TRIANGLE OF PROGRESS - CHINA PAKISTAN ECONOMIC CORRIDOR, SHIP RECYCLING & STEEL INDUSTRY

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Abstract

The economic promise of the 60s has faded away in the last many decades with frequent boom and bust cycles indicative of poor planning and ill-advised policy making. Political instability, terrorism within and from across the borders and lack of national consensus has resulted in a dwindling economy. What has persevered is Pakistan's relationship with China which has only grown despite the occasional hiccups. CPEC, a harbinger of hope for Pakistan's economy was launched with the help of Chinese in 2015, has only been able to garner limited success in light of global opposition and more importantly due political instability and resistant bureaucratic processes. But undoubtedly, CPEC has the potential to uplift two critical yet inter-dependent segments of Pakistan's economy i.e. Ship recycling and steel industry. This study investigates how other states such as Bangladesh in the case of Ship Recycling and South Korea in Steel sector have been able to accrue maximum benefits while dilating upon the factors leading to the decline of these sectors through analysis of various studies and corelating them with available data. The paper recommends a way forward for the policy makers on the role of Special Economic Zones (SEZs) under CPEC as a catalyst to forge new economic pathways within Ship Recycling and Steel sector.

Keywords: Blue Economy, Terrorism, CPEC, Steel Industry, Ship Recycling, SEZ

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1. Background

Pakistan and China are two neighbouring countries whose relationship has been described as "sweeter than honey, higher than Himalayas and deeper than the oceans".[1] This relationship which had a humble beginning has grown over the past many decades with cultural, military, economic and trade linkages making it stronger with every passing decade. The land connection between the two states through the Himalayas known as the Karakoram highway has opened new vistas for both states. China Pakistan Economic Corridor (CPEC) is but only a natural extension of the Karakoram Highway.

The bilateral trade relations between the two countries were established in January 1963 after signing the first bilateral long term trade agreement. Both countries signed Free Trade Agreement (FTA) on 24 November 2006. The idea of connecting South Eastern China with northern Pakistan and beyond had been explored many a times and this project was finally envisaged by Chinese President Xi Jinping in 2013.[2] China Pakistan Economic Corridor or CPEC was eventually proposed by Chinese Premier Li Keqiang during his visit to Pakistan in May 2013.[3] In November 2014, Chinese government announced to finance Chinese companies to build energy and infrastructure related projects worth US $ 45.6 billions in Pakistan as part of CPEC project followed by signing of the agreement on 20 April 2015.[4]

The economic progress that was expected by the Pakistani nation has not materialized in the way it was hoped. Various factors have been identified at the national, regional and international level that have affected the plans in varying degrees. Multiple businesses most notably, the ship recycling business has suffered a calamitous slump over many decades which has directly affected the steel industry. Even when CPEC projects were in full swing, no effort was put in to turn around the ship recycling business so as to help the steel industry reduce its imports and reducing the overall import bill of iron and steel scrap. Steel remains the basic product required for manufacturing businesses and export oriented growth especially when diversification of exports is direly needed.

The contribution of the world's steel industry towards global economy has been stupendous. In 2019, it contributed 3.8% of the global GDP with a contribution of about 2.9 trillion US $ and supported 96 million jobs worldwide.[5] China alone contributes 36% of this annual contribution to global GDP followed by USA (11%) and Japan (9%).[6] The study

[1] This term has been used to describe Pak-China relations and was used by ex-PM of Pakistan in 2013 to describe the strong military, economic, cultural and political ties between the two states. This term has been used in the region (in parts) as a metaphor to describe strong relationships transcending the physical domain. Reportedly, Zhou Enlai of China in 1964 had used a similar statement when he invited the crew for a state banquet on the occasion of first PIA flight into China.

[2] Minhas Majeed Khan et al., eds., *China-Pakistan Economic Corridor: A Game Changer* (Islamabad: Institute of Strategic Studies, 2016).

[3] Ibid.

[4] Ibid.

[5] 'The Role of Steel Manufacturing in Global Economy' (London: Oxford Economics, May 2019), https://worldsteel.org/wp-content/uploads/The-role-of-steel-manufacturing-in-the-global-economy.pdf.

[6] Ibid.

commissioned by World Steel Association concluded that for every two jobs created in the Steel sector, 13 more jobs are created in the supply chain sector.[7] The steel industry's impact on the national economy is well documented and the case of Republic of Korea (ROK - South Korea) is an example to follow.[8] Pakistan produced a mere 5.3 million tonnes in 2023 that is a paltry 0.28% of the global steel production.[9] This paper investigates how states such as Bangladesh in the case of Ship Recycling and South Korea in Steel sector have been able to accrue maximum benefits while understanding the linkages between the ship recycling business and steel industry for Pakistan. Considering Pakistan's population demographic and unemployment patterns,[10] the development of steel industry in collaboration with the ship recycling business is considered a perfect recipe to course a path to economic progress as proposed through CPEC.

1.1 China-Pakistan Economic Corridor

CPEC was envisioned to be a cornerstone for financial, industrial and human resource development coupled with poverty alleviation through agricultural advancements and development of Special Economic Zones and industrial parks to provide respectable jobs to the masses. CPEC is not just the name of one Road, rather a broad development framework. China and Pakistan have bilaterally decided that economic cooperation will be carried out in four key areas, these include Gwadar Port, energy, infrastructure development and industrial cooperation to drive development across Pakistan and deliver tangible benefits to the people living around these projects[11]. CPEC spans over 15 years, 4 phases, 52 Projects, aligned along 3 routes.

1.2 Phases of CPEC

CPEC's four phase's development plan includes[12]

1.2.1 **Short Term Plan**. Covers the following two phases: -

a. Phase-I by 2018 focused on Early Harvest Projects (EHPs).

b. Phase-II by year 2020, CPEC endeavoured to take the initial shape, substantially tackling major bottlenecks in Pakistan's economic and social development and the CPEC was to boost the economic growth through energy projects and development of necessary infrastructure.

[7] Ibid.

[8] Kwang-Sook Huh, 'Steel Consumption and Economic Growth in Korea: Long-Term and Short-Term Evidence', *Resources Policy* 36, no. 2 (June 2011): 107–13, doi:10.1016/j.resourpol.2011.01.005.

[9] 'World Steel in Figures 2024', *World Steel Association*, accessed 10 July 2024, https://worldsteel.org/data/world-steel-in-figures-2024/.

[10] Abdul Rasheed Azad, 'Unemployment Rate Stands at 6.3pc', Business News, *Business Recorder*, (12 June 2024), https://www.brecorder.com/news/40308029.

[11] 'China, Pakistan Elevate Relations, Commit to Long-Lasting Friendship', News, *China Daily*, accessed 22 May 2024, https://www.chinadaily.com.cn/world/2015xivisitpse/2015-04/21/content_20488627.htm.

[12] 'CPEC Long Term Plan 2017-2030', Information, *China Pakistan Economic Corridor*, accessed 22 May 2024, https://cpec.gov.pk/brain/public/uploads/documents/CPEC-LTP.pdf.

 DOI: 10.53968/pjmr.2024.004.6

1.2.2 **Medium Term Plan**. By year 2025, the medium term plan envisaged the completion of industrial system which would bring prosperity and livelihood to populace along the CPEC routes while enhancing regional connectivity. It also envisaged the establishment of Special Economic Zones (SEZs) and industrial parks and bringing them to fruition.

1.2.3 **Long Term Plan[13]** By year 2030, CPEC strives to accomplish sustainable growth not just in Pakistan but to be a stimulus for growth and prosperity across regions including Central and South Asia.

1.3 Development Projects of CPEC

1.3.1 Developments in Energy Sector.

14 projects have been completed in the energy sector that includes five coal fired projects of about 6600 MW, Solar and wind power projects of about 1300 MW and Karot Hydropower project of 720 MW. It also included an essential 660KV HVDC transmission line project from Matiari to Lahore. [14] The unfinished projects include Suki Kinari Hydropower Project (884 MW) which is scheduled for completion in November 2024[15].

1.3.2 Infrastructure Development Projects.

CPEC envisages construction, expansion and re-construction of existing and new roads, railway lines, pipelines, development of Gwadar and SEZs. Major projects are as follows:-

Road Infrastructure Development Projects. The Kasghar - Gwadar Expressway via Khunjerab is approximately 2,700 kilometers. The Northern route runs from Khunjerab to Burhan and is common to three other routes which are mentioned below:[16]

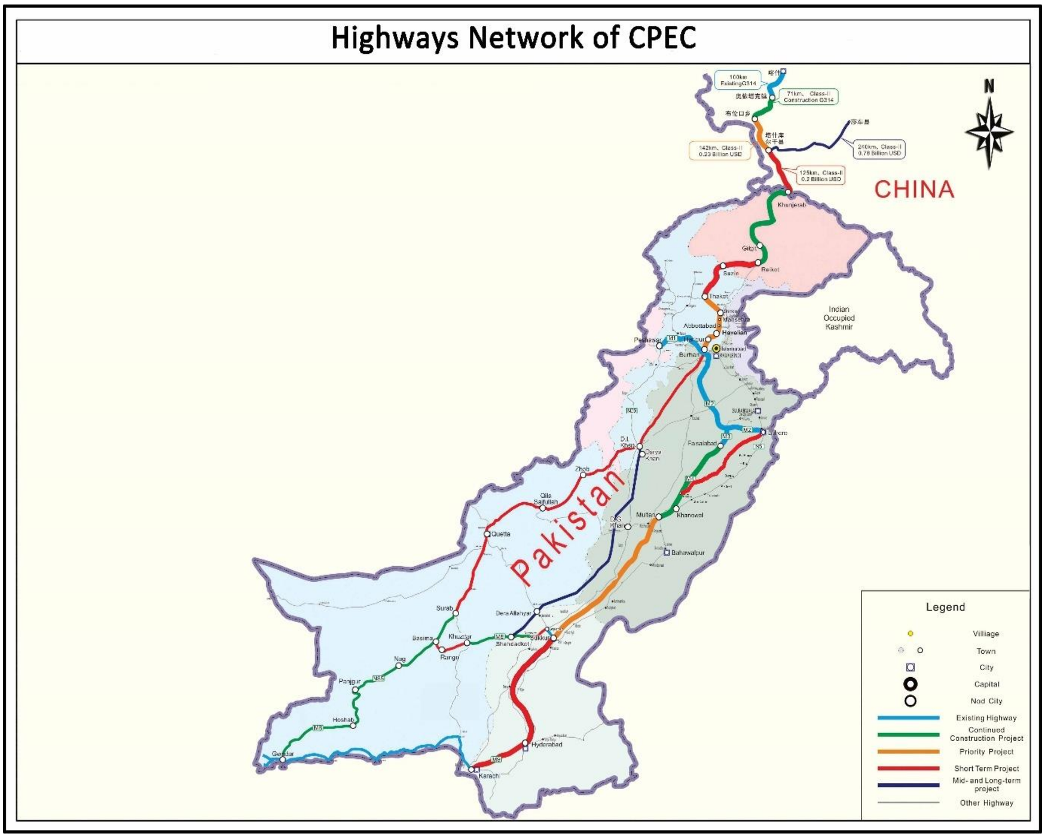
Western Route (2674 Kilometres). Originates from Gwadar and passes through Turbat, Panjgur, Basima, Sorab, Quetta, Qilla Saifullah, Zhob, D I khan, Hassan Abdal and onwards along Karakoram Highway (KKH).

Central Route (2756 Kilometres). Commences from Gwadar, follows M-8 and then connect it with Indus Highway for onward connectivity with Mianwali, Hassan Abdal and Karakoram Highway (KKH).

[13] Ibid.
[14] Hadiqa Mir, 'A Decade of CPEC - An Appraisal', *National Defence University*, 10 August 2023, https://www.ndu.edu.pk/issra/pub/insight/2023/A-DECADE-OF-CPEC%E2%80%93AN-APPRAISAL/A-DECADE-OF-CPEC%E2%80%93AN-APPRAISAL.html.
[15] Nisar Ahmed Khan, 'Work on Suki Kinari Power Project to Be Completed in Nov', News, *DAWN*, (29 March 2024), https://www.dawn.com/news/1824371.
[16] Khan et al., *China-Pakistan Economic Corridor*.

 DOI: 10.53968/pjmr.2024.004.6

Eastern Route (2781 Kilometres). Originates from Gwadar, follows Coastal Highway till Karachi, then along Karachi-Lahore-Peshawar motorway, then leads to Hassan Abdal and finally Karakoram Highway (KKH).



Map : Sourced from CPEC website (https://cpec.gov.pk/map-single/1)

Railway Infrastructure Development Projects. Railway development projects[17] includes following:-

a. Expansion/ Upgradation of existing mainline (ML-I) from Karachi to Peshawar.
b. Karachi Circular Railway.
c. Establishment of Havelian Dry Port.
d. Orange Line Project Lahore.
e. Quetta Mass Transit.
f. Peshawar Mass Transit.

1.3.3 **Gwadar Port Project**.

Since 2013, China Overseas Port Holding Company (COPHC) in collaboration with Gwadar Port Authority is developing Gwadar Free Trade Zone and has been awarded 40 years operations rights to the port. Gwadar Port operations have still not completely materialized due absence of road and rail

[17] Hadiqa Mir, 'A Decade of CPEC - An Appraisal'.

connectivity with major population centres in the north. The delays in the completion of western and central route have affected the overall efficacy of Gwadar port operations.[18] Moreover, the domestic situation in city of Gwadar due Government apathy has also affected the Gwadar Port Project.

1.3.4 **Gwadar - Kashgar Pipeline**.

Work on Gwadar - Kashgar oil pipeline will commence after the feasibility study gets completed by FWO[19]. This pipeline would shift Middle East oil to China with capacity of 1 Million barrel / day. China plans to shift approximately 17 percent of its oil needs through this project. The project will be funded by China and FWO will execute the project. The final length, route and cost of the project are yet to be finalized. The project is currently significantly delayed due financial constraints. Nevertheless, considerable scepticism exists regarding the feasibility of the project.[20]

2. Special Economic Zones[21] & CPEC

SEZs offer an opportunity for the investors to be made available the best services and ensuring there investments have the best opportunity to succeed. It also allows for the local industry to shift into better developed areas, come under tax net while increasing their profitability. A lot of local industries seek expansion but due limitations of space or high cost of land and machinery restrict their future expansion plans. At a national level, SEZs allow for enhanced productivity with the availability of skilled work force and exchange of technology amongst the industrial complexes created within the SEZs. Overall, it helps the global competitiveness of exports of country w.r.t foreign producers. Many countries have undertaken this route of developing SEZs to improve exports, increase value addition while reducing unemployment. China has been one of those countries which has exploited the potential of these SEZs to the fullest. In 1980s, China established "four SEZs granting special financial, investment, and trade related incentives in the cities of Shenzhen, Zhuhai, Shantou, and Xiamen"[22]. These SEZs were responsible for generating almost 30 million jobs in addition to increasing exports, reducing import bill

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[18] 'The China Pakistan Economic Corridor and Growth of Trade' (World Bank), accessed 16 July 2024, https://documents1.worldbank.org/curated/ar/674251583850888285/pdf/The-China-Pakistan-Economic-Corridor-and-the-Growth-of-Trade.pdf.

[19] Fawad Yousafzai, 'China to Build Mega Oil Pipeline from Gwadar to Kashgar', News, *The Nation*, (13 June 2016), https://www.nation.com.pk/13-Jun-2016/china-to-build-mega-oil-pipeline-from-gwadar-to-kashgar.

[20] Jeremy Garlick, *Reconfiguring the China-Pakistan Economic Corridor: Geo-Economic Pipe Dreams Versus Geopolitical Realities*, 1st ed. (London: Routledge, 2021), doi:10.4324/9781003018377.

[21] A Special Economic Zone (SEZ) is a designated geographic area within a country that is subject to special economic regulations and policies that differ from those applied to the rest of the country. The purpose of creating SEZs is to attract foreign investment, boost exports, and create jobs. SEZs typically offer a range of incentives to companies that operate within them, such as tax breaks, customs duty exemptions, relaxed regulations on labor and environmental standards, and streamlined bureaucratic procedures. This makes it easier and more cost-effective for businesses to set up operations in the SEZs and carry out their activities.

[22] Iftikhar Ahmed and Zhou Taidong, 'Special Economic Zones in Pakistan - Promises and Peril' (Islamabad: Pakistan Institute of Development Economics, 2020), https://www.pide.org.pk/Research/Research-Report-Special-Economic-Zones-in-Pakistan-Promises-and-Perils.pdf.

and earning precious foreign exchange for the country.[23] Similarly, countries like Bangladesh have also reaped the benefits of establishing SEZs where by 2015, around 450000 people were employed in SEZs with around 64% women. [24]

In Pakistan, 71 Industrial estates are operational whereas there 4 state owned export processing zones (EPZ). There are three EPZ under the private sector under various stages of development. The launching of CPEC offered Pakistan an opportunity to further the SEZs it had started to develop under the SEZ Act of 2012. Till now, 22 SEZs have been approved whereas in the 6th meeting of Pak-China Joint Cooperation Committee (JCC) on CPEC, four provincial SEZs were agreed to be built under the CPEC Industrial Cooperation.[25] All four provincial SEZs, namely, Rashakai SEZ in Khyber Pakhtunkhwa, Allama Iqbal Industrial City in Faisalabad - Punjab, Bostan SEZ in Balochistan and Dhabeji SEZ (close to Karachi) in Sindh are at different stages of development. But the success of these SEZs lies in coherence, implementation and continuation of policies that have been produced by the government to attract domestic and foreign investment. The five priority CPEC sectors are tourism, construction, automobile, information technology and textile. [26] Out of these five sectors, the construction industry and automobile industry are both heavily reliant on steel industry. This can be gauged from the fact that on average every vehicle consumes around 900 kg of steel. And with production of automobiles back to the highs achieved pre-Covid-19, the demand is set to grow. The automotive market is worth around 112 billion US dollars (2021 figures).[27] Similarly, EU's automotive sector consumes around 17% of EUs steel, second only to construction sector.[28] But the lack of focus in Pakistan on steel industry and its interlinked industry i.e. ship recycling, is alarming.

3. Ship Recycling Industry

South Asia dominates ship recycling industry due to lower labour costs and relatively weak environmental and health regulations compared to western countries. In 2020, 630 ocean-going commercial ships and offshore units were sold to scrap yards while 446 ocean-going commercial ships and floating offshore units were sold to the scrap yards in 2023. Of these, 325 of the largest tankers, bulkers, floating platforms, cargo- and passenger ships ended up on the beaches of Bangladesh, India and Pakistan, amounting to more than 85% of the gross tonnage dismantled globally.[29]

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[23] Ibid.
[24] Ibid.
[25] 'Special Economic Zones - Pakistan Economic Survey 2020-21 (Annex III)' (Ministry of Finance, Government of Pakistan, 2021), https://www.finance.gov.pk/survey/chapters_21/Annex%20III%20SEZones.pdf.
[26] 'Special Economic Zone Framework in Pakistan', *Board Of Investment, Government of Pakistan*, 17 November 2024, https://invest.gov.pk/sez.
[27] Kiran Pulidindi and Akshay Prakash, 'Automotive Steel Market Size - Trends Report 2022-2030' (Global Market Insight, August 2022), https://www.gminsights.com/industry-analysis/automotive-steel-market.
[28] Nikolas Hill et al., 'The Use of Green Steel in the Automotive Industry' (Transport and Environment, 10 July 2024), https://www.transportenvironment.org/articles/cleaning-up-steel-in-cars-why-and-how.
[29] 'The Toxic Tide - 2023 Shipbreaking Records', *NGO Shipbreaking Platform*, accessed 22 May 2024, https://shipbreakingplatform.org/spotlight-data-2023/.

Ship recycling is a major source of scrap metal for production of steel. A ship is typically made up of 95% steel which is recyclable.[30] Pakistan's annual demand for steel products in FY 2022 was around 13.5 million tons which further contracted in FY 2023 due import restrictions and currency devaluation. This was also indicated through a 41% decline in import of iron and steel scrap in FY 2023.[31] Over 70% of the scrap steel is supplied to rerolling mills in Karachi, and approximately 95% of the ship recycling industry's income comes from the selling of ship scrap steel.[32] Ship recycling industry offers Pakistan's domestic Steel industry to purchase raw material domestically without expending the foreign exchange element while helping the state save precious foreign exchange used for import of iron and steel scrap and products.[33]

Table 1: Comparative Analysis of Iron and Steel Costs from Imports vs. Ship Recycling and Foreign Exchange Savings (2019–2022)

Iron and Steel (Import vs Ship Recycling Scrap) & Foreign Exchange Savings			
Year	**Iron and Steel Import Cost (USD per metric ton)**	**Ship Recycled Iron and Steel Cost (USD per metric ton)**	**Savings in USD (in Billions)**
2019	321	122	0.26
2020	389	69	0.16
2021	394	136	0.78
2022	601	296	0.69

Gadani ship recycling yard was once the largest in the world having workforce of more than 30,000 in 1980s. The number of employees, since then has sharply reduced to 6000 workers due to rapid decline in the local ship recycling industry which mainly resulted from non-adoption of international safety standards and high import duties/ taxes in comparison to regional competitors. It has currently 132 plots with 2/3rd of the plots owned privately and rest owned by Baluchistan Development Authority.[34] A major accident in 2016 at Gadani Ship recycling yard killed 26 workers and injured 58 workers.[35] Although a 2010 World Bank report indicated better working conditions in Gadani then there were in Bangladesh,[36] the Gadani ship recycling yards have not been able to replicate the success of the 80s. Presently, the business lacks infrastructure, skilled workforce and safe working environment. Other challenges to ship recycling industry are electrical supply

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[30] A. Pournara and V. Sakkas, 'Shipyards and Ship Breaking: Opportunities for Utilization of Steel under the Prism of Circular Economy' (CEST2021, Athens, Greece), accessed 16 July 2024, doi:10.30955/gnc2021.00289.

[31] Shahid Iqbal, 'Steel Imports Halve amid Economic Slowdown', News, *DAWN*, (26 April 2023), https://www.dawn.com/news/1749339.

[32] Bisma Mannan, Md Jahir Rizvi, and Yong Ming Dai, 'Ship Recycling in Developing Economies of South Asia: Changing Liability to a Commodity', *Green Technologies and Sustainability* 2, no. 2 (May 2024): 100064, doi:10.1016/j.grets.2023.100064.

[33] Manzoor Hussain Memon, Adeel Sultan Kadri, and Muhammad Musa, 'Ship-Breaking in Pakistan - An Overview for Industry Potential & Challenges', Working Paper, (2023), https://www.manzilpakistan.org/pdf/Ship-Breaking%20in%20Pakistan.pdf.

[34] Maria Sarraf et al., 'Ship Breaking and Recycling Industry in Pakistan and Bangladesh', *World Bank*, December 2010, https://documents1.worldbank.org/curated/en/872281468114238957/pdf/582750ESW0Whit1LIC1011098791web1opt.pdf.

[35] Ismail Sasoli, 'At Least 5 Dead as Fire Breaks out at Gadani Shipbreaking Yard', News, *DAWN*, (9 January 2017), https://www.dawn.com/news/1307371.

[36] Maria Sarraf et al., 'Ship Breaking and Recycling Industry in Pakistan and Bangladesh'.

issues, dangerous working conditions for labourers such as exposure to hazardous and toxic wastes, poor wages and lack of health facilities.

Table 2: Number of Ships Recycled by Leading Countries (2018–2022)

Number of Ships Recycled (2018-2022)				
Year	**Pakistan**	**Bangladesh**	**India**	**Turkiye**
2018	80	185	253	113
2019	35	234	200	107
2020	99	144	203	94
2021	119	254	210	77
2022	43	122	127	49

4. International Conventions - Lessons from Bangladesh

Bangladesh has one of the biggest Ship recycling industry in the world. The industry was also beset with challenges resulting from untrained manpower, health and safety concerns and more importantly environmental pollution. Although COVID affected the Bengali Ship recycling industry in the same way as it did to other countries like Pakistan, the intent shown by the businessmen and government officials to adhere to the new health and safety protocols is noteworthy. Bangladesh, in June 2023 became a signatory to "The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention)" of 2009 along with Liberia which triggered its enforcement by 26 June 2025. Bangladesh not only became a signatory to the convention but also prepared well for the consequences of the signing of the convention. International Maritime Organization (IMO) has with the help of international donor's spearheaded Safe and Environmentally Sound Ship Recycling (SENSREC) project in Bangladesh. The 3 phase project aimed to provide Bangladesh with suitable legal and policy level advice while enhancing its capacity to absorb the changes envisaged in the Hong Kong convention. The Project has been funded by Norway in three phases, to the tune of approximately US$4 million since 2015. The success of Phase I and II has resulted in training of 900 skilled workers in the shipyard industry while ensuring the stake holders understand the necessity of "Green Recycling". SENSREC Phase III will provide further support to Bangladesh ship recycling industry by providing suitable assistance to develop improved storage, treatment and disposal facilities as well as analysing future investments that may be required.[37] This has provided a much needed boost to the ship recycling industry in Bangladesh.

The National Hazardous Waste Management Policy of 2022 issued by Federal Ministry of Climate Change in June, 2022 called for Pakistan to ratify and implement the Hong Kong Convention. Pakistan finally became a signatory to Hong Kong convention on 30 November 2023. But Pakistan's ship recycling industry is ill prepared and does not

[37] 'Hong Kong Ship Recycling Convention Set to Enter into Force', *International Maritime Organization*, accessed 8 July 2024, https://www.imo.org/en/MediaCentre/PressBriefings/pages/Hong-Kong-Convention-set-to-enter-into-force-.aspx.

have the requisite technical expertise to improve upon the Health, safety and environmental standards. Moreover, following is required to be done at the federal level to ensure implementation of Hong Kong Convention before June 2025:[38]

4.1 Promulgation of suitable Act for Ship recycling.
4.2 Framing a suitable ship recycling code based on IMO guidelines.
4.3 Requisite training of personnel.
4.4 Ensuring availability of technological expertise, equipment and requisite facilities for disposal of hazardous materials.

It is unlikely that Pakistan would be able to complete all the four above listed tasks prior to 2025 to successfully shift its ship recycling model to 'Green Recycling'. Nevertheless, National Institute of Maritime Affairs has successfully completed a research study which was sponsored by Norway to identify the gaps and propose a way forward in order to complete the requirements of Hong Kong convention before stipulated time.[39]

5. The Steel Industry

Pakistan's steel sector was once led by Pakistan Steel Mill (PSM), a state owned enterprise which has remained inoperative since 2015 and had been on the government privatization list for a long time till its removal in 2023.[40] PSM's total assets are currently valued at 838.66 billion Rs which includes over 17,000 acres of land, thousands of houses, many hospitals, educational facilities etc, plant and machinery amounting to about 750 billion rupees.[41] PSM owes the state around 102 billion rupees in principal and Rs.48 billion in interests while the state owned bank, National Bank of Pakistan is owed around 38 billion rupees in principal and a similar amount in interests. Similarly, Sui Southern gas Company Limited (SSGCL) is owed Rs.23 billion principal and a disputed amount of Late Payment Surcharge (40 billion Rs claimed by SSGCL).[42] The inactivity of the state owned Steel mill although taxing to the tax payers, has in a way allowed for the private sector to invest and compete in Steel sector with around 173 players registered with Pakistan Steel Re-Rolling Mills Association.

The Steel production process most commonly used is Basic-Oxygen Furnace (BOF) which uses iron ore, coal and lime stone as basic raw material for steel production. Pakistan Steel Mill was designed as a Blast Furnace BOF steel mill which has now been non-operational since 2015. The second most commonly used process is Electric Arc

[38] Mushtaq Ghumman, 'Recycling of Ships: Accession to "Hong Kong Convention" Approved', News, *Business Recorder*, (30 November 2023), https://www.brecorder.com/news/40275941.
[39] 'NIMA Completes HKC Gap Analysis Study', Press Release, *Facebook*, (29 July 2024), https://www.facebook.com/nimaisb/photos/-press-release-nima-completes-hkc-gap-analysis-studyislamabad-29-july-24-the-nat/930166942456901/.
[40] Ghulam Abbas, 'Pakistan Steel Mills Removed from the Govt's Privatisation List', Business News, *Profit*, (19 December 2023), https://profit.pakistantoday.com.pk/2023/12/19/pakistan-steel-mills-removed-from-the-govts-privatisation-list/.
[41] Khaleeq Kiani, 'After $18bn Loss, Govt to Reassess Pakistan Steel Mills Liabilities', News, *DAWN*, (6 November 2023), https://www.dawn.com/news/1786815.
[42] Mushtaq Ghumman, 'Only 1 Company Interested in Beleaguered PSM', News, *Business Recorder*, (3 April 2023), https://www.brecorder.com/news/40235084.

Furnace (EAF) which is further divided into EAF and Induction Furnace (IF). Both of these processes utilize scrap metal as a basic raw material for the manufacturing of steel products. Most of the steel mills currently operating in Pakistan utilize IF process for steel production, thus requiring scrap metal as a raw material. Pakistan's overall steel production record is abysmal. Pakistan's total steel production in 2023 accounted for just 5.3 million tons. This was less than the 50th ranked company (in the world for Steel production) Jinnan Steel, producing 7.45 million tons worth of steel.[43] The fact that Pakistan has to pay upfront a huge amount of foreign exchange for import of iron and steel scrap only for the limited steel production compounds the problem. These are major burdens on an economy that is already reeling from a high import bill and stagnant exports.

Table 3: Pakistan's Steel Imports - Cost and Quantity of Iron and Steel Scrap vs. Finished Iron and Steel (FY 2022–2023)

Pakistani Steel Imports[44]				
	Iron and Steel Scrap		Iron and Steel	
FY	**Cost US $**	**Quantity MT**	**Cost US $**	**Quantity MT**
2023	1.15 billion	2245769	1.89 billion	2217366
2022	1.85 billion	4720052	1.95 billion	3035834

The domestic Steel industry has the capacity to produce and meet most of its local demand. The National Steel Advisory Committee Report indicated that the production capacity of Long products and tubes and pipes matches the demand of the local market. However, it falls miserably short in case of flat products as the demand is of around 2,700,000 Million Tons (MT) while the domestic production capacity is around 550,000 MT.[45] A PACRA study indicated in FY22 that the capacity utilization for production of long and flat products (steel products) was only 53% and 52% respectively. This fell to 30% for Tubes and Pipes.[46] Despite availability of requisite capacity to produce steel products, Pakistan exported only 55.7 million US $ worth of iron and steel products in 2023. This is a paltry figure indicating lack of policy to enhance steel exports, poor quality of products and an industry lacking innovation. The lack of inclusivity is also a reason for protestation for the steel producers with many complaining to the government over preference of imported steel over local steel for CPEC projects.[47]

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[43] 'World Steel in Figures 2024'.

[44] 'Annual Analytical Report on External Trade Statistics of Pakistan FY 2023' (Islamabad: Pakistan Bureau of Statistics, March 2024), https://www.pbs.gov.pk/sites/default/files/external_trade/Annual_Analytical_Report_on_External_Trade_Statistics_of_Pakistan_FY2023.pdf.

[45] Uzma Zia and Hafsa Hina, 'LSM - Pakistan Steel Industry Outlook', Knowledge Brief (Islamabad: Pakistan Institute of Development Economics, 2021), https://file.pide.org.pk/uploads/kb-043-lsm-pakistan-steel-industry-outlook.pdf?_gl=1*ah4vdc*_ga*MTQwMTU2MjEyNC4xNzE2MzE0NTkx*_ga_T5TLWHEVW9*MTcxNjMxNDU5MS4xLjEuMTcxNjMxNDY4OC42MC4wLjEwNjk2MzYzNTE.

[46] Saniya Tauseef and Ayesha Wajih, 'PACRA Research - Steel' (Pakistan Credit Rating Agency, September 2023), https://www.pacra.com/sector_research/PACRA%20Research%20-%20Steel%20-%20Sep%2723_1693919766.pdf.

[47] Usman Hanif, 'Local Producers Oppose Steel Imports for CPEC', News, *Express Tribune*, (15 October 2021), https://tribune.com.pk/story/2324865/local-producers-oppose-steel-imports-for-cpec.

The steel industry is also directly affected by the smuggling of steel products from across the Iranian border.[48] Smuggling coupled with dumping of steel products from China creates a double jeopardy for the domestic steel industry. Adding to the issues faced, is the unstable supply of electricity and its high tariffs.

Table 4: Comparison of Electricity Tariffs for Industrial Use and Captive Power Generation (as of 22 February 2024)

Electricity Tariffs (as of 22 Feb 2024)		**Captive Power Generation (as of 22 Feb 2024)**	
Country	**Industrial tariff**	**Country**	**Rate**
Pakistan	17 cents/ kWh	Pakistan	12.2 cents/ kWh
India	6 cents/ kWh	Regional Countries	9 cents/ kWh (average)
Bangladesh	8.6 cents/ kWh		
Vietnam	7.2 cents/ kWh		

6. Lessons from South Korea

Pakistan's Steel industry is a small industry by any measure. With a population of more than 220 million, Pakistan had a per capita consumption of steel of 59 kg in 2021. This was a slight improvement from 2020 when it was recorded at 49 kg. South Korea has the world's highest per capita consumption of steel at around 233 kg.[49] South Korea, on the other hand is an example of how a country with limited natural resources has been able to establish a steel industry capable of competing with the biggest manufacturers of the world. South Korea imports iron ore and coke, both essential ingredients for a steel industry and yet POSCO is the world's sixth largest steel producer in the world. POSCO was launched in 1968 and its first production line was completed in 1973 with an annual capacity of 1.03 million tons. With continuous expansions and support of the Korean government, Pohong works was launched in 1983 (9.1 million tons crude steel capacity) and Gwangyang Works (11.4 million tons capacity) in 1992. The privatization was completed in 2000 and since then there has been no turning back. Despite Chinese steel industry posing serious challenges to POSCO, it has persevered through innovation, technological advancements, collaboration with customers and adapting new environmentally friendly techniques. This can be seen by development of new varieties of high grade steel that are strong, thin and light weight allowing for increased speed and efficiency. This can be seen in a variety that POSCO co-developed with Renault Samsung and which utilizes magnesium and is 30 percent lighter than aluminium. It is one of the thinnest, lightest and strongest materials available for manufacturing of cars today.[50] As of 2015, it is being used by Porsche for the roof of its 911 GT3 RS, a sports car that has been breaking speed records.[51] This has been possible because of POSCO's efforts to

[48] 'Steel Producers Urge Govt to Take Note of Smuggling during Eid Holidays', News, *Express Tribune*, (31 March 2024), https://tribune.com.pk/story/2461144/steel-producers-urge-govt-to-take-note-of-smuggling-during-eid-holidays.

[49] Shahid Iqbal, 'Steel Imports Halve amid Economic Slowdown'.

[50] Amy Blitz, 'Lessons from the Steel Industry: If You Can't Compete on Price, Innovate Your Way to Value-Added Differentiation', *Strategy & Leadership* 45, no. 5 (18 September 2017): 26–32, doi:10.1108/SL-07-2017-0070.

[51] Ibid.

establish two of the world's leading research organizations, Pohang University of Science and Technology (POSTECH) in 1986 and the Research Institute of Industrial Science and Technology (RIST) in 1987. This was part of POSCO's research and development innovation strategy to maintain and further enhance its position as a leading steel producing company.

7. **Way Forward**

Pakistan's economy has been in the doldrums of late. Current account deficit, high inflation, miniscule tax base, circular debts, high import bill, limited growth in exports coupled with dwindling foreign exchange reserves have almost stagnated the economy. Even with the approval of 28th IMF program, steps to resolve the basic deficiencies in the country's economy remain wanting. CPEC, the harbinger of hope for Pakistan's economy has itself suffered a slow down due to limited operability of Gwadar Port and overdue payments linked with CPEC investments in power sector. If Gwadar Port Project is the cornerstone for CPEC, Gadani ship recycling is the lynchpin of Pakistan's Blue Economy. But unfortunately the only time Gadani has been mentioned by the government was with the ill planned Gadani Power Project of ten imported coal power projects (660 MW each) which included construction of jetties and breakwaters to accommodate for ships bringing in imported coal in 2013.[52] This plan was later put on the backburner due to lack of investor interest.[53] What is required is a holistic approach to Gadani ship recycling and domestic steel industry. Both the businesses are interlinked and reliant on success of each other. A streamlined supply of ships for recycling would ensure availability of suitable raw material for the steel industry and protect them considerably from various detrimental effects. Following is recommended in this regard:

7.1 Pakistan needs to change its tact on CPEC and instead of projects, should focus more on learning from the Chinese on creating the right environment for local and foreign investors to invest. The development of SEZs is the right step but more importantly, development of steel industry for export purposes and ship recycling sector as a raw material for steel industry may be made part of priority sectors of CPEC. This would help in achieving targets of Short and Medium term set in the original CPEC plan.

7.2 Ship Recycling business needs to be recognized as an 'industry' with focus on healthy working conditions, safety of men and material while ensuring that the marine environment is protected. This requires updating the techniques being used to break down the ships for recycling. It is imperative that domestic laws are brought in conformity with international laws at the earliest and requisite training of personnel is undertaken through public-private partnership. The Bengali, Chinese and Turkish experiences of converting their non-compliant ship recycling industry to a compliant one can also be taken advantage of.

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[52] Arif Rafiq, *The China-Pakistan Economic Corridor: Barriers and Impact* (Washington, DC: United States Institute of Peace, 2017).

[53] Khaleeq Kiani, '6,600MW Gadani Power Project Put on Back Burner', News, *DAWN*, (4 February 2015), https://www.dawn.com/news/1161417.

7.3 Gadani beach is the only piece of land that is being utilized for ship recycling and is considered enough for the near future. What is essentially required is better regulation and sustainment of business friendly policies. The availability of medical services, fire brigades, water, stable electrical supplies, sewerage treatment plants and disposal of hazardous materials needs to be ensured by the provincial government on urgent basis. Once these facilities are provided, the federal and provincial governments as a regulator can enforce requirements as entailed by Hong Kong Convention 2009 (HKC) on the owners/leasers of ship recycling plots at Gadani. There is no exit from Hong Kong Convention 2009 and the only way forward is implementation and execution of these laws in true letter and spirit. The study completed by NIMA should be taken as a stepping stone to move forward and fulfil the HKC requirements.

7.4 The steel requirement in CPEC projects being planned and those in progress need to be streamlined with the domestic stake holders encouraged through consistent and stimulating policies. Mainline-1 Project from Karachi to Peshawar, a project being billed as part of CPEC and considered the future lifeline of Pakistan's economy would essentially require a lot of steel during its construction. Every effort should be made to take advantage of ship recycling business and the steel industry to produce every bit of steel that is required within Pakistan. This would essentially reduce the import bill, loan amount and ensure provision of jobs to the labour community. As a principle, Government should endeavour and plan as such that maximum steel requirements for CPEC projects be met through local industry while adhering to quality standards.

7.5 The steel industry is unfortunately intent on fulfilling local demand. The private sector needs to be supported to ensure they upgrade their plants, produce greener steel conforming with future climate change requirements, produce higher quality products and have plans ready to export them. This can only happen once the government ensures a level playing field for all competitors through a uniform, consistent and a long term policy which is formulated taking into the concerns of local investors as well as the customers. More so, local investors should be encouraged to expand their current setups by providing tax cuts while also ensuring that their expansion plans cater for the export market and environment.

7.6 Research and development is the only way to enhance productivity and export potential of the steel industry. This would require collaboration between the steel manufacturer and the user with inputs from public and private sector universities, a model that has been tested and verified by the Koreans in their steel industry. The government's role in this is pivotal for provision of the right environment and set of policies to ensure that both the steel manufacturer and end user remain interested in research and development through requisite tax breaks and other reassuring measures. The academia-industry linkages need to be strengthened with more focus and deliberation especially for both the ship recycling and steel business.

DOI: 10.53968/pjmr.2024.004.6

7.7 The success of CPEC SEZs is incumbent upon investors interests. This entails that government must ensure basic facilities such as availability of electricity, sewerage systems, fresh water etc. are guaranteed while drastically cutting down the bureaucratic delays. The SEZs (Dhabeji and Port Qasim) must be geared up for the steel industry while ensuring smooth road linkages from Gadani to these SEZs bypassing the city traffic. Special incentives for the steel manufacturers may be introduced for utilization of local raw material being obtained from Gadani while linking them to increasing exports of the steel industry.

8. **Conclusion**

Pakistan’s economic potential can only be fully exploited if the resources and policy are aligned and implemented in true letter and spirit. A hardworking nation such as Pakistan, needs a strong industrial base to propel forward in its economic journey. It is imperative for Pakistan that labour intensive businesses such as Ship recycling and steel industry are brought to the fore for the good of the people. The development of these two industries in line with CPEC expansion can lead to a substantial boost in the economic fortunes of the country.