Priority Industries for Relocation under CPEC - Integrating Pakistan in the Chinese Value Chains

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Abstract

In this paper the authors have identified the priority industries, which could be given special incentive to re-locate in the new Special economic Zones (SEZ) under the CPEC project. The methodology utilized identifies these industries through a quantitative analysis, utilizing the international available trade statistics and identifies the commonality of Chinese export to Pakistan and to the regions which are in maritime proximity to the Indian ocean. The basic assumption of the study is that semi-finished goods from china, can be transported through existing maritime routes, these semi-finished goods are further converted into finished goods in Pakistan Prioritized Special Economic Zones (p-SEZ). This will permit Pakistan to enter into the global value chains of China at a downstream position. Downstream entry of the value chain is the only strategy available to relatively less industrially developed countries like Pakistan as it requires minimum managerial and technical

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expertise development of the work force. The value preposition for the relocation of the Chinese industries in Pakistan p-SEZ is the proximity to the energy zones and proximity to the final product customers.

1. Introduction

Despite last decade's global financial crisis, international trade and globalization are still considered an important driver for economic growth. On the import side, with more competition from imports, domestic firms are expected to adopt better technologies and hence improve productivity. On the export side it has been empirically shown that exporting firms are more productive than their locally distributing counter parts. China is one of the leading players in global trade where it contributed 17 percent of the total world exports and 18 percent of total imports [1]. This global expansion and integration have not only benefited China but also rest of the world through positive spillover effects of economic growth. Due to flow of investment, opportunities through trade, cross border employment opportunities, and technological advancements, the economic growth of China has benefited many economies. [2] empirically established that there are significant spillover effects of china's economic growth on rest of the world.

As far as the recipients of these spillovers are concerned, the rest of the world is benefiting from low cost production of China (cheaper imports), while the regional countries (Asia) might also benefit from being a part of China's production value chain (exports of intermediate goods to China). The role of global value chain in reducing cost of production is well established theoretical and empirical. The interplay of comparative advantage and globalization has led to establishment of distributed Global Value Chains (GVCs) where production of industrial intermediate good, rests with most efficient country [3]. More value-added production activities are concentrated in high

income countries Apart from technological capacity leading to efficiency, regionalism has also been a determinant in the extent of a country's role in GVC. [4]

China has initiated the new model of regional integration in 2013 namely "Belt and Road Initiative (BRI)" with the investment of 900 billion USDs in which China is going to connect with more than 65 countries of Europe, Africa and Asia. Under the umbrella of BRI, China is revitalizing its connectivity with 2/3 population of the world through road, railways, communication networks, energy pipelines, energy transmission lines, dry ports and sea ports. Six major economic corridors have been inaugurated and China Pakistan Economic Corridor (CPEC) is one of these for China's connectivity to Europe, Middle East, through Gwadar port. The Gwadar port also provides greater market access for the central Asian republics. The main objective of BRI is increasing the market access of China at lower cost and time, increasing the throughput of its exports. However, the BRI is also associated with other reasons, namely;

- China's eastern region is facing industrial congestion which has led to rising rents, labor costs, population congestion as well as alarming levels of pollution [5]
- The western's region is relatively sparsely populated and has relatively benefited less from China's growth. To open up its western territories to trade and industry china is planning 19 cities belt.
- China intends to expand its market through fast track access by reducing the time and cost of delivery of its products.

2. Problem and Opportunities

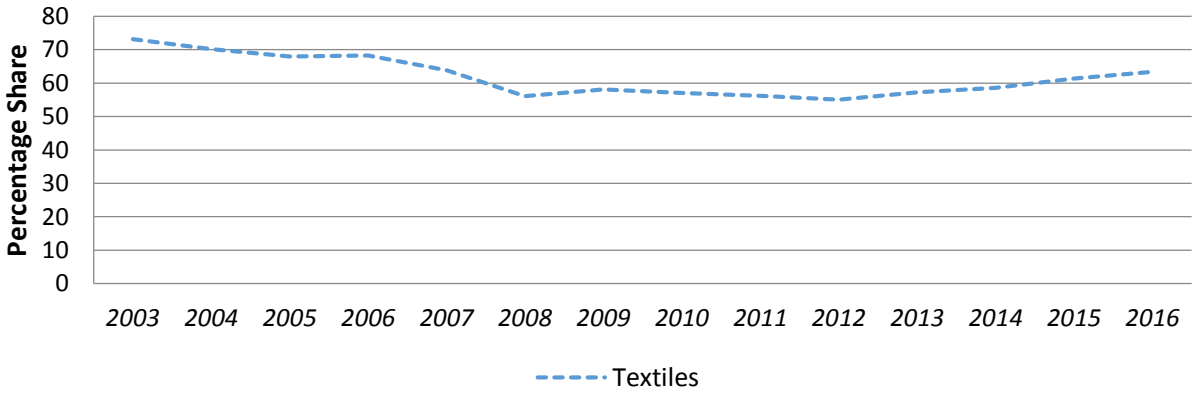
Pakistan has seen increasing trade deficit since the last few years. One might consider multiple reasons but one of the major factors is increased competition for Pakistan's products (China, India, Bangladesh and Viet-Nam are major competitors). Pakistan's reliance on exports of

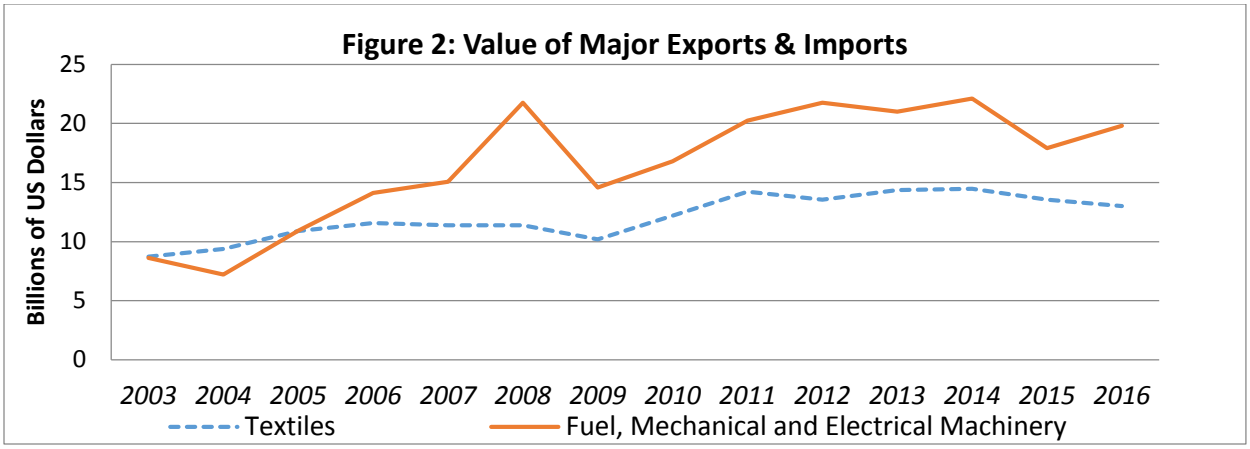
textile is represented by an average of 62% share of textile sector in total exports from year 2003 to 2016 (Figure 1). The largest share of our exports (textile) is not able to finance even the 42% of our imports which comprise of fuel, and machinery (Figure 2).

On one end Pakistan had followed Import Substitution Policies in such consumer goods which do not bring high returns. While on the other hand infant industry protection policies of past have led to issues in terms of lack of technological development in the protected industries and dependency on government subsidies and protection. Hence even the industry with comparative advantage in Pakistan (Textile) has lagged behind similar industries in other developing countries, and is not competitive anymore (when compared with Viet-Nam, China, Bangladesh, and India etc.). The widening deficit creates BOP (Balance of Payment) problems.

Historically Pakistan has focused on short term solutions to the problem like attempting to increase exports in the existing exporting industries mostly through export financing schemes. However, there should be certain medium to long-term strategy that may result in long term sustainable growth with multi-pronged approach.

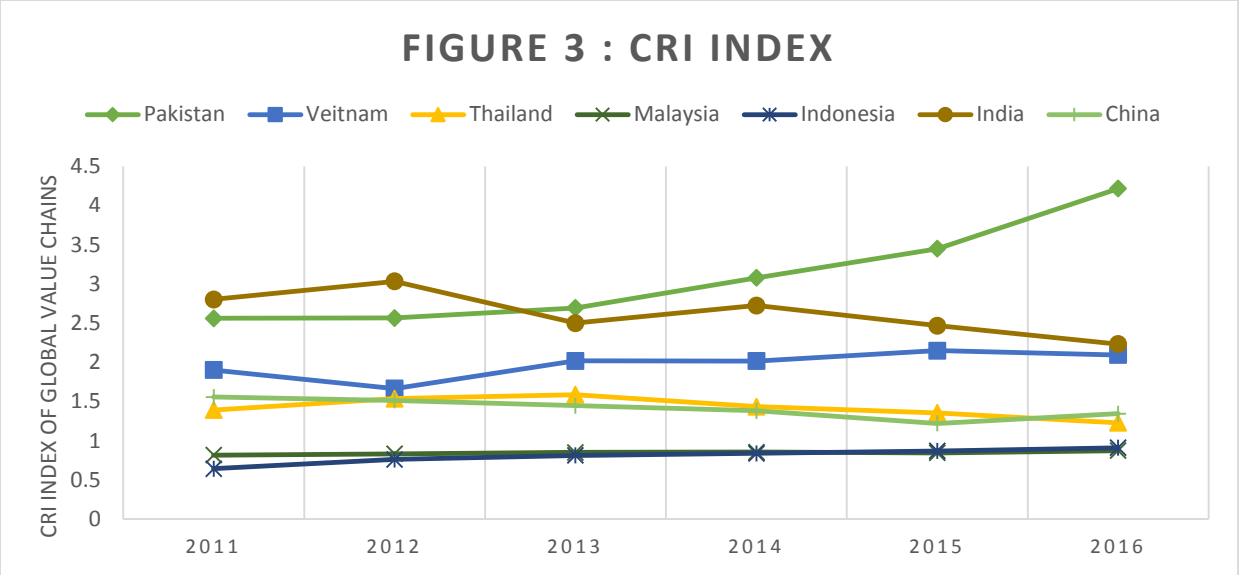
Figure 1: Share of Textile in Total Exports





The FTA signed with China has revealed the weakness in Pakistan's industrial infrastructure, where the import bill increased considerably more relative to the exports to China. It is difficult to compete with a country which has spent last few decades on developing its production capacity, achieving technological and managerial efficiency. With this level of global expansion, China is able to produce most of the goods at much cheaper rates than Pakistan and has market knowledge of the product demand patterns, as well as market access.

The recent trend in the Pakistan economy has shown that Pakistan is consistently increasing the imports of intermediate goods, if a country imports more intermediate goods and exports relatively fewer intermediate goods called the CRI index [6], then it is located downstream of the global value chain, as it is focusing on assembly and internal consumption of the intermediate goods. As shown in the figure 3 Pakistan's focus should be more towards reducing its imports of the intermediate goods for domestic consumption and integrate in global value chains, Pakistan should also focus on increasing exports of intermediate goods which could be use further downstream. Although oil and lubricant represent a large portion of our imports in intermediate goods, but we can focus on reducing our dependency on machinery spare parts and build our own local industries.



The emerging scenario under CPEC bring risk factors for local industries along with opportunities. Developing countries like Pakistan increase their trade linkages with such countries which can bring technological efficiency in the long run. Considering this as an opportunity Pakistan can improve its export and reduce its import bill with integration of its industries in Chinese Global Value Chains. The most difficult task and the more crucial is the choice of industries / goods for which Pakistan can either be a part in the present or develop capacity for the future. This choice also has to inherently give Chinese counterpart a value preposition for relocating their production facilities in Pakistan. The selection of the industries also has to take in consideration the preservation of the local small industries, rather than wiping then off with big Chinese nationals, so our focus of relocation will be on those industries in which Pakistani industry is already lagging behind and importing heavily.

The optimal choice may be to choose such goods which will China and thus naturally attract investment from Chinese businesses. Using CPEC China is expected to have additional accessibility to the Middle East's market along with supplies to Pakistan's neighboring countries. Pakistan can try to be a part of production process of items being exported to Middle East as well

as Pakistan, hence acquiring the production technology for the future, while simultaneously reducing its import bill. The benefit to China would be reduction in its industrial congestion along with reduction in cost and time of delivery to Pakistan as well as middle east countries.

The **objective of this paper** is to identify such industries, where Pakistan can be a part of China's GVC while simultaneously reducing its import bill through import substitution as well as developing capacity to produce and export in the long run through spillover effects. The framework being proposed in this paper can be customized for the choice of industries for Joint Ventures and Chinese Investments. It should be pointed out that the identified industries should be given a priority and precedence in the future development policy of CPEC industrial development projects. The selection process is designed to reduce Pakistan future import dependencies of and will help Pakistan in integrating in to the already existing value chains.

Another **important point** that the researchers are trying to make is this analysis is the inherent complexity of industrialization process, in order words integrating in the global value chains. Less developed countries usually join existing value chains by participating in the downstream of the value chains, i.e. assembly process, the choice of the country location is governed by the natural endowment the local labor, land and energy competitiveness. In order to move up the value chain the countries need to develop corresponding trained man power, and managerial expertise. The governmental strategy to develop any **less developed industries** is to first integrate in the downstream of the value chain, then through proper management of policy, mange the spillover effect of the technology and encourage the local SME to provide more value-added services, and product to the value chain, hence progressively move up the managerial and technical value chain. It should be pointed out that this analysis provides the pertinent industries for **relocation or joint venturing decision**, and for the sustainable and inclusive development of

China's Belt and Road Initiative in which the participating countries should also benefit from replicating this methodology.

3. Methodology

The methodology utilized is based on quantitative analysis of international trade statistics, the data utilized in the study is extracted from WITS [7]. In order to integrate Pakistan in the Chinese global value chains, locational advantage of Pakistan in the proximity of Indian ocean is considered. The selection of the countries is based on the criteria on the proximity of the Indian ocean, and the list of the selected countries is provided in the Table 4, further referred in the study as the area of interest (AOI). This selection criteria provides a natural augment for the relocation of value chain in the proximity to the end user of the Chinese products, as the Middle east and Africa markets provide China with large export potential. Any Special Economic Zones development under CPEC provides China opportunity of producing or assembling its goods in the proximity of the Strait of Hormuz (The largest energy transport corridor), and then transporting of the energy and then the finished goods to the end user will provide an inherent logistical advantage to the Chinese companies, and further reduce the product cost.

The data analysis is done on HS Code level 4, of all the Chinese exports to the AOI. The goal of the quantitative analysis is to identify the commonality of trade to the AOI, it should be iterated that only those products are considered which have a stable trade over the time period of 2011-2016, thus considering only the stable consumption patterns, and not the innovative consumptions. The software used for the analysis is the R software [8] for statistical analysis, and the package dplyr [9] for data wrangling. Since Pakistan is included in the list hence the import substitution argument will automatically be satisfied. However, the role of dollar value of its impact in terms of choice of items is to be discussed in detail which is followed in the next section.

4. Results

Once using the matching code developed in R was applied to the data of selected countries from 2011 to 2016 up to HS 4-digit code, a total of 395 product families were identified. These items have very consistent exports from China to Pakistan and rest of the AOI for the past six years (representing demand in these regions). Pakistan average imports from china in these 395 product families is 9.39 billion USD in the period of study, while China's total exports in these commodities to the AOI countries averages to 123.584 billion USD.

Although the actual policy formulation needs to be more elaborate and need to consider all of the 395 items, but in order to prioritize and summarize, the list has been narrowed down to top 30 items as per the 6-year average value in USD, based on three different criteria possibly leading to different outcomes. These criterions have been explained under the following three strategy choices explained subsequently.

It should be clarified that the subsequent 3 strategies discussed by the authors only give the road map of product families which should be given special priority for indigenization, and thus reducing the trade deficit in medium to long term. Special tax and tariff incentive should be designed to facilitate and attract these product industries to Pakistan. Special incentives are also required for the human resource develop in the product families. Pakistan can try to apply any one or any multiple combination of the below discussed strategies.

Strategy 1: Integrating in the Chinese values chains for national capacity building and indigenization of current import from china

In this case the items are prioritized based on Pakistan's 6-year average value of imports from china in the selected 395 product families. Hence Pakistan's imports from China are highest

for HS code 8517 out of the final 395 items. In this case the top 30 items are presented in Table 1. If the items are selected on the basis of Pakistan's imports, they account for almost 4.5 billion USD. While total exports of China in the AOI for these product families average to 41.33 billion USD. This strategy will account for 48.27 percent of the of total imports from China (395 identified product families), hence significantly reducing the import bill. Further there is always a possibility of spillover effects where the domestic industries will gain technological capacity and hence build Pakistan's export base for the long run.

Strategy 2: Integrating in the Chinese value chains for regional product demand satisfaction

The alternate scenario is when the items are listed with top 30 Chinese exports to the AOI in terms of the average value of China's exports in the selected 395 product families. The strategy will help Pakistan to become part of major Chinese exports, this although relatively difficult to implement has the potential to generate trade surplus for Pakistan, as Pakistan will be providing services not only for its own utilization but will also be providing services for the regional consumption, making Pakistan part of the regional value chain. Table 2 presents the results, where Pakistan imports 3.58 billion USD while total exports of China are 56.17 billion USD. This strategy will account for 38.19 percent of Pakistan's total imports from China in 395 product families.

Strategy 3: Technology indigenization for sustainable export growth

One of the reasons for increasing trade deficit of Pakistan is that the composition of exports has almost remained stagnant with textile being major exports of Pakistan. On the other hand, with changing life style and increased globalization, the composition of imports has changed over time

resulting into larger import bill. This change in composition is towards technology-based items including machinery and electrical equipment which is broadly categorized into HS code 84-85. If the items are priorities based on these HS codes, the results are be presented in table 3 below. Under this strategy Pakistan would be replacing almost 1.02 billion USD of its imports while China has a total of 12.21 billion dollars of its total exports from this category. Although this strategy will account for 10.87 percent of Pakistan's total imports from China in 395 items, however, this strategy might result into long term spillover effects and knowledge accumulation of technology-based production, making Pakistan relatively technologically advanced country.

5. Conclusion

The designed framework using matching of Chinese exports to Pakistan with countries expected to be supplied through CPEC, across time, has helped in identification of specific industries in which Pakistan can be part of China's Global Value Chain. It should be noted that the authors have optimized their decisional methodology by considering the maritime connectivity, for the transport of energy, intermediate goods, and finished goods. This consideration only is due to the fact that for cost reducing can only be achieved through maritime connectivity, and Gwadar and Karachi along with the costal belt of Pakistan can be exploited as the land resource for the SEZ. The number of goods by including more than 30 goods to calculate the impact of import substitution, but this methodology can be applied if in the future with a different the AOI. Further the framework can also be customized to identify industries based on a different underlying preference, for example if the textile sector in general is to be prioritized. The most important aspect is addressing the current situation BOT of Pakistan in a long-term sustainable and inclusive manner. The strategies can benefit Pakistan through technological spillover and gaining a part of

Chinese exports in the long run, while China can benefit from low cost and less time of delivery of its items to Pakistan as well as countries in the AOI. This study also provides china planning and extension of the BRI in a more inclusive and sustainable manner, giving less developed countries to positively contribute in the sustainable and inclusive development of the region.

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Table 1 : Prioritized List: Top 30 Pakistan's Imports Criteria

Sr. No.	Product HS-Code	Product Description	Pakistan's Imports (Million USD)	China's Exports to Selected Countries (Million USD)
1	8517	Telephone sets, including telephone	705.37	6831.96
2	5407	Woven fabrics of synthetic filament	453.01	2762.79
3	7225	Flat-rolled products of other alloy	250.38	1162.10
4	4011	New pneumatic tyres, of rubber.	218.40	2442.03
5	5516	Woven fabrics of artificial staple	211.18	589.62
6	8504	Electrical transformers, static con	188.92	1068.59
7	6402	Other footwear with outer soles	177.32	2249.57
8	8541	Diodes, transistors and similar sem	169.12	585.62
9	8502	Electric generating sets and rotary	159.00	800.40
10	7210	Flat-rolled products of iron or non	125.77	1187.70
11	7308	Structures (excluding prefabricated	121.35	864.64
12	8415	Air conditioning machines, compris	120.10	1921.56
13	8539	Electric filament or discharge lamp	117.99	886.97
14	5208	Woven fabrics of cotton, containing	107.76	451.99
15	8544	Insulated (including enamelled or a	105.58	861.99
16	8407	Spark-ignition reciprocating or rot	105.44	351.15
17	6006	Other knitted or crocheted fabrics.	103.47	657.77

18	8409	Parts suitable for use solely or pr	99.85	441.61
19	9405	Lamps and lighting fittings includi	91.51	2096.18
20	8528	Monitors and projectors, not incorp	86.31	1913.68
21	4202	Trunks, suit-cases, vanity-cases, e	85.55	2288.07
22	5903	Textile fabrics impregnated, coated	84.06	560.07
23	3926	Other articles of plastics and arti	83.97	1376.19
24	8471	Automatic data processing machine	83.57	4293.43
25	2933	Heterocyclic compound with nitrog	82.35	319.95
26	8414	Air or vacuum pumps, air or other	81.42	1136.21
27	8503	Parts suitable for use solely or pr	80.21	251.69
28	7219	Flat-rolled products of stainless s	79.18	255.58
29	5513	Woven fabrics of synthetic staple f	79.09	244.58
30	8714	Parts and accessories of vehicles o	78.06	483.68
		Total	**4535.27**	**41337.39**

Table 2 : Prioritized List: Top 30 Chinese Exports to Selected Countries Criteria

Sr. No.	Product HS-Code	Product Description	Pakistan's Imports (Million USD)	China's Exports to Selected Countries (Million USD)
1	8517	Telephone sets, including telephone	705.37	6831.96
2	8471	Automatic data processing machines	83.57	4293.43
3	6104	Women's or girls' suits, ensembles,	19.76	2899.14
4	5407	Woven fabrics of synthetic filament	453.01	2762.79
5	9403	Other furniture and parts thereof.	27.90	2653.67
6	4011	New pneumatic tyres, of rubber.	218.40	2442.03
7	4202	Trunks, suit-cases, vanity-cases, e	85.55	2288.07
8	6402	Other footwear with outer soles and	177.32	2249.57
9	9405	Lamps and lighting fittings includi	91.51	2096.18
10	8703	Motor cars and other motor vehicles	5.98	1964.78
11	8415	Air conditioning machines, comprisi	120.10	1921.56
12	8528	Monitors and projectors, not incorp	86.31	1913.68
13	7304	Tubes, pipes and hollow profiles, s	69.83	1865.38
14	8708	Parts and accessories of the motor	49.71	1836.91
15	6103	Men's or boys' suits, ensembles, ja	24.70	1580.56
16	9401	Seats (other than those of heading	19.83	1509.12
17	3926	Other articles of plastics and arti	83.97	1376.19

18	6204	Women's or girls' suits, ensembles,	15.62	1299.90
19	8481	Taps, cocks, valves and similar app	60.84	1296.55
20	7210	Flat-rolled products of iron or non	125.77	1187.70
21	6203	Men's or boys' suits, ensembles, ja	19.54	1181.07
22	7225	Flat-rolled products of other alloy	250.38	1162.10
23	8414	Air or vacuum pumps, air or other g	81.42	1136.21
24	8516	Electric instantaneous or storage w	45.84	1073.92
25	8504	Electrical transformers, static con	188.92	1068.59
26	8539	Electric filament or discharge lamp	117.99	886.97
27	7308	Structures (excluding prefabricated	121.35	864.64
28	8544	Insulated (including enamelled or a	105.58	861.99
29	6908	Glazed ceramic flags and paving, he	68.80	845.97
30	7228	Other bars and rods of other alloy	64.12	821.47
		Total	**3588.97**	**56172.10**

Table 3 : Prioritized List: Top 30 Tech Based Chinese Exports Criteria

Sr. No.	Product HS-Code	Product Description	Pakistan's Imports (Million USD)	China's Exports to Selected Countries (Million USD)
1	8407	Spark-ignition reciprocating or rot	105.4360303	351.1533778
2	8408	Compression-ignition internal com	12.42694167	183.5116428
3	8409	Parts suitable for use solely or pr	99.84617117	441.612619
4	8412	Other engines and motors.	12.98310033	111.7964783
5	8413	Pumps for liquids, whether or not f	74.59763917	769.7957187
6	8414	Air or vacuum pumps, air or other	81.417134	1136.210392
7	8415	Air conditioning machine, compris	120.1016978	1921.561678
8	8417	Industrial or laboratory furnaces	8.957987333	123.757388
9	8418	Refrigerators, freezers and other	54.00999017	667.5212023
10	8419	Machinery, plant or laboratory equi	53.35341467	442.108879
11	8421	Centrifuges, including centrifugal	48.37238017	481.1333837
12	8422	Dish washing machines; machinery	14.30864183	150.3564373
13	8423	Weighing machine (excluding bal	7.663074833	90.7789945
14	8424	Mechanical appliances	10.008003	213.1025333
15	8425	Pulley tackle and hoists other than	6.792786667	117.8389007
16	8426	Ships' derricks; cranes, including	47.0863225	491.2021305
17	8427	Fork-lift trucks; other works truck	4.553020667	169.7771992

18	8428	Other lifting, handling, loading or	34.11156467	532.2695233
19	8429	Self-propelled bulldozers, angledoz	25.92602783	675.2255185
20	8430	Other moving, grading, levelling, s	30.97347733	777.605145
21	8431	Parts suitable for use solely or pr	26.49811833	721.2112315
22	8433	Harvesting or threshing machinery,	1.225416167	62.746719
23	8436	Other agricultural, horticultural,	11.6545535	43.57627567
24	8438	Machinery, not specified or include	3.948405167	70.76709017
25	8441	machinery for making up paper	6.754743833	85.57932417
26	8443	Printing machinery used for printin	14.38675283	578.2119355
27	8447	Knitting machines, stitch-bonding	69.24353483	117.5494278
28	8450	Household or laundry washing	8.906392333	425.0881227
29	8452	Sewing machines, other than book-	21.50027083	156.0048465
30	8450	Metal-rolling mills and rolls there	4.992540333	104.419063
		Total	**1022.036134**	**12213.47318**

Table 4: Area of Interest: AOI

Pakistan Iran Oman UAE Bahrain Kuwait Iraq Saudi Arabia Sudan Egypt South Africa