries that are important sources of imports for the region, including the extent to which individual countries are dependent on supplies from specific import sources.

Even after vaccines become available, COVID-19 will not be eradicated. Healthcare systems would need to remain equipped to fight the pandemic. For a region like South Asia, ensuring sufficient access to critical medical items will be imperative to tackling future waves of the pandemic. Such access is also crucial in enabling the region to stay prepared for future public health exigencies.

The critical medical items studied in this Scan are divided into the following groups and broad categories:

- a) Medical equipment (6): humidifiers, non-heated; flow-splitter for oxygen supply; bougies and catheters; patient monitors and pulse oximeters; venturi masks, nasal prongs, laryngoscope; and ventilators, oxygen masks and nebulisers.

- b) Chemicals (4): chlorine; enzymes; hand sanitisers; and liquid soap.
- c) Protective bodywear (7): aprons; medical masks; gloves (examination); nitrile and sterile gloves; protective clothing; protective goggles; other medical headwear.

Annex 1 provides descriptions of each category along with their Harmonised System codes.

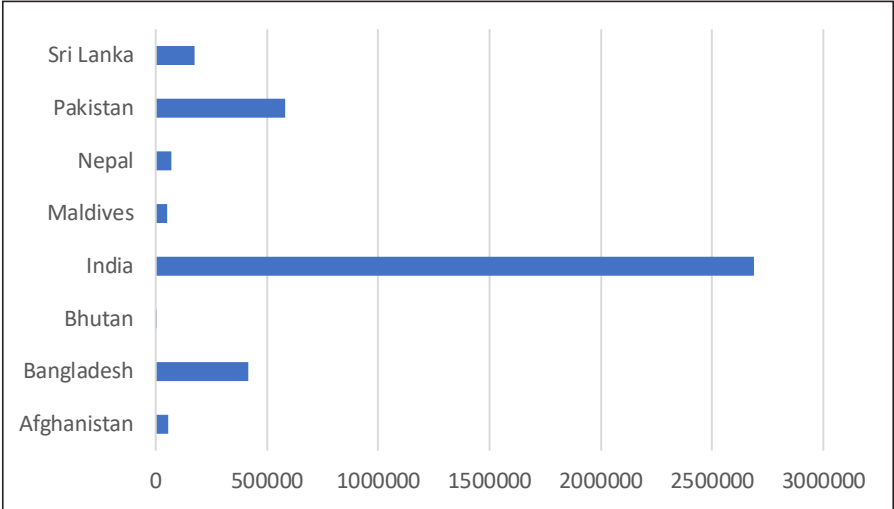
The annual import data for the aforementioned categories of medical items are obtained from the World Bank's 'Database on COVID-19 Trade Flows and Policies' (www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies). It is the key source for all statistical information used in this paper. The import value, as reflected in the database, for each South Asian country is the average of such values for 2017, 2018 and 2019 (wherever available). Regional compilations of imports and further statistical results are by the author.

The paper is divided into four sections. Section 1 presents the stylised facts on regional imports. It identifies the shares of various items in the imports and looks closely at the nature of the topmost imports. It moves on to identify the country-wise concentration of imports for various items across sources. Section 2 studies the nature of imports and their sources for individual countries. Section 3 examines the role of China and India as major sources of imports for the region. Section 4 reflects on the vulnerabilities caused by imports.

South Asia: Stylised Facts on Imports

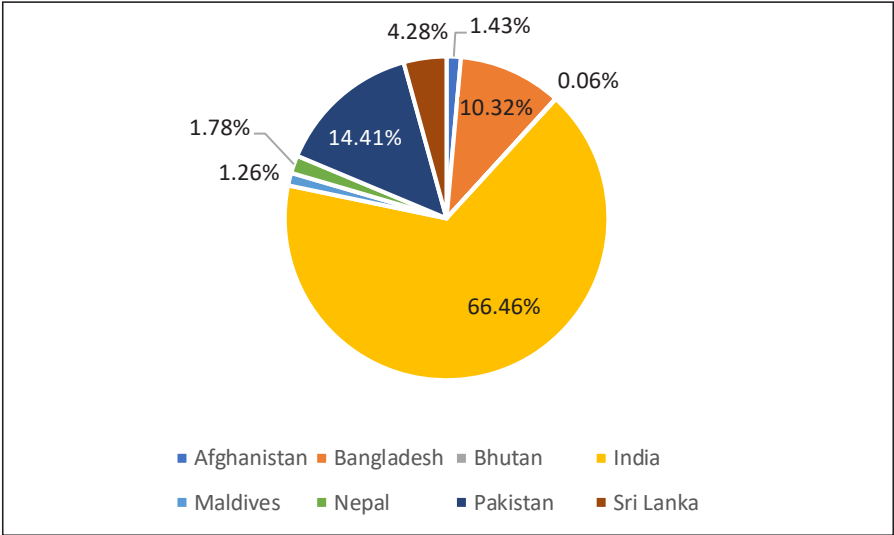
Imports of critical medical items by the South Asian region are expectedly linked to the sizes of the regional economies. The larger the economic size, the higher are the imports. India accounts for the largest volume of imports, followed by Pakistan and Bangladesh (Figures 1 and 2). Out of the region’s total imports, around two-thirds are accounted for by India, while Pakistan and Bangladesh account for 14.4 per cent and 10.3 per cent respectively. Among them, these three largest economies account for 90 per cent of regional imports. Sri Lanka, the other relatively large economy in the region, has a share of 4.3 per cent in regional imports, followed by Nepal, the Maldives and Afghanistan with shares of one to two per cent each. Bhutan’s share in total imports is negligible.

Figure 1: South Asia: Total Imports, Country-wise (US\$’000)



Source: “Database on COVID-19 trade flows and policies”, World Bank, 2020, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Figure 2: Country-wise Imports, as Regional Shares (Per cent)

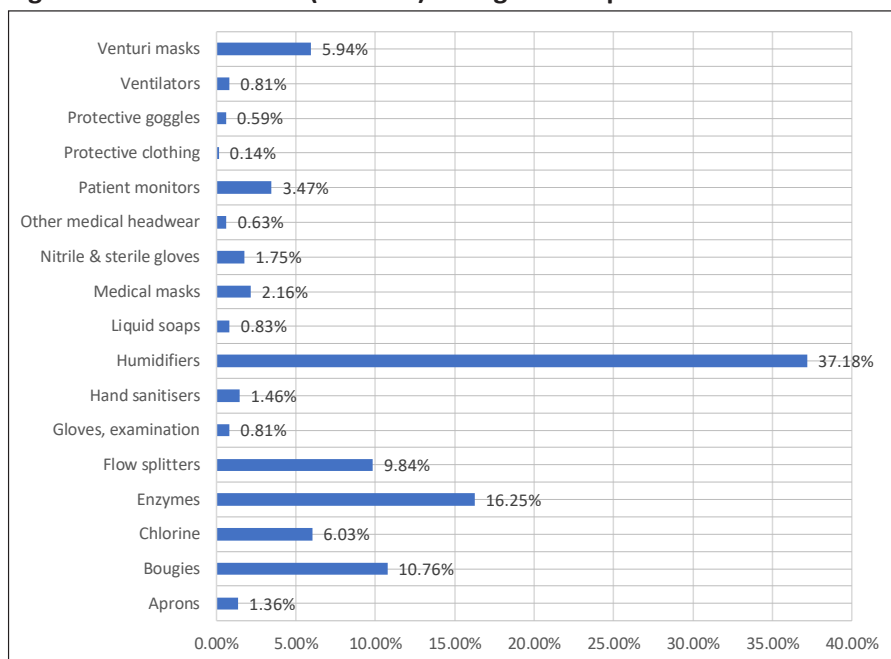


Source: “Database on COVID-19 Trade Flows and Policies”, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies. Shares computed by the author.

Product Character

Humidifiers are South Asia’s largest critical medical imports, followed by enzymes, bougies, flow-splitters and chlorine (Figure 3). These five items account for 80 per cent of the region’s total imports. Among the other categories, venturi masks, patient monitors, medical masks, hand sanitisers, nitrile and sterile gloves and aprons are relatively prominent, with shares of at least one per cent or more in total imports.

Figure 3: Product Shares (Per cent) in Regional Imports

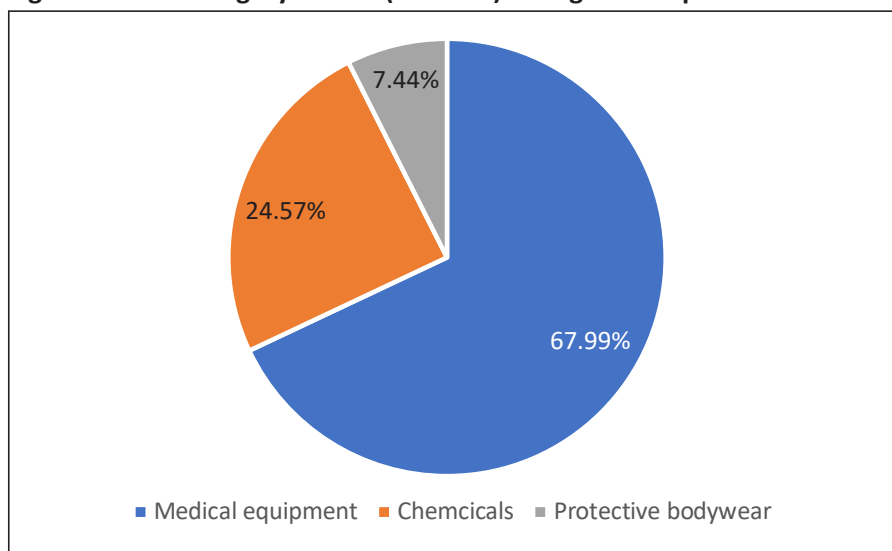


Source: “Database on COVID-19 Trade Flows and Policies”, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies. Shares computed by author.

In terms of the three broad categories of items, medical equipment comprises the largest share in imports, followed by chemicals and protective bodywear (Figure 4). The sizes of the shares have been influenced by the prominence of specific items, such as humidifiers, bougies and flow-splitters for medical equipment; and enzymes and chlorine for chemicals. The relatively lower prominence of protective bodywear items in the total imports explains the overall lower share of the group.

It is instructive at this stage to take a close look at the imports of the major individual items in terms of the countries sourcing them. The focus is on the top five imports – humidifiers, enzymes, bougies, flow-splitters and chlorine – that account for more than 80 per cent of the region’s critical medical item imports (Figure 3). The shares of the individual countries in the overall regional import of each item are computed and reflected in the paragraphs hereafter. The computations are based on the country-wise data on imports of individual items, as captured by the World Bank’s database on COVID-19 trade flows and policies.

Figure 4: Item Category Shares (Per cent) in Regional Imports



Source: "Database on COVID-19 Trade Flows and Policies", www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies). Shares computed by the author.

Humidifiers

India accounts for 72.5 per cent of South Asia's total import of humidifiers. Bangladesh and Pakistan follow with 14.7 and 8.4 per cent shares respectively, while Sri Lanka has a share of 3.5 per cent. The shares of the smaller economies – Afghanistan and Nepal – are negligible, while the Maldives and Bhutan are not importing humidifiers. From a regional perspective, as mentioned earlier, India's aggregate imports tend to influence the overall regional import profile, as it has done for humidifiers. However, India and the other large regional economies are heavily reliant on humidifiers. It is the group which has the largest share in the individual imports of India, Bangladesh, Pakistan and Sri Lanka (Annexes 5a, 3a, 8a and 9a).

Enzymes

Like humidifiers, India dominates the regional import of enzymes, accounting for 73.2 per cent of total imports. Unlike humidifiers, however, Pakistan has the second-largest share of enzyme imports at 15.7 per cent, a much larger share than it has for humidifiers. India and Pakistan account for almost 90 per cent of enzyme imports by South Asia. Bangladesh's share in enzyme imports for the region is just around four per cent. Sri Lanka has a marginally higher share of 4.1 per cent of these imports compared with its share of humidifier imports. On the whole, enzymes are a significantly important category for

all the regional economies, occupying high shares in their individual imports. They are the topmost for Bhutan (Annex 4a), second largest for India and Nepal (Annexes 5a and 7a), third for Bangladesh, the Maldives, Pakistan and Sri Lanka (Annexes 3a, 6a, 8a and 9a) and fifth-largest for Afghanistan (Annex 2a).

Bougies

In South Asia's imports of bougies, India and Pakistan have shares of 66 per cent and 25 per cent respectively. The two countries account for a little more than 90 per cent of total such imports. The reflection confirms the importance of the larger regional economies, principally India, in impacting import patterns for the region. Bangladesh follows with a share of 4.4 per cent and Sri Lanka with around two per cent. Individually, bougies are among the top five imports for Bhutan, India, Nepal, Pakistan and Sri Lanka (Annexes 4a, 5a, 7a, 8a and 9a).

Flow-splitters

The dominance of India, accompanied by Pakistan, is again visible in South Asia's imports of flow-splitters. Almost 83 per cent of regional imports of flow-splitters are by India while roughly nine per cent are by Pakistan, pushing the combined share of the two countries to more than 90 per cent of the imports of the item. Bangladesh and Sri Lanka account for five per cent and just more than one per cent respectively. It is interesting to note that while the flow-splitter is among the top five imports for Bangladesh, Bhutan, India and the Maldives, it is not among the leading imports for Pakistan and Sri Lanka (Annexes 3a, 4a, 5a, 6a, 8a and 9a).

Chlorine

India accounts for almost the entire volume of chlorine imported by the region, with a share of 99 per cent of imports. Pakistan and Sri Lanka account for the remaining chlorine imports. It is also interesting to note that chlorine is not among the leading imports for Pakistan and Sri Lanka as it is for India (Annexes 5a, 8a and 9a). India's huge imports of chlorine, in proportion to those by the rest of the region, have the obvious impact of making chlorine one of the leading critical medical imports for the region. It also expands the share of chemicals as a category in total imports to South Asia.

As the aforementioned analysis reveals, the import pattern of India is significant in influencing the overall import pattern of the region. Along with India, those of the other larger regional economies, particularly Pakistan, are also important in influencing the overall regional import character. One of

the impacts of the preponderance of India has been the greater importance of medical equipment and chemicals in total regional imports. Protective bodywear imports have much lower shares in India's overall imports (Annex 5a), while they are among the relatively important imports for some other regional economies. India's low share in the import of protective bodywear pulls the relative weight of these items down in total imports. In a sense, a lower proportion of India's imports of these items are also a reflection of the relatively greater availabilities of these items domestically. This could be due to the country's greater broad-based internal industrial capacities vis-à-vis the rest of the region. Medical equipment, on the other hand, given its large domestic demand from the domestic healthcare sector and the relatively few capacities that exist at home – not just for India, but also other larger regional economies – has a larger overall share in the regional imports.

Import Concentration

South Asia's critical medical imports display a prominent tendency to be concentrated among a few sources. This is reflected in Tables 1 and 2.

In identifying concentration, the critical medical import categories of each country are organised into four groups: >90 per cent, 75-90 per cent, 50-75 per cent and <50 per cent. For each country, a particular import category is slotted into one of the four groups, depending upon the share of the top three leading sources in total imports. More categories in the >90 per cent group, or 75-90 per cent group, point to a greater concentration of imports of those countries, whereas more categories in the <50 per cent group show the opposite.

As Table 1 reveals, the majority of imports for almost all South Asian economies are being sourced in the range of 50-75 per cent from the top three leading sources. More information on the leading sources and their shares are available in Annexes 2b, 3b, 4b, 5b, 6b, 7b, 8b and 9b. These are also discussed in greater detail in the next section on country-specific import characteristics. However, with more than half of most of the imports being procured from the top three sources respectively, the concentration (or dependence) on these sources is significant.

Table 1: Country-wise Concentration of Imports

Countries	>90%	75%-90%	50%-75%	<50%
Afghanistan	4	5	6	1
Bangladesh	5	2	6	3
Bhutan	2	2	2	0
India	2	1	10	2
Maldives		1	10	2
Nepal	11	0	4	1
Pakistan	4	2	10	1
Sri Lanka	3	5	9	0

Source: Compiled by the author from “Database on COVID-19 Trade Flows and Policies”, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

The import concentration for Nepal is the highest in the region. For 11 product categories out of the sixteen import categories, Nepal sources more than 90 per cent of its imports from the top three sources. Concentration is also relatively high among the region’s three largest economies – India, Pakistan and Sri Lanka – where for 10 of the product categories for India and Pakistan, and nine for Sri Lanka, 50 per cent and 75 per cent of their imports are obtained from the top three sources. Bangladesh displays a more balanced pattern of sourcing in this respect. Indeed, three of its product categories – the highest number among individual regional economies – have sourcing of less than 50 per cent from the top three sources (Table 1).

Among products, more than 90 per cent of nitrile and sterile gloves and gloves for examination are being sourced by five South Asian economies. These demonstrate the highest concentration, followed by other medical headwear and protective goggles. It is interesting to note that all these items from top three sources are part of personal protective bodywear, which have the lowest share among total regional imports (Figure 4).

With respect to prominent imports like humidifiers, the degree of concentration is between 50 per cent and 75 per cent for five countries of the region, whereas for enzymes, bougies and flow-splitters, it is in the same range for five or six countries of the region (Table 2). These items demonstrate a high but not excessively high concentration, underpinning a noticeable reliance of most economies on the top three sources of their imports.

Table 2: Product-wise Concentration of Imports

Items	>90%	75%-90%	50%-75%	<50%
Aprons	1	4	2	
Bougies		2	4	2
Chlorine	1		2	
Enzymes			6	2
Flow-splitters	1	1	5	1
Gloves, examination	5	1		
Hand Sanitisers	3		5	
Humidifiers	1		5	
Liquid Soap	1	3	3	
Medical Masks	3	1	3	1
Nitrile & Sterile Gloves	5	1	1	
Other Medical Headwear	4	1	2	
Patient Monitors		1	4	2
Protective Clothing	2	1	3	
Protective Goggles	4	2	1	1
Ventilators			6	
Venturi Masks			5	1

Source: Compiled by the author from “Database on COVID-19 Trade Flows and Policies”, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Country-wise Imports and Main Sources

Afghanistan

Afghanistan's critical medical supply imports of US\$57.7 million (S\$76.8 million) are dominated by hand sanitisers, medical masks, venturi masks, humidifiers, enzymes and bougies. These six categories account for just over US\$50 million (S\$66.3 million) and a share of 87.3 per cent in total critical medical imports (Annex 2a).

Among the major sources of imports, Asia, Europe and the United States (US) are important for Afghanistan. Within Asia, Iran, China and the United Arab Emirates (UAE) are the major exporters of several items to Afghanistan (Annex 2b), with Iran being the largest exporter of hand sanitisers, nitrile and sterile gloves, and aprons. China is the largest exporter of patient monitors and ventilators, while being one of the top three exporters for nine other categories of imports (Annex 2b). The UAE is the largest supplier of liquid soaps to Afghanistan.

Among its South Asian neighbours, India and Pakistan are important sources of imports for Afghanistan. Apart from being the largest exporter of bougies, India is also among the top three sources for medical masks, venturi masks, gloves and liquid soaps. Pakistan is one of the leading exporters of hand sanitisers and protective clothing.

Among the European countries, Belgium is the largest source of Afghanistan's imports of venturi masks and gloves. Europe is Afghanistan's largest source for humidifiers and enzymes with the United Kingdom (UK), Turkey and Germany being the three top sources for humidifiers; and Germany, the Netherlands and Belgium being so for enzymes. Turkey and Bulgaria are also generally major exporters to Afghanistan (Annex 2b).

Along with China, the US is the most significant source of imports for Afghanistan, by virtue of being among the top three sources for 10 groups of critical medical imports, including being the largest source for flow-splitters, other medical headwear, protective clothing and protective goggles.

Afghanistan reflects a significant concentration in the sourcing of imports (Table 2). Except for enzymes, the top three sources account for more than half of total imports for all categories (Annex 2b). For some groups, including the two with the highest shares in total imports – hand sanitisers and medical masks – more than 90 per cent of imports are obtained from the top three source countries.

Bangladesh

More than half of Bangladesh's critical medical imports comprise humidifiers (Annex 3a), followed by venturi masks. These two imports account for more than 60 per cent of the country's total imports. Enzymes, aprons, bougies, flow-splitters and medical masks are among other significant imports, making up a quarter of total imports.

While Bangladesh sources from Asia, Europe and the US, India is its largest source of imports from South Asia. India's prominence in this regard is significant as it is among the three largest sources for 12 out of 16 import categories, while being the largest source for flow splitters, bougies, medical masks and liquid soap (Annex 3b). Its prominence as an import source for Bangladesh matches that of China. China is among the top three sources for 12 categories of imports, while being the largest for aprons, ventilators, other medical headwear, protective goggles, gloves, hand sanitisers and protective clothing. The prominence of both China and India for some of these imports is striking. More than 90 per cent of protective clothing and goggles and more than 60 per cent of aprons imported by Bangladesh are from China, while nearly 60 per cent of liquid soap imports are from India.

The prominence of China and India in Bangladesh's imports outshines those of the other Asian countries. Hong Kong, another major source of imports, accounts for almost 40 per cent of humidifiers – the largest of Bangladesh's imports. Singapore exports several critical medical items to Bangladesh. It is the largest source of the country's imports of patient monitors and venturi masks, while being among the leading sources for enzymes, liquid soap and ventilators (Annex 3b). From the Asia-Pacific region, Malaysia, Korea and Thailand are among the other leading sources for several imports. Malaysia accounts for nearly three-fourths of Bangladesh's imports of gloves – both nitrile and sterile, and those used for examination (Annex 3b).

Among the European countries, Germany, the Netherlands and Italy are among the three top sources of certain categories of imports, while the US is so for a couple of other groups (Annex 3b). As such, the relative importance of the European countries and the US is less in the medical import profile of Bangladesh compared with countries from Asia.

As mentioned earlier (Table 1), imports by Bangladesh do indicate a concentration among several products. Except for enzymes, medical masks and patient monitors, more than half of the other imports are sourced by Bangladesh from the top three sources. The concentrations are particularly high for gloves (nitrile and examination), other medical headwear and

protective clothing and goggles. Notwithstanding such concentration, Bangladesh's dependence on the leading sources is relatively less compared with those of the other South Asian economies.

Bhutan

Bhutan has the lowest imports of critical medical items in South Asia. Its imports include only six categories: enzymes, hand sanitisers, flow-splitters, bougies, medical masks and protective goggles (Annex 4a). Of these, enzymes and hand sanitisers account for almost 75 per cent of Bhutan's total imports.

As with the rest of the region, Bhutan's imports are also largely concentrated among a few sources. For some imports (Annex 4b), more than 90 per cent of the total requirements are obtained from the top three sources, whereas for the others, at least 70 per cent of the requirements are sourced similarly.

India is the most important source of medical imports for Bhutan. It is the largest source of imports for five of the six categories, while being one of the largest sources for the sixth category (Annex 4b). Other major sources for Bhutan include China (bougies, protective goggles), Japan (bougies, medical masks), Italy (flow-splitters, medical masks), Germany (enzymes), Austria (flow-splitters), France (protective goggles), Korea (enzymes) and Malaysia and Thailand (hand sanitisers). The sources, while spanning across Europe and Asia, are much less significant compared with India, underpinning Bhutan's heavy economic dependence on South Asia's largest economy. In this respect, and as an exception to the trend noticed for the rest of the region, Bhutan's dependence on China is relatively less.

India

India's overall imports are dominated by humidifiers, which account for 40 per cent of its total imports, followed by enzymes, flow-splitters and bougies. Between them, these four categories account for more than 80 per cent of India's total critical medical imports (Annex 5a). With the exception of chlorine and patient monitors, which together add up to almost 15 per cent of total imports, the remaining categories account for much smaller shares in total imports.

India's imports clearly demonstrate the tendency to be sourced largely from a few countries. Except for flow-splitters and bougies, for all the other categories, India sources more than half of its imports from the top three source countries. For nitrile and sterile gloves, gloves for examination and protective goggles, more than 80 per cent of imports are obtained from the top three sources (Annex 5b).

The top source countries for India's imports include China, Germany, the US, Japan, Korea, Ireland, the Netherlands, Singapore, Malaysia, Thailand, Sri Lanka, Hong Kong, Vietnam, the Philippines, Cambodia, Croatia, the UAE and the UK (Table 2). Among these, some are particularly prominent sources, as they are among the top three for several of the categories. These include China, Germany and the US.

China is the most significant source for India's imports. It is the largest source for nine of the 15 categories (Annex 5b). Among India's largest imports, China is the topmost source for humidifiers and chlorine. India also sources humidifiers extensively from Germany and Japan, while for chlorine, its other major sources are Japan and Korea. Among India's three other key imports, China does not figure among the three topmost sources for enzymes, which are accounted for by the US, Germany and Singapore. China is among the top three sources for flow-splitters, but like enzymes, it is not so for bougies. China, however, almost entirely dominates India's imports of personal protective bodywear – medical masks, protective goggles, other medical headwear, protective clothing, aprons and hand sanitisers.

As Annex 5b further reveals, in several items, India sources extensively from the US, Germany, UK and the Netherlands, as it does from Japan, Singapore, Malaysia and Korea. To that extent, it needs to be noted that some of these countries are, along with China or otherwise, leading sources for India's imports that have the largest shares in total imports. China's dominance is preponderant in items that as a group have the lowest share in value terms in India's total imports. These, notably personal protective clothing, are nonetheless essential for their role in personal protective equipment (PPE) for frontline healthcare professionals, as well as in wider general use of households and individuals.

The Maldives

More than 80 per cent of the Maldives' critical medical imports are made up by venturi masks, hand sanitisers, enzymes and flow-splitters. Out of these, venturi masks account for nearly 47 per cent of total imports (Annex 6a). Like the rest of the region, the Maldives' imports are concentrated among a few sources (Table 1). However, it is noticeable that unlike the countries in the rest of the region, there are no product categories where the Maldives is sourcing more than 90 per cent imports from only the top three source countries (Table 1). In this respect, it does not reflect severe concentration, or very high dependency upon a few sources. Indeed, its highest concentration is in the import of bougies, the only category where it is sourcing more than three-fourths of its imports from the top three sources (Annex 6b).

India's importance as a source for most of the imports is again pronounced for the Maldives, just as it is for Bangladesh and Bhutan. India is among the top three sources for nine categories of critical medical imports, while being the largest source for the Maldives' import of enzymes and bougies (Annex 6b). China is an equally prominent source. It is among the top three leading sources for six categories, out of which it is the largest source for five: aprons, flow-splitters, medical masks, other medical headwear and protective goggles.

Southeast Asia is also an important source of medical imports for the Maldives. Singapore, Malaysia and Vietnam figure among the top three import sources across multiple categories, as does Sri Lanka from South Asia (Annex 6b). The comparative reliance of the Maldives on Europe as a major source of imports is relatively less with only France, Germany and Switzerland figuring as the key sources for one or two categories (Annex 6b).

Nepal

Nepal's critical medical imports are sufficiently broad-based with no particular product category overtly dominating the import basket. Venturi masks comprise around a third of imports, followed by enzymes, humidifiers and bougies (Annex 7a). As earlier mentioned, Nepal stands out in the region as the country with the most intense concentration of its imports among top sources. For most of its products, more than 90 per cent of the total imports are obtained from the top three sources (Table 1 and Annex 7b).

Nepal is significantly dependant on India as a source of imports. India is among the top three sources of imports for 15 out of the 16 categories of its critical medical imports, with the exception of patient monitors. India is the largest source for Nepal's top five import categories – venturi masks, enzymes, humidifiers, bougies and hand sanitisers – while being so for other medical headwear, flow-splitters, liquid soap and gloves as well. This clearly makes Nepal's dependence on India overwhelming.

The reliance on China for medical imports, although significant, is less than that on India. China is among the top three sources for seven categories of imports, including being the largest source for protective goggles, medical masks and aprons (Annex 7b). Singapore, Malaysia, Thailand and Korea are the other Asian countries that are among top sources for multiple categories (Annex 7b). Germany and the Netherlands are the prominent sources from Europe, with Spain, Italy, and the UK featuring among the top three for some categories, along with the US.

Pakistan

Out of more than US\$580 million (\$\$768.6 million) of total critical medical imports by Pakistan, humidifiers are the largest category, followed by bougies, enzymes and venturi masks (Annex 8a). These four categories comprise three-quarters of Pakistan's total imports, reflecting the dominance of these groups in the import basket.

As can be seen from Table 1 earlier, Pakistan demonstrates a noticeably high concentration in sourcing. For four categories – medical masks, nitrile and sterile gloves, gloves for examination and medical headwear – more than 90 per cent of imports by Pakistan are sourced from its top three sources. For almost all the other categories, more than half of the imports accrue from the top three sources (Table 1 and Annex 8b).

China overwhelmingly dominates the source profile for Pakistan. It is among the top three largest sources for all the import categories, except patient monitors, chlorine and protective clothing (Annex 8b). Within these categories, it is the largest source for imports of humidifiers, bougies, flow splitters, ventilators, medical masks, liquid soap, other medical headwear, aprons and protective goggles (Annex 8b). Compared with China, and in contrast to its importance as a sourcing location for most other countries in South Asia, India is a much less significant source of imports. It is a leading source of import for only two categories: liquid soap and other medical headwear.

Korea, Bangladesh, Malaysia, Thailand, Vietnam, Indonesia, Japan, the UAE and Singapore are some of the other Asian countries that are among the major sources of medical imports for Pakistan. Among these countries, Malaysia is the largest source for nitrile and sterile gloves and gloves for examination (Annex 8b).

Pakistan's imports are also significantly dependant on Europe. Germany is the most important source country in this regard. It is among the top three sources for seven categories of imports, while being the most prominent source for imports of patient monitors, venturi masks and enzymes. Belgium is another major source of medical imports for Pakistan, along with Turkey. The US too is a leading source for several items.

Sri Lanka

More than 70 per cent of Sri Lanka's critical medical imports comprise humidifiers, venturi masks and enzymes (Annex 9a). Overall, Sri Lanka's imports are among the smallest of the four major South Asian economies. At an aggregate level of US\$173 million (\$\$229.2 million), these imports are

41 per cent of those of Bangladesh, 30 per cent of those of Pakistan and just above six per cent of those of India. Notwithstanding the relatively smaller shares vis-à-vis imports of its larger regional counterparts, Sri Lanka's imports reflect the common regional trait of concentration. For three categories – nitrile and sterile gloves, chlorine, and gloves for examination – more than 90 per cent of imports are sourced from the top three exporters. For all other categories, more than half of the imports are sourced similarly (Table 1 and Annex 9b).

China and India are identically prominent as sources of Sri Lanka's critical medical imports. China is among the top three leading sources of imports for 10 categories, while being the topmost source for protective goggles, other medical headwear, chlorine and flow-splitters. India too is among the top three leading sources for 10 categories, while being the topmost source for bougies, hand sanitisers and liquid soap. Hong Kong, Korea, Japan, Thailand, Malaysia, Vietnam and Singapore are among the other leading sources of medical imports for Sri Lanka, with Hong Kong being the largest source for aprons and protective clothing, and Malaysia being so for nitrile and sterile gloves, and gloves for examination (Annex 9b).

Germany is also a prominent source of imports for Sri Lanka. It is among the top three sources for six categories of imports, while being the largest source for venturi masks. The rest of Europe, except for the UK and Austria, are not major sources, while the US is for a few categories.

China and India as Import Sources for South Asia

As the country-wise analysis of sources for imports shows, China and India are two of the most prominent sources of critical medical imports for the rest of the region. For India, the largest economy in the region, China is among the most significant sources. The preponderance of China and India as the most significant sources of medical imports has several implications. These include the salience of the economic relationship of China with the rest of the South Asian region, excluding India.

Table 3: China and India as Sources of Critical Medical Item imports in South Asia

	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Medical Equipment								
Humidifiers		India China		China		India	China	India China
Flow-splitters	China	India China	India		China India	India	China	China India
Bougies	India China	India China	India China		India	India	China	India
Patient Monitors	China			China	India			China
Venturi Masks		India			India	India	China	China
Ventilators	China	China India			India	India	China	China
Chemicals								
Chlorine				China				China
Enzymes			India		India	India	China	
Hand Sanitisers	China	China India	India	China	India	India China	China	India
Liquid Soap	India	India				India	China India	India
Protective Bodywear								
Aprons	China	China		China	China India	China India	China	China
Medical Masks	India China	India China	India	China	China India	China India	China	China India
Gloves, examination	China India	China India				India China	China	India
Nitrile & Sterile Gloves	China	China			China	India	China	
Protective Clothing	China	China India		China		India		India
Protective Goggles		China India	India China	China	China	China India	China	China India
Other Medical Headwear	China	China India		China	China	India China	China India	China India

Note: a) If China or India is marked in bold, it means they are the topmost source for the particular category. If not, they are among the top three. In the latter case, if China is mentioned above India, it means it is the 2nd largest, while India is 3rd and vice versa; b) For India, only China is mentioned.

Source: Compiled by the author from Annexes 2b to 8b.

Table 3 underlines the importance of China and India as sources of imports for the individual South Asian countries and individual product categories. The country-product profile is indicative of the high significance of China and India for all the countries of the region. They are either the topmost or among the top three sources of imports for almost all product categories, for all countries.

It is difficult to separate between the relative importance of the two countries with respect to most of the individual South Asian economies importing from them, and the products being imported. Pakistan, however, is a distinct exception. Given the large economic size of Pakistan, China's dominance of the critical medical import segment is sizeable and far more than that of India. This, however, is not so with respect to the other two large economies of the region – Bangladesh and Sri Lanka. China and India dominate the critical medical imports of these countries with practically equal importance. As far as the smaller economies of the region are concerned, the significance in equivalence is noticed for Afghanistan and the Maldives. However, for Bhutan and Nepal, India clearly exceeds China in importance.

Trade agreements and preferential tariffs contribute to the importance that China and India enjoy in exporting medical items to South Asia. China enjoys preferential tariffs for quite a few items while exporting to Pakistan¹ due to its bilateral free trade agreement with Pakistan. India too enjoys an advantage in this regard due to the preferential access that the South Asian countries allow to exports from one another under the regional South Asian Free Trade Agreement.² With respect to China, India's advantage becomes distinct in this regard in some cases. For exports to Bangladesh, for example, humidifiers from India do not attract tariffs, while those from China do.³ A much greater market access difference is seen for liquid soaps where the tariff differential between exports from India and China are significant.⁴ However, the significance is not always a function of the differential in market access created by preferential tariffs. China is the topmost exporter of flow-splitters to Sri

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1. China exports nitrile and sterile gloves to Pakistan at a preferential tariff of five per cent, whereas the applied tariff is 20 per cent. For bougies, ventilators and venturi masks, the preferential rates for exports from China are 4.6 per cent, zero and 0.75 per cent respectively, whereas the rates applicable for these exports from other countries are higher. "Database on COVID-19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.
 2. 'Agreement on South Asian Free Trade Area', South Asian Association for Regional Cooperation (SAARC), Secretariat. www.saarc-sec.org/index.php/resources/agreements-conventions/36-agreement-on-south-asian-free-trade-area-safta/file.
 3. China's humidifier exports attract a tariff of 0.9 per cent. "Database on COVID-19 Trade Flows and Policies", op. cit.
 4. Like other South Asian countries, liquid soap exports from India to Bangladesh invite a tariff of five per cent, whereas those from China invite 25 per cent. Ibid.

Lanka despite its exports attracting a much higher tariff, while Indian exports of flow-splitters do not attract any.⁵

Table 4: China's Share and Rank in India's Imports (Per cent)

Item Category	Share	Rank
Humidifiers, non-heated	22.53	1
Enzymes	05.28	5
Flow-splitters for oxygen supply	13.67	2
Bougies, Catheters, Drains and Sondes, and parts	09.24	4
Chlorine	22.08	1
Patient Monitors and Pulse Oximeters	22.97	1
Nitrile and Sterile Gloves	0.62	6
Medical Masks	50.04	1
Gloves, examination, non-sterile	01.39	5
Hand Sanitisers	30.84	1
Protective Goggles	68.07	1
Aprons, heavy duty and viral transport medium	50.93	1
Liquid Soap	01.43	12
Other Medical Headwear	51.59	1
Protective Clothing	38.72	1

Note: Share values are rounded off to two places of decimals

Source: "India's critical medical imports and the China dependency", ISAS Insights No. 627, 15 July 2020, Table 3, www.isas.nus.edu.sg/papers/indias-critical-medical-imports-and-the-china-dependency/.

India's overall import dependence on China shows up in its imports of critical medical items. In this respect, much like several other countries in the region, China emerges as a major source for India too. For seven out of 15 products, China is the largest source of imports for India (Table 4). As mentioned earlier, it has the largest share in India's imports of two of the top five items – humidifiers and chlorine – accounting for more than 20 per cent of imports for both. In some other items, China's preponderance in the imports is distinctly noticeable. These are medical masks, protective goggles, aprons and other medical headwear, where China accounts for more than 50 per cent of India's imports.

It is important to look at India's trade in critical medical items to get a clearer insight into the apparently contradictory aspects of it being a major source of imports of these items for many countries in the region, while being the largest regional importer itself. As Table 5 indicates, India is a net exporter in terms of its aggregate exports being higher than aggregate imports for several items. These include flow-splitters, patient monitors, gloves for examination, aprons, liquid soap, other medical headwear, protective clothing, ventilators and venturi masks. This explains why it is a major source of imports for the rest of South Asia in many of these items. However, for several of these,

5. China's exports to Sri Lanka attract a tariff of 22.5 per cent. Ibid.

Table 5: India's Import and Export of Critical Medical Items

Item Category	Import (\$'000)	Export (\$'000)
Humidifiers, non-heated	1090638.75	360539.95
Enzymes	481188.219	75597.84
Flow-splitters for oxygen supply	329568.406	496784.05
Bougies, Catheters, Drains and Sondes, and parts	287691.219	225473.57
Chlorine	241961.734	1682.68
Patient Monitors and Pulse Oximeters	64199.8867	131973.59
Nitrile and Sterile Gloves	56914.2422	11074.89
Medical Masks	39580.1331	315293.7
Gloves, examination, non-sterile	22309.0566	33406.81
Hand Sanitisers	18907.9492	18876.3
Protective Goggles	16597.1367	11029.02
Aprons, heavy-duty and viral transport medium	14137.2949	16946.87
Liquid Soap	12522.9033	23365.68

Source: "Database on COVID-19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

large imports are taking place, which could be due to a variety of reasons, most ostensibly the competitive prices of imported items and their easier availabilities.

Vulnerabilities and Policy Imperatives

As the world and South Asia prepare for immunisation against COVID-19, the World Health Organization draws attention to the importance of staying vigilant against the pandemic.⁶ Such preparedness requires the South Asian countries to have access to sufficient supplies of critical medical items. The relatively smaller South Asian economies – Afghanistan, Bhutan, the Maldives and Nepal – are particularly vulnerable to low supplies of these items, as their domestic productions are more limited. For the larger South Asian economies too, the heavy increase in demand for such items during COVID-19 makes domestic supplies insufficient and reliance on imports a major imperative.

One of the major problems that the South Asian economies will encounter in accessing imports is export prohibitions. These prohibitions have come up rapidly in the world since the outbreak of COVID-19. The largest number of prohibitions by the World Trade Organization members – with respect to the items discussed in this Scan – is seen for face and eye protection, protective goggles, protective garments, gloves, sanitisers and ventilators.⁷ Exporting countries resorted to these prohibitions following a rapid increase in their demand at home in order to ensure sufficient supplies for the domestic population. The European Union subjected exports of certain personal protection equipment to export authorisation.⁸ Exports of respirators, surgical masks and gloves were restricted by the US.⁹ India restricted exports of hand sanitisers, diagnostic kits and ventilators.¹⁰ These restrictions would have created worries for those countries of South Asia that depended on restricting countries for imports.¹¹ Given that domestic concerns are expected to be addressed first by all major producers of critical medical items, future

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6. “A Coronavirus vaccine ‘does not mean zero COVID’ warns WHO”, *Euronews*, 4 December 2020. www.euronews.com/2020/12/04/a-coronavirus-vaccine-does-not-mean-zero-covid-warns-who.
 7. “Export Prohibitions and Restrictions”, World Trade Organization, Information Note, 23 April 2020, Chart 1, Page 7. www.wto.org/english/tratop_e/covid19_e/export_prohibitions_report_e.pdf.
 8. “Commission Implementing Regulation (EU) 2020/426”, *Official Journal of the European Union*, 19 March 2020. eur-lex.europa.eu/eli/reg_impl/2020/426/oj.
 9. “Prioritization and Allocation of Certain Scarce or Threatened Health and Medical Resources for Domestic Use”, Federal Register, *The Daily Journal of the United States Government*, 10 April 2020. www.federalregister.gov/documents/2020/04/10/2020-07659/prioritization-and-allocation-of-certain-scarce-or-threatened-health-and-medical-resources-for.
 10. Various notifications issued by the Directorate General of Foreign Trade (DGFT), Department of Commerce, Ministry of Commerce and Industry, Government of India. content.dgft.gov.in/Website/noti%2008%20eng_0.pdf; content.dgft.gov.in/Website/Noti%2009%20eng_0.pdf; content.dgft.gov.in/Website/Noti%2053_0.pdf.
 11. More details of the various export restrictions following COVID-19 are available at www.wcoomd.org/en/topics/facilitation/activities-and-programmes/natural-disaster/list-of-countries-coronavirus.aspx.

restrictions by exporting countries in similar situations cannot be ruled out, making most parts of the region vulnerable to supply disruptions.

The supply disruptions could have been partly mitigated had there been sufficient diversification among the sources of imports. However, as noted earlier in the Scan, imports of critical medical items are highly concentrated among various sources. For all the regional economies, more than 50 per cent of most imports are being sourced from the top three exporters, underpinning the overt reliance of countries on a few suppliers. This dependence has significant implications. It makes the economies vulnerable to shortages arising from supply disruptions in exporting economies.

The onset of COVID-19 and implementation of strict lockdowns in China had led to the stoppage of domestic production in the country. China is a regional hub of PPE production. Production stoppages within China led to disruptions along the entire supply chain of various critical medical items, particularly masks and protective clothing.¹² The South Asian countries, like other parts of the world, were affected by the disruptions. Disrupted access to PPEs was exacerbated by the extension of COVID-19 and attendant production restrictions in Southeast Asia, where Malaysia, Indonesia, Singapore and Thailand are also major sources of critical medical imports for South Asia.

Heavy concentration in sources of imports and the resultant risk of shortages are a vulnerability the region will need to address seriously. The importance of diversifying sources of procurement to avoid supply chain breakdowns and increase the resilience of production networks is imperative for the region. In this regard, it is important for South Asia to seriously consider the prospects of engaging actively with a project like the Resilient Supply Chain Initiative¹³ to diversify production and access to critical medical imports. Resilient supply chains would enhance economic security for the South Asian countries by expanding access, diversifying risks and securing just-in-time supplies.

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12. "Global Shortage of Personal Protective Equipment amid COVID-19: Supply Chains, Bottlenecks, and Policy Implications", ADB Briefs, No. 130, April 2020. www.adb.org/sites/default/files/publication/579121/ppe-covid-19-supply-chains-bottlenecks-policy.pdf.
 13. Australia-India-Japan Economic Minister's Joint Statement on Supply Chain Resilience, 1 September 2020. www.meti.go.jp/press/2020/09/20200901008/20200901008-1.pdf.

Annex 1: Items and Product Description

S/No	Item	HS 2017 Code	Product Description
1.	Humidifiers, non-heated	847989	Machines and mechanical appliances, n.e.s.
2.	Enzymes	382200	Diagnostic or laboratory reagents on a backing, prepared diagnostic or laboratory reagents whether or not on a backing, and certified reference materials (excl. compound diagnostic reagents designed to be administered to the patient, blood-grouping reagents, animal blood prepared for therapeutic, prophylactic or diagnostic uses and vaccines, toxins, cultures of micro-organisms and similar products)
3.	Flow-splitters for oxygen supply	841391	Parts of pumps for liquids, n.e.s.
4.	Bougies, Catheters, Drains and Sondes, and Parts	901839	Needles, catheters, cannulae and the like, used in medical, surgical, dental, or veterinary sciences (excl. syringes, tubular metal needles and needles for sutures)
5.	Chlorine	390421	Non-plasticised polyvinyl chloride, in primary forms, mixed with other substances
6.	Patient Monitors and Pulse Oximeters	901819	Electro-diagnostic apparatus, incl. apparatus for functional exploratory examination or for checking physiological parameters (excl. electro-cardiographs, ultrasonic scanning apparatus, magnetic resonance imaging apparatus and scintigraphic apparatus)
7.	Nitrile and Sterile Gloves	401519	Gloves, mittens and mitts, of vulcanised rubber (excl surgical gloves)
8.	Medical Masks	630790	Made-up articles of textile materials, incl. dress patterns, n.e.s.
9.	Gloves, examination, non-sterile	401511	Surgical gloves, of vulcanised rubber (excl. fingerstalls)
10.	Hand Sanitisers	340220	Surface-active preparations, washing preparations, auxiliary washing preparations and cleaning preparations put up for retail sale (excl. organic surface-active agents, soap and organic surface-active preparations in the form of bars, cakes, moulded pieces or shapes, and products and preparations for washing the skin in the form of liquid or cream)
11.	Protective Goggles	900490	Spectacles, goggles and the like, corrective, protective or other (excl. spectacles for testing eyesight, sunglasses, contact lenses, spectacle lenses and frames and mountings for spectacles)

12.	Aprons, heavy duty and viral transport medium	392620	Articles of apparel and clothing accessories produced by the stitching or sticking together of plastic sheeting, incl. gloves, mittens and mitts (excl. goods of 9619)
13.	Liquid Soap	340130	Organic surface-active products and preparations for washing the skin, in the form of liquid or cream and put up for retail sale, whether or not containing soap
14.	Other Medical Headwear	650610	Safety headgear, whether or not lined or trimmed
15.	Protective Clothing	621010	Garments made up of felt or nonwovens, whether or not impregnated, coated, covered, or laminated (excl. babies' garments and clothing accessories)
16.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	901920	Ozone therapy, oxygen therapy, aerosol therapy, artificial respiration, or other therapeutic respiration apparatus
17.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	901890	Instruments and appliances used in medical, surgical, or veterinary sciences, n.e.s.

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 2a: Afghanistan's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Hand Sanitisers	17,903.16992	31.02
2.	Medical Masks	14,876.44336	25.77
3.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	6,240.583984	10.81
4.	Humidifiers, non-heated	4,567.806152	7.91
5.	Enzymes	3,818.26123	6.61
6.	Bougies, Catheters, Drains and Sondes, and Parts	2,989.579346	5.18
7.	Nitrile and Sterile Gloves	1,849.943604	3.21
8.	Aprons, heavy duty and viral transport medium	1,113.148193	1.93
9.	Patient Monitors and Pulse Oximeters	1,059.969849	1.84
10.	Flow-splitters, for oxygen supply	878.4203491	1.52
11.	Other Medical Headwear	773.3388672	1.34
12.	Gloves, examination, non-sterile	409.473999	0.71
13.	Liquid Soap	384.0828247	0.66
14.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	330.4493408	0.57
15.	Protective Goggles	308.3594971	0.53
16.	Protective Clothing	211.2734985	0.36
	Total	57,714.30	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 2b: Afghanistan's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Hand Sanitisers	Iran, Pakistan, China	93.01
2.	Medical Masks	India, US, China	97.73
3.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	Belgium, India, Netherlands	50.87
4.	Humidifiers, non-heated	UK, Turkey, Germany	70.35
5.	Enzymes	Germany, Netherlands, Belgium	42.46
6.	Bougies, Catheters, Drains and Sondes, and Parts	India, Malaysia, China	69.32
7.	Nitrile and Sterile Gloves	Iran, US, China	85.65
8.	Aprons, heavy duty and viral transport medium	Iran, China, US	89.61
9.	Patient Monitors and Pulse Oximeters	China, Netherlands, US	65.96
10.	Flow-splitters for oxygen supply	US, China, Turkey	63.74
11.	Other Medical Headwear	US, UK, China	91.33
12.	Gloves, examination, non-sterile	Belgium, China, India	81.17
13.	Liquid Soap	UAE, India, US	75.15
14.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	China, Hong Kong, US	73.18
15.	Protective Goggles	US, China, Bulgaria	90.99
16.	Protective Clothing	US, Pakistan, Turkey	78.60

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 3a: Bangladesh's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Humidifiers, non-heated	22,1313.43	52.99
2.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	42,117.59	10.08
3.	Enzymes	25,972.99	6.21
4.	Aprons, heavy duty and viral transport medium	20,556.18	4.92
5.	Flow-splitters for oxygen supply	20,159.22	4.82
6.	Bougies, Catheters, Drains and Sondes, and Parts	19,007.80	4.55
7.	Medical Masks	18,235.96	4.36
8.	Patient Monitors and Pulse Oximeters	10,794.83	2.58
9.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	10,661.68	2.55
10.	Other Medical Headwear	8,303.18	1.98
11.	Liquid Soap	7,647.97	1.83
12.	Protective Goggles	4,218.43	1.01
13.	Gloves, examination, non-sterile	3,487.01	0.83
14.	Nitrile and Sterile Gloves	2,353.66	0.56
15.	Hand Sanitisers	2,303.22	0.55
16.	Protective Clothing	508.96	0.12
	Total	417,642.11	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 3b: Bangladesh's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Humidifiers, non-heated	Hong Kong, India, China	60.09
2.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	Singapore, Germany, India	51.16
3.	Enzymes	US, Germany, Singapore	40.19
4.	Aprons, heavy duty and viral transport medium	China, Hong Kong, Sri Lanka	84.14
5.	Flow-splitters for oxygen supply	India, Korea, China	53.07
6.	Bougies, Catheters, Drains and Sondes, and Parts	India, Netherlands, China	65.7
7.	Medical Masks	India, China, other Asia n.e.s.	46.96
8.	Patient Monitors and Pulse Oximeters	Singapore, US, Netherlands	49.44
9.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	China, India, Singapore	52.87
10.	Other Medical Headwear	China, India, Italy	97.47
11.	Liquid Soap	India, Thailand, Singapore	89.26
12.	Protective Goggles	China, India, Hong Kong	96.63
13.	Gloves, examination, non-sterile	China, India, Malaysia	94.18
14.	Nitrile and Sterile gloves	Malaysia, China, Thailand	96.50
15.	Hand Sanitisers	China, India, Germany	61.8
16.	Protective Clothing	China, India, Italy	97.42

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 4a: Bhutan's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Enzymes	981.578369	39.52
2.	Hand Sanitisers	870.861023	35.07
3.	Flow-splitters for oxygen supply	346.348511	13.95
4.	Bougies, Catheters, Drains and Sondes, and Parts	246.293488	9.91
5.	Medical Masks	32.0214996	1.29
6.	Protective Goggles	6.18200016	0.25
	Total	2,483.28	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 4b: Bhutan's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Enzymes	India, Germany, Korea	71.39
2.	Hand Sanitisers	India, Malaysia, Thailand	99.91
3.	Flow-splitters for oxygen supply	India, Italy, Austria	88.97
4.	Bougies, Catheters, Drains and Sondes, and Parts	India, Japan, China	88.06
5.	Medical Masks	Italy, Japan, India	74.31
6.	Protective Goggles	India, China, France	100.00

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Table 5a: India's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Humidifiers, non-heated	1,090,638.75	40.57
2.	Enzymes	481,188.22	17.90
3.	Flow-splitters for oxygen supply	329,568.41	12.26
4.	Bougies, Catheters, Drains and Sondes, and Parts	287,691.22	10.70
5.	Chlorine	241,961.73	9.0
6.	Patient Monitors and Pulse Oximeters	64,199.89	2.39
7.	Nitrile and Sterile Gloves	56,914.24	2.12
8.	Medical Masks	39,580.13	1.47
9.	Gloves, examination, non-sterile	22,309.06	0.83
10.	Hand Sanitisers	18,907.95	0.70
11.	Protective Goggles	16,597.14	0.62
12.	Aprons, heavy duty and viral transport medium	14,137.29	0.53
13.	Liquid Soap	12,522.90	0.47
14.	Other Medical Headwear	7,749.60	0.29
15.	Protective Clothing	4,400.76	0.16
	Total	2,688,367.29	

Notes:

1. Import values are the average of such values for 2017, 2018 and 2019 (wherever available). Values are rounded off to two places of decimals.
2. Shares computed by the author.

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 5b: India's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Humidifiers, non-heated	China, Germany, Japan	57.42
2.	Enzymes	US, Germany, Singapore	58.88
3.	Flow-splitters for oxygen supply	Germany, China, US	47.31
4.	Bougies, Catheters, Drains and Sondes, and Parts	US, Ireland, Netherlands	39.25
5.	Chlorine	China, Japan, Korea	56.58
6.	Patient Monitors and Pulse Oximeters	China, US, Germany	66.81
7.	Nitrile and Sterile Gloves	Malaysia, Thailand, Sri Lanka	92.77
8.	Medical Masks	China, UAE, Philippines	73.57
9.	Gloves, examination, non-sterile	Malaysia, Sri Lanka, Thailand	91.39
10.	Hand Sanitisers	China, US, Germany	63.28
11.	Protective Goggles	China, Other Asia, n.e.s.; Malaysia	82.89
12.	Aprons, heavy duty and viral transport medium	China, US, Hong Kong	66.99
13.	Liquid Soap	Germany, UK, Thailand	62.10
14.	Other Medical Headwear	China, Croatia, US	66.96
15.	Protective Clothing	China, Vietnam, Cambodia	72.25

Note: Values are rounded off to two places of decimals.

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 6a: The Maldives' Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	23,723.1973	46.49
2.	Hand Sanitisers	7,804.98145	15.30
3.	Enzymes	6,293.40186	12.33
4.	Flow-splitters for oxygen supply	4,065.98755	7.97
5.	Liquid Soap	3,506.25952	6.87
6.	Medical Masks	1,635.07495	3.20
7.	Bougies, Catheters, Drains and Sondes, and Parts	1,433.04248	2.81
8.	Aprons, heavy duty and viral transport medium	715.653503	1.40
9.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	568.757996	1.11
10.	Nitrile and Sterile Gloves	493.721985	0.97
11.	Patient Monitors and Pulse Oximeters	370.849518	0.73
12.	Protective Goggles	229.222	0.45
13.	Other Medical Headwear	184.439499	0.36
	Total	51,024.5896	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank, www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 6b: The Maldives' Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	Singapore, India, Sri Lanka	47.12
2.	Hand Sanitisers	Indonesia, Singapore, India	63.03
3.	Enzymes	India, Germany, France	62.22
4.	Flow-splitters for oxygen supply	China, Singapore, India	58.70
5.	Liquid Soap	Singapore, Malaysia, Vietnam	64.49
6.	Medical Masks	China, Malaysia, India	55.27
7.	Bougies, Catheters, Drains and Sondes, and Parts	India, Sri Lanka, Malaysia	78.02
8.	Aprons, heavy duty and viral transport medium	China, Sri Lanka, India	63.58
9.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	Switzerland, Japan, India	60.96
10.	Nitrile and Sterile Gloves	Singapore, UAE, China	62.42
11.	Patient Monitors and Pulse Oximeters	Malaysia, UK, India	68.78
12.	Protective Goggles	China, Other Asia n.e.s., France	44.64
13.	Other Medical Headwear	China, Sri Lanka, UAE	52.70

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 7a: Nepal's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	24,332.3262	33.79
2.	Enzymes	8,337.61816	11.58
3.	Humidifiers, non-heated	7,602.12939	10.56
4.	Bougies, Catheters, Drains and Sondes, and Parts	6,149.37695	8.54
5.	Hand Sanitisers	4,869.28027	6.76
6.	Patient Monitors and Pulse Oximeters	3,895.00073	5.41
7.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	3,164.33228	4.39
8.	Other Medical Headwear	3,087.41797	4.29
9.	Flow-splitters for oxygen supply	2,477.75684	3.44
10.	Liquid Soap	2,365.96045	3.29
11.	Gloves, examination, non-sterile	1,356.95544	1.88
12.	Protective Goggles	1,221.19592	1.70
13.	Medical Masks	1,160.21667	1.61
14.	Aprons, heavy-duty and viral transport medium	1,072.052	1.49
15.	Nitrile and Sterile Gloves	756.754517	1.05
16.	Protective Clothing	156.105499	0.22
	Total	72,004.4793	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 7b: Nepal's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	India, Germany, Singapore	63.41
2.	Enzymes	India, Germany, France	50.50
3.	Humidifiers, non-heated	India, Korea, Germany	90.89
4.	Bougies, Catheters, Drains and Sondes, and Parts	India, Malaysia, Netherlands	66.14
5.	Hand Sanitisers	India, China, Germany	96.80
6.	Patient Monitors and Pulse Oximeters	Singapore, Germany, US	46.78
7.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	Germany, India, US	58.18
8.	Other Medical Headwear	India, China, Thailand	96.74
9.	Flow-splitters for oxygen supply	India, Singapore, China	92.41
10.	Liquid Soap	India, Thailand, Netherlands	96.62
11.	Gloves, examination, non-sterile	India, Malaysia, China	99.98
12.	Protective Goggles	China, India, Netherlands	97.49
13.	Medical Masks	China, India, Korea	95.14
14.	Aprons, heavy duty and viral transport medium	China, India, Spain	99.85
15.	Nitrile and Sterile Gloves	Malaysia, India, Thailand	97.08
16.	Protective Clothing	Italy, India, UK	99.17

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 8a: Pakistan's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Humidifiers, non-heated	126,728.758	21.73
2.	Bougies, Catheters, Drains and Sondes, and Parts	108,719.688	18.65
3.	Enzymes	103,169.305	17.70
4.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	99,947.5391	17.14
5.	Patient Monitors and Pulse Oximeters	56,723.2656	9.73
6.	Flow-splitters for oxygen supply	35,486.2617	6.08
7.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	14,317.9697	2.46
8.	Medical Masks	8,502.96094	1.46
9.	Nitrile and Sterile Gloves	6,619.41113	1.13
10.	Gloves, examination, non-sterile	4,954.63379	0.85
11.	Liquid Soap	4,905.82227	0.84
12.	Other Medical Headwear	4,791.57373	0.82
13.	Hand Sanitisers	3,519.12256	0.60
14.	Aprons, heavy-duty and viral transport medium	2,317.38159	0.34
15.	Protective Goggles	996.143982	0.17
16.	Chlorine	925.797485	0.16
17.	Protective Clothing	363.660339	0.06
	Total	582,989.294	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 8b: Pakistan's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Humidifiers, non-heated	China, Korea, Germany	71.23
2.	Bougies, Catheters, Drains and Sondes, and Parts	China, Ireland, US	48.65
3.	Enzymes	Germany, US, China	63.84
4.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	Germany, US, China	55.28
5.	Patient Monitors and Pulse Oximeters	Germany, US, Japan	51.08
6.	Flow-splitters for oxygen supply	China, US, Germany	70.55
7.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	China, US, Germany	59.74
8.	Medical Masks	China, Turkey, Bangladesh	90.53
9.	Nitrile and Sterile Gloves	Malaysia, China, Sri Lanka	96.13
10.	Gloves, examination, non-sterile	Malaysia, Sri Lanka, China	94.96
11.	Liquid Soap	China, Thailand, India	56.03
12.	Other Medical Headwear	China, India, UAE	96.07
13.	Hand Sanitisers	Vietnam, China, UK	67.33
14.	Aprons, heavy-duty and viral transport medium	China, Sri Lanka, Indonesia	78.50
15.	Protective Goggles	China, US, Germany	87.81
16.	Chlorine	Belgium, Singapore, Vietnam	57.60
17.	Protective Clothing	Turkey, Belgium, Ukraine	62.00

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 9a: Sri Lanka's Imports of Critical Medical Supplies

S/No	Item Category	Import (US\$'000)	Share (%)
1.	Humidifiers, non-heated	53,037.5977	30.64
2.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	43,750.9375	25.27
3.	Enzymes	27,578.6875	15.93
4.	Aprons, heavy-duty and viral transport medium	15,188.125	8.77
5.	Bougies, Catheters, Drains and Sondes, and parts	8,851.73242	5.11
6.	Flow-splitters for oxygen supply	5,085.19482	2.94
7.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	3,912.66797	2.26
8.	Patient Monitors and Pulse Oximeters	3,217.28174	1.86
9.	Medical Masks	3,188.38794	1.84
10.	Hand Sanitisers	2,718.97241	1.57
11.	Liquid Soap	2,335.35107	1.35
12.	Nitrile and Sterile Gloves	1,849.94348	1.07
13.	Chlorine	1,043.73596	0.60
14.	Other Medical Headwear	630.003967	0.36
15.	Protective Goggles	403.92749	0.23
16.	Gloves, examination, non-sterile	254.128006	0.15
17.	Protective Clothing	62.6414986	
	Total	173,109.316	

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

Annex 9b: Sri Lanka's Major Import Sources and Shares

S/No	Item Category	Top Three Source Countries	Share (%)
1.	Humidifiers, non-heated	Australia, India, China	55.66
2.	Venturi Masks, Nasal Prongs, Laryngoscopes, Resuscitators, Suction Devices	Germany, US, China	50.56
3.	Enzymes	US, Germany, UK	53.34
4.	Aprons, heavy-duty and viral transport medium	Hong Kong, China, Korea	78.08
5.	Bougies, Catheters, Drains and Sondes, and Parts	India, US, Japan	53.36
6.	Flow-splitters for oxygen supply	China, India, Germany	54.26
7.	Ventilators, Oxygen Masks and Nebulisers, Nasal Cannula and CPAP Machines	Austria, US, China	57.24
8.	Patient Monitors and Pulse Oximeters	Japan, China, Germany	77.37
9.	Medical Masks	Other Asia n.e.s., China, India	78.10
10.	Hand Sanitisers	India, Germany, US	59.86
11.	Liquid Soap	India, Thailand, UK	80.97
12.	Nitrile and Sterile Gloves	Malaysia, Vietnam, Thailand	92.65
13.	Chlorine	China, Singapore, Vietnam	91.01
14.	Other Medical Headwear	China, India, UK	80.03
15.	Protective Goggles	China, UK, India	72.55
16.	Gloves, examination, non-sterile	Malaysia, India, Germany	94.46
17.	Protective Clothing	Hong Kong, India, US	52.36

Source: "Database on COVID19 Trade Flows and Policies", The World Bank. www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies.

About the Author

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