

CONFIDENTIAL

Industry Report on
Stainless Steel Sheets, Washers, Sheet Metal
Components and Pipes & Tubes

August 2023

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Annexure for Abbreviation used

GDP	Gross Domestic Product
GVA	Gross Value Added
IIP	Index of Industrial Production
PFCE	Private Final Consumption Expenditure
GFCF	Gross fixed capital formation
WPI	Wholesale Price Index
CPI	Consumer Price Index
y-o-y	Year on Year
m-o-m	Month on Month
IMF	International Monetary Fund
RBI	Reserve Bank of India
MOSPI	The Ministry of Statistics and Programme Implementation
Est., Adv. Est	Estimated, Advance Estimates
P, F	Projected, Forecast
USD	US Dollar
INR	Indian Rupee
Mn, Bn, Tn	Million, Billion, Trillion

Global Economic Overview

After a healthy rebound in 2021, the global economy is showing signs of slowdown, as growth rate dropped for 2022, and inflation remains sticky at record-high levels in the face of aggressive monetary tightening around the world.

Real GDP growth	2021	2022	2023P	2024P
World	6.0%	3.4%	2.9%	3.0%
India	8.7%	6.8%	5.9%	6.3%
China	8.1%	3.0%	5.2%	4.5%
Japan	1.7%	1.1%	1.3%	1.0%
USA	5.7%	2.1%	1.6%	1.1%
UK	7.4%	4.0%	-0.3%	1.0%
EU	5.2%	3.5%	0.8%	1.4%

Source: International Monetary Fund, April 2023 Outlook

Uncertainty related to food and energy supply emerged as major risk to stable governance, debt sustainability and business continuity across developed and emerging markets. The three economic heavyweights - the US, China, and the EU - continue to grapple with a host of challenges. Consequently, even fundamentally strong, export-oriented developing markets faced weak growth in 2022.

As the global economy continues to slowdown, central bankers are ramping down the pace of interest rate hikes, the policy playbook deployed in the two previous global recessions might not work this time. What complicates the job of central bankers are unusually tight labor markets, which translate into high demand pressures, and the fact that evidence of inflation reduction globally is still quite weak. However, the consensus points toward the fact that a full blow recession may not be upon us, but a global slowdown has been set in motion and businesses should remain vigilant and resilient.

Business, especially with cross border linkages should consider two key points. The timing and intensity of this economic slowdown is likely to differ as the US is on a much better footing than the EU; and some developing markets in Asia, the Middle East and Latin America will outperform the US in coming months. Secondly, businesses cannot rely on the kind of policy support that was forthcoming in the last two global recessions (2008 and 2020). With higher interest rates, government debt is now costlier, hence fiscal support, too, will likely be limited or targeted. Businesses must thus critically assess the implications of the slowdown on their operations, their subsidiaries, or suppliers.

The first months of 2023 was quite eventful - Croatia joined the Eurozone as its 20th member, Brazil witnessed a mini-insurrection, India overtook China as the world's most populous nation, and the US hit its debt ceiling. Some of the other notable global events that happened during the same period include – Bank of Japan getting a new governor (Mr. Kazuo Ueda, the Bank's first governor from academic background), China's president Xi Jinping was awarded a third five year term. In addition, the Russia – Ukraine conflict which crossed its one-year mark in February 2023 shows no sign of abating. Some of these events may have profound implications over the coming decades, while the others may pose the biggest risk to the global economy in 2023.

Given where inflation levels are currently hovering (and the fact that core pricing pressures have not yet abated), more will have to be done to weather the storm. This is reflected in central bank commentaries. Major central banks like US Fed has been raising its interest rate to combat rising inflation, with latest hike (of quarter point) announced in July 26, 2023. Over the past 18 months, the US Fed rates has gone up by 5.25 percentage points. However, the Fed has indicated that there would be a pause in its monetary tightening cycle later this year.

Whether this will result in a global recession is not even the most important question at this point. What businesses should know is that we are heading toward a synchronized global economic slowdown, and that they should prepare for a possible recession in developed markets. Further, the logic that a central-bank-engineered recession (if at all) should be mild, might hold true for the US, but in Europe, the course that the ongoing Russia-Ukraine war takes may continue to impact outcomes. Moreover, milder than usual weather has played an important role in easing pressure on energy prices in Europe.

India's Key Economic Indicator

India's economy is showing signs of resilience with GDP estimated to grow by approximately 7% in FY 2023¹. Although this translates into a moderation in demand (compared to FY 2022), the estimated GDP growth in FY 2023 represents a return to pre pandemic era growth path. Despite this moderation in growth, India continues to remain one of the fastest growing economies in the world.

There are quite a few factors that is aiding India's economic recovery – notably its resilience to external shocks (ongoing Russia – Ukraine conflict) and rebound in private consumption. This rebound in private consumption is bringing back the focus on improvements in domestic demand, which together with revival in export demand is a precursor to higher industrial activity. Already the capacity utilization rates in Indian manufacturing sector are recovering as industries has stepped up their production volumes. As this momentum sustains, the increasing capacity utilization would lead to fresh round of capacity expansion plan. The universal vaccination program by the Government has played a big part in reinstating confidence among the population, in turn helping to revive private consumption.

Realizing the need to impart external stimuli, the Government stepped up its spending on infrastructure projects which in turn had a positive impact on economic growth. The capital expenditure of central government increased by more than 60 during FY 2023². This has provided the much-needed confidence to private sector, and in turn attracted private investment.

On the lending side, the financial health of major banks has witnessed an improvement which has helped in improving the credit supply. With capacity utilization improving, there would be demand for credit from corporate sector to fund the next round of expansion plans. Banking industry is well poised to address that demand. Underlining the improving credit scenario is the credit growth to micro, small and medium enterprise (MSME) sector which increased by nearly 31% in January – November 2022 period, compared to corresponding period previous year³. The extended Emergency Credit Linked Guarantee Scheme (ECLGS) by the Union Government has played a major role in improving this credit supply.

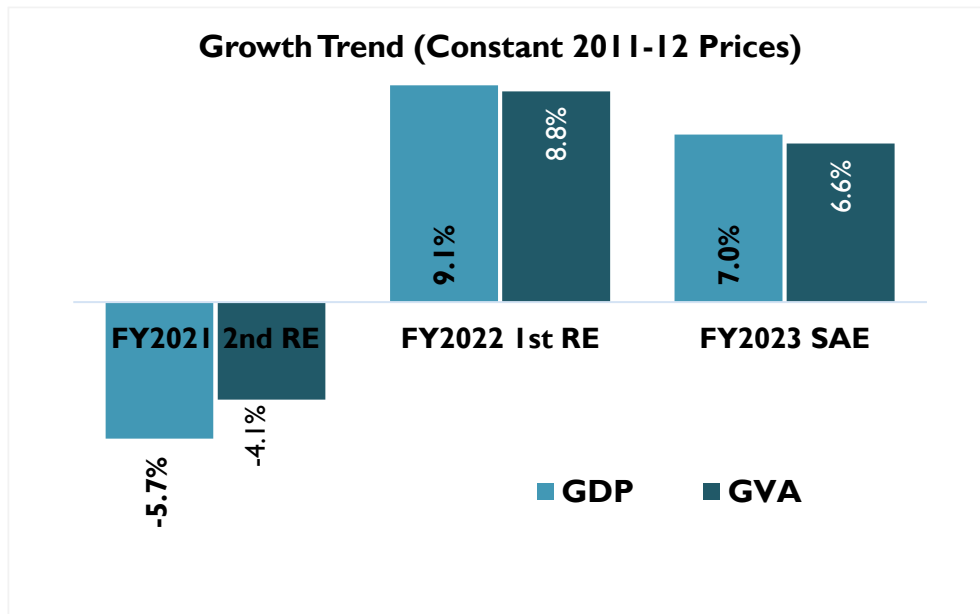
The slowdown in growth rate in FY 2023, compared to the previous fiscal on the back of slowing domestic as well as external demand owing to series of interest rate hikes globally to tackle high inflation. The year-on-year moderation in growth rate is also partly due to a fading impact of pandemic-induced base effects which had contributed towards higher growth in FY 2022. On quarterly basis, the growth moderated in Q2 and Q3 of FY 2023 which highlights impact of slowing economy on the back of monetary tightening. During Q3 FY

¹ As per RBI First Advance Estimates. However, IMF have revised its India GDP growth for FY 2023 downward to 6.8%

² India Economic Survey FY 2023

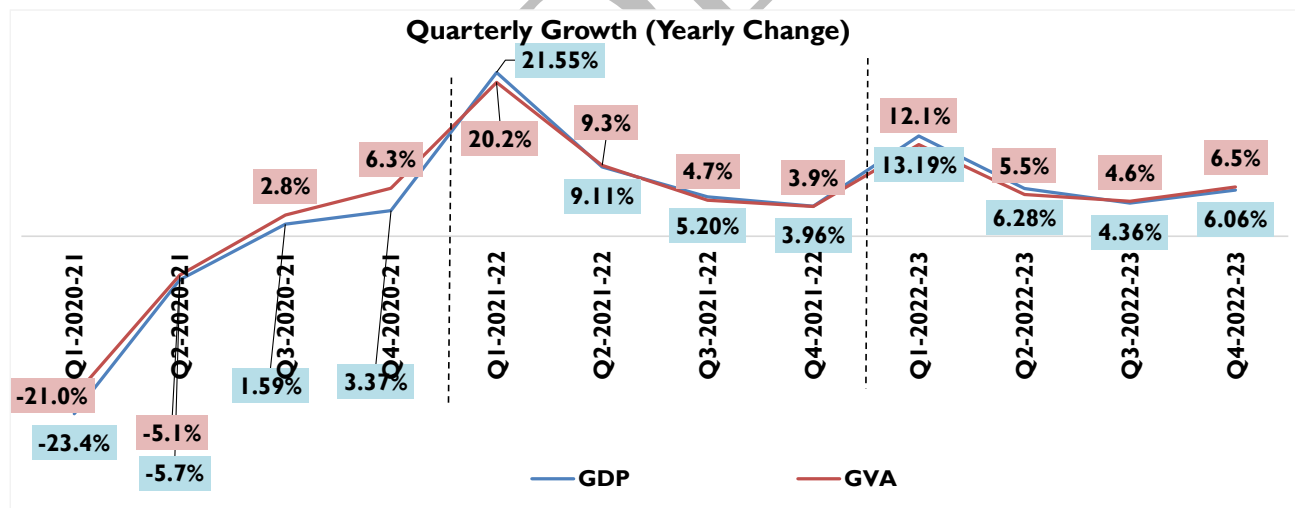
³ India Economic Survey FY 2023

2023, the country's GDP grew by 4.36% against 6.28% y-o-y increase in the corresponding quarter last fiscal. However the fourth quarter of FY 2023 saw a rebound in growth rate, indicating an optimistic scenario.



Source: Ministry of Statistics & Programme Implementation (MOSPI)

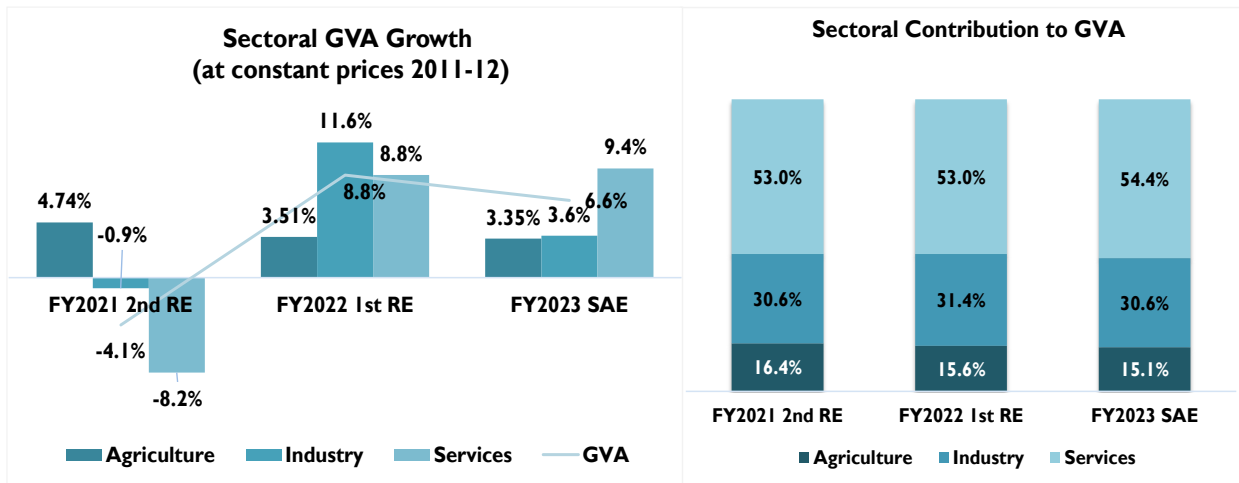
RE stands for Revised Estimates, SAE stands for Second Advance Estimates



Source: Ministry of Statistics & Programme Implementation (MOSPI)

Sectoral analysis of GVA reveals growth tapered sharply in industrial sector which is estimated to have grown by just 3.6% in FY 2023 against 11.6% in FY 2022. In the industrial sector, growth across major economic activity such as mining, manufacturing, construction sector slowed registering a growth of 3.4%, 0.6% and 9.1%

in FY 2023 against a growth rate of 7.1%, 11.05% and 14.8% recorded in FY 2022, respectively. Utilities sector too observed a marginal moderation in y-o-y growth to 9.2% against a decline of 3.6% in the previous years.



Source: MOSPI, RE stands for Revised Estimates, SAE stands for Second Advance Estimates

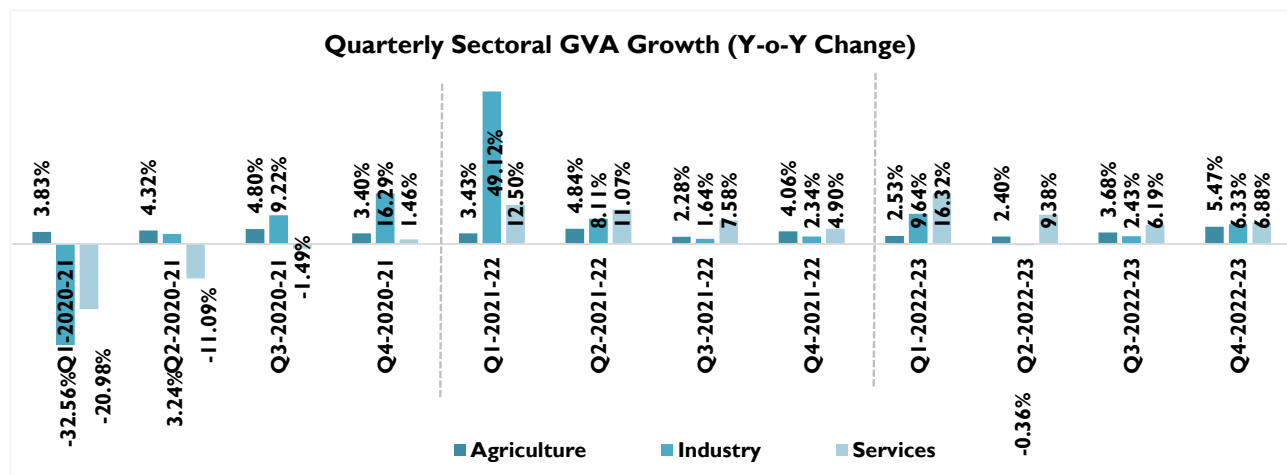
Talking about the services sectors performance, with major relaxation in covid restriction, progress on covid vaccination and living with virus attitude, business in service sector gradually returned to normalcy in FY 2022. Economic recovery was supported by the service sector as individual mobility returned to pre-pandemic level. The trade, hotel, transport, communication, and broadcasting segment continued to strengthen and grow by 14.2% in FY 2023 against 13.8% in the previous year and financial services, real estate and professional services sector recorded 6.9% y-o-y growth against 4.7%. However, overall service sector growth was curbed by moderation in public administration and defense services sector which recorded 7.1% yearly increase against 9.7% increase in the previous year.

Quarterly GVA Performance

Quarterly GVA numbers for Q4 FY 2023 presents an optimistic picture, with an improved growth rate across industrial sectors. Manufacturing sector increased by nearly 4.5% in Q4 FY 2023, after two quarters of contraction. Meanwhile agriculture and other sectors within the industrial sector continued its stable growth. Agriculture sector GVA strengthen in Q4 FY 2023 to register 5.47% yearly growth compared to both corresponding quarter last year (4.06%). Any growth between 3.5-4% in farm sector is considered above the long-term trend line. Construction sector witnessed 10.39% y-o-y growth in Q4 of FY 2023 against 4.93% y-o-y growth in the previous quarter, mining and quarrying sector, and Electricity, gas, water supply & other utility services sector registered strong growth in Q4 FY 2023.

Within service sector, quarterly growth moderated across all segments in Q4 FY 2023 against the previous quarter. Trade, hotel, transport, communication, and broadcasting segment observed 91% y-o-y growth in

Q4 as compared to 9.64% growth in the last quarter. Other services sector broadly classified under Public Admin, Defence & Other Services and Financial, Real Estate & Professional Services too observed 3.12% and 7.11% growth in Q4 FY 2023 against 1.99% and 5.79% y-o-y change in Q3 FY 2023.

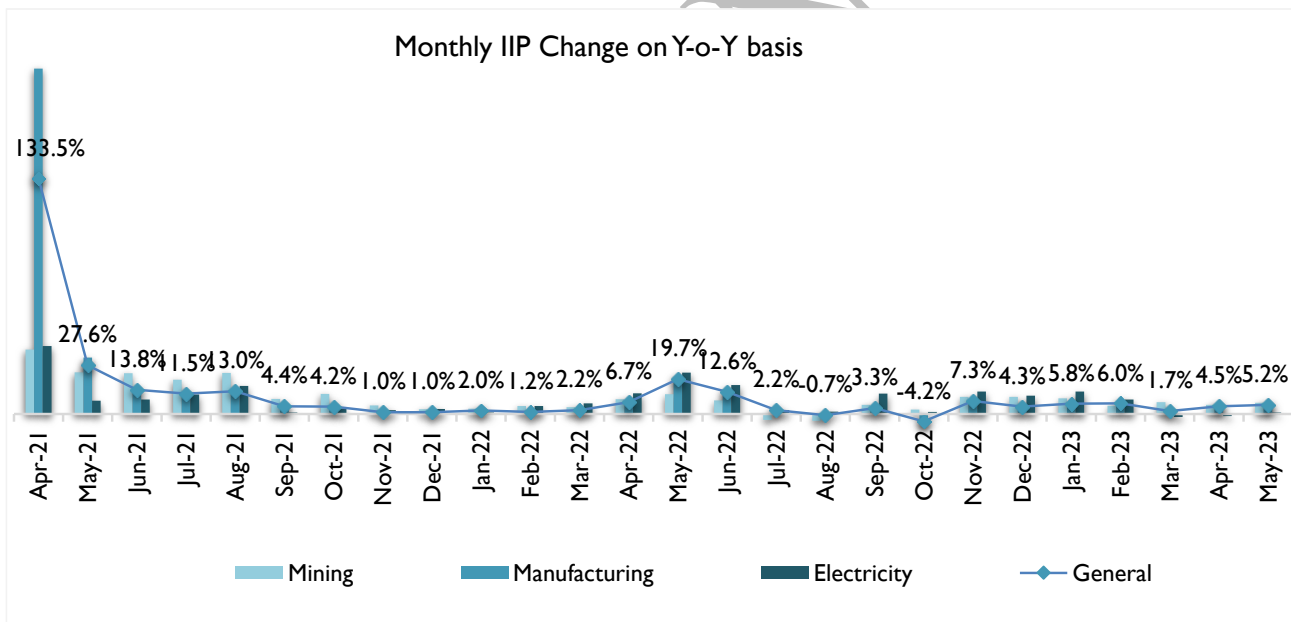
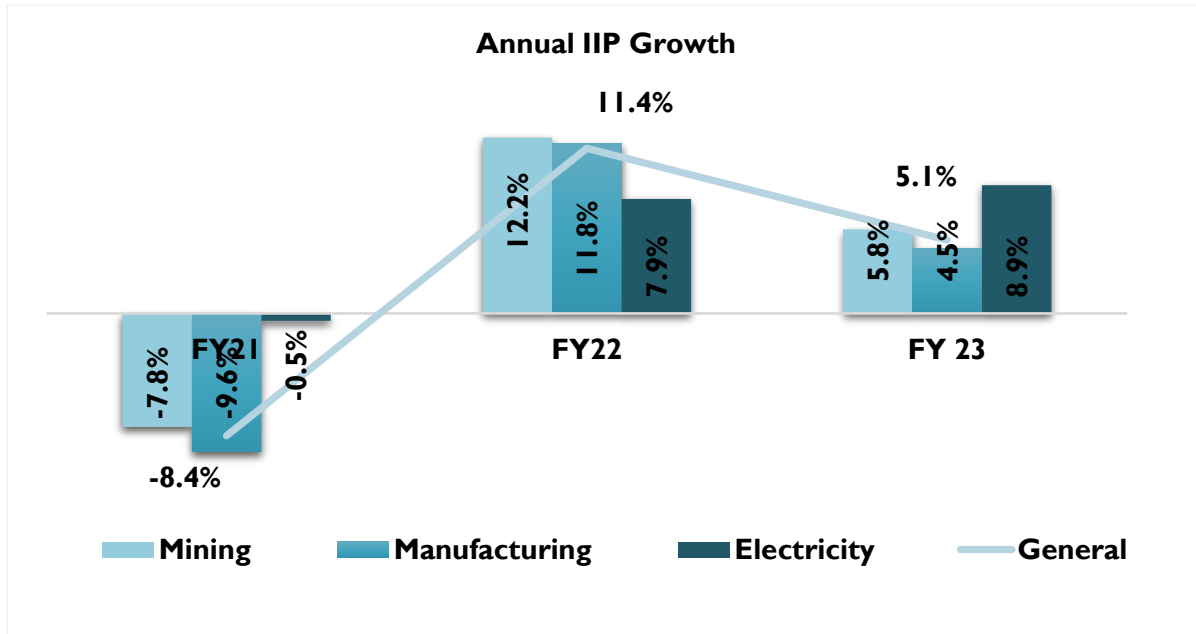


Source: MOSPI

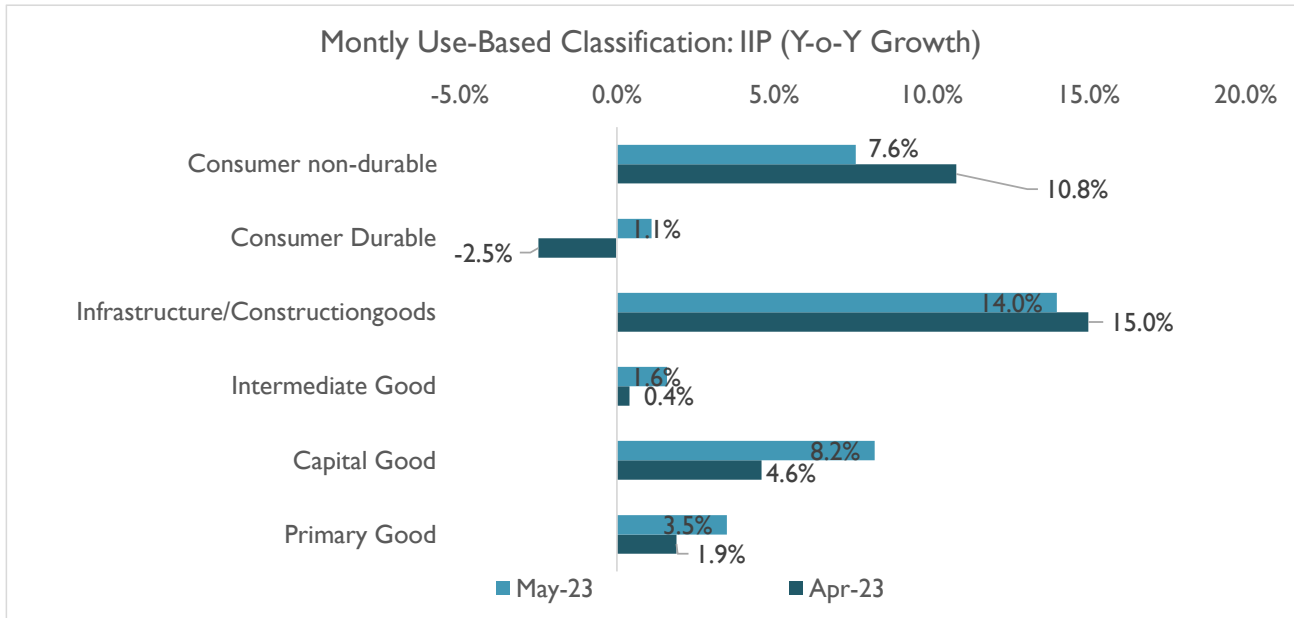
Index of Industrial Production

After experiencing three years of deteriorating industry growth, the country’s Index of Industrial Production (IIP) index registered 11.4% y-o-y growth in FY 2022 where growth was evenly spread across all sub-segments. Manufacturing index, with 77.6% weightage in overall index, registered 11.7% y-o-y growth in FY 2022 while mining sector index registered the highest growth. On use-based classification basis, infrastructure/construction goods, capital good, intermediate good and consumer durable outperformed over the other sector and registered healthy double-digit growth.

After the pre-pandemic pent up demand that triggered a strong revival in industrial activity in FY 2022, annual IIP growth rate moderated in FY 2023 to 5.1%. However, this rate was still above the pre-pandemic rate – indicating the robust revival in industrial activity.



Although the monthly IIP growth rate has come down from the high level that was recorded during the later CY 2022, the growth pattern during the current year is pointing towards a stabilization of growth. For the year FY 2023, IIP growth has settled to a stable growth rate, and this trend is continuing in the initial years of FY 2024 (April and May 2023).



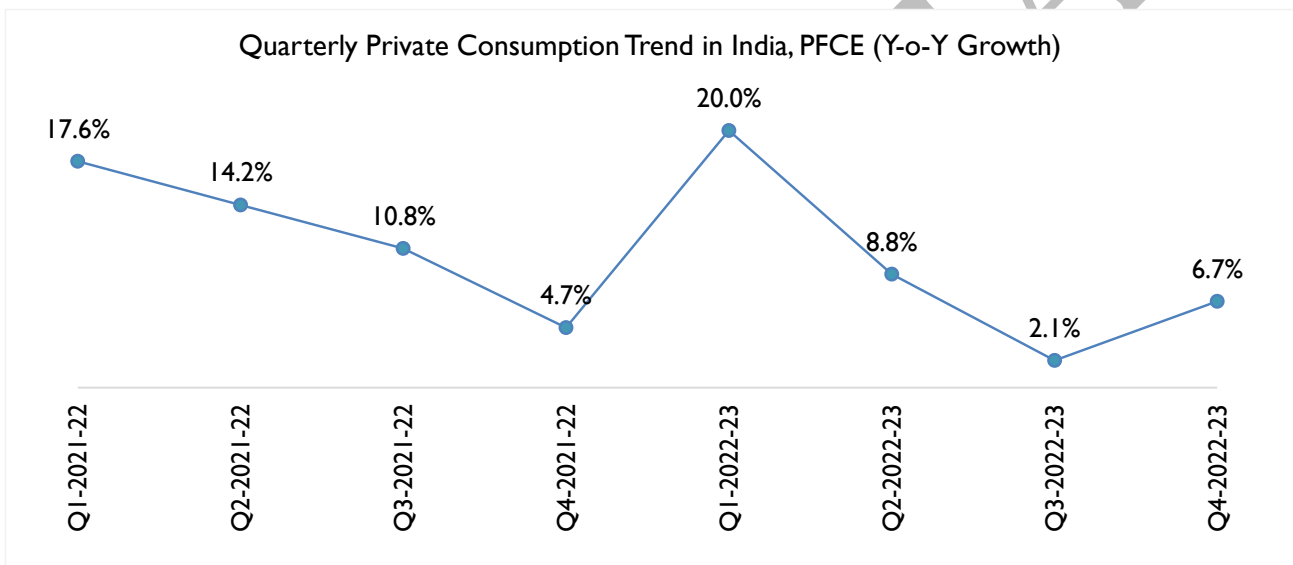
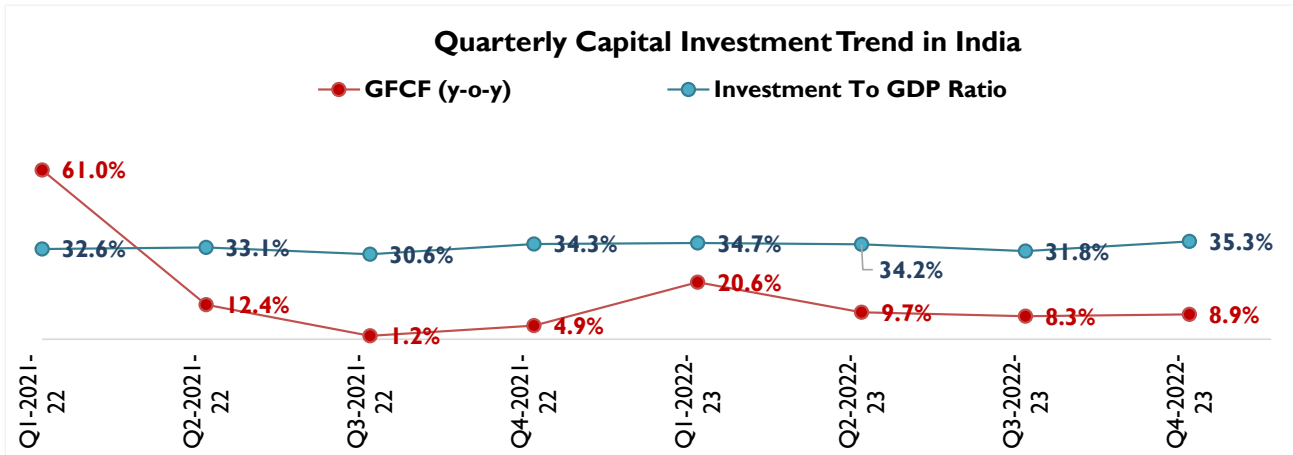
Sources: MOSPI

As per the use-based classification, growth in all segments excluding primary goods deteriorated in December 2022 against previous month. Consumer good and intermediate goods were worst hit segments. The Contracting IIP data points towards adverse operating business climate as global headwinds, high inflation, and monetary tightening started having adverse impact on manufacturing activity.

Investment & Consumption Scenario

Other major indicators such as Gross fixed capital formation (GFCF), a measure of investments, grew by 8.9% in Q4 FY 2023, in line with the growth rate that was registered during the last two quarters (Q2 and Q3 FY 2023).

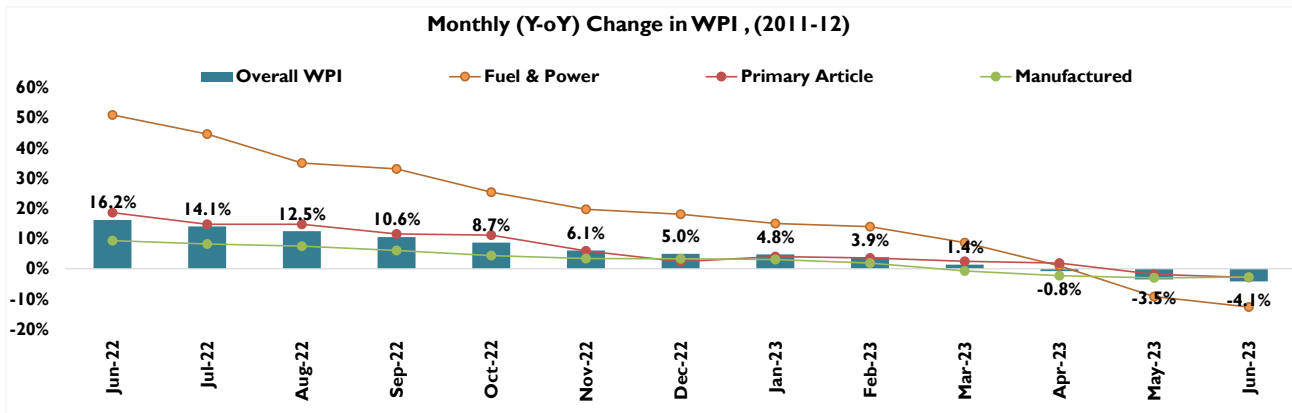
Despite the festive season demand and largely a covid-free economy, Private Final Consumption Expenditure (PFCE) a realistic proxy to gauge household spending, observed a continued moderation in Q3 FY 2023 where yearly growth softened to 2.1% which was nearly 7% lower compared to Q2 FY 2023. However, for the last quarter (Q4 FY 2023), PFCE increase by 6.7%



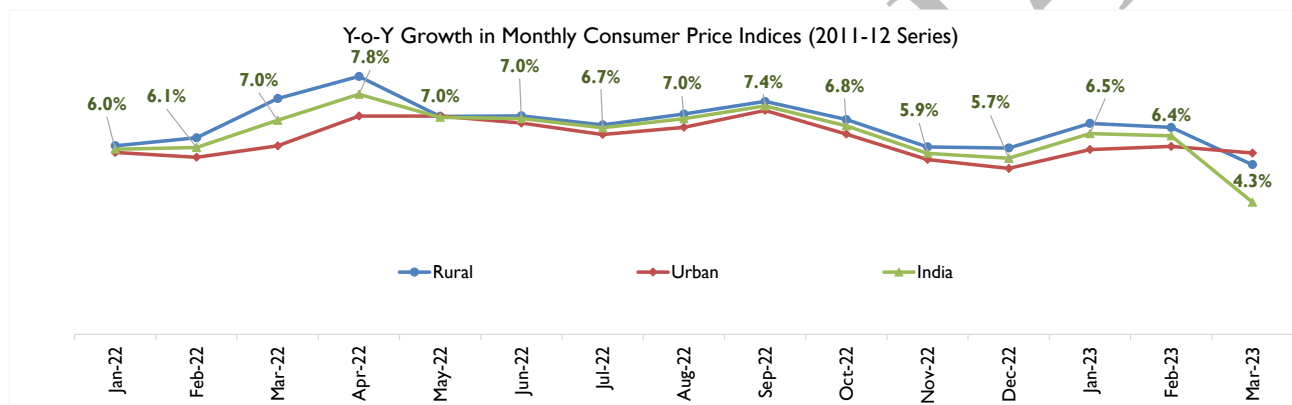
Sources: MOSPI

Inflation

Wholesale Price Index (WPI) is moderating on the back of softening of prices. Compared to June 22, WPI in June 2023 dropped by 4.1%. This is primary on the back of softening of fuel & power prices. Monthly y-o-y change (June 2023 v/s June 2022) for manufactured products was -2.7%, and this too contributed to the moderation in WPI. Softening prices of mineral oils, chemicals & chemical products, textiles, crude petroleum & natural gas, textiles, and food products. contributed towards moderation in WPI inflation.



Source: MOSPI, Office of Economic Advisor



Source: CMIE Economic Outlook

Retail inflation rate (as measured by Consumer Price Index) again jumped above 6% tolerance limit of the central bank in January 2023 after observing mild moderation in the previous two months. The overall CPI grew by 6.5% in January 2023 due to spike in food inflation and CPI food index grew by 5.9% during FY 2023 against 4.2% y-o-y growth in the previous year. Within food index, Cereals and product-led food inflation reached 16.1 per cent in January 2023 from 13.8 per cent in December 2022. As a part of anti-inflationary measure, the RBI has hiked the repo rate by 225 bps since May 2022 to current 6.5% (May 2023), with latest fourth round hike announced on 8 Feb 2023. The Reserve Bank of India has estimated an average inflation rate of 6.5% for FY 2023. Since then, retail inflation appears to be softening, as it grew by 6.4% and 4.3% respectively in February and March of 2023.

Growth Outlook

Amidst the difficult and uncertain external economic environment, the Indian government has delivered a balanced Union Budget which focuses on achieving an inclusive and sustainable growth while adhering to the fiscal glide path. Notwithstanding the external risk, there is a sustained momentum in economic activity supported by domestic drivers. The consumer confidence survey by the Reserve bank of India points towards

rising confidence of households both for the current situation as well as the future expectations (for a one-year period).

Rural demand is likely to be boosted by good prospects for agricultural output and discretionary spending is expected to support urban consumption supporting. Resilient domestic financial markets, sturdy growth in credit and the government's thrust on capital expenditure is expected to drive momentum in investment activity. Capacity utilization in the manufacturing sector has surpassed its long period average. Thus, the stance taken by the government to not only emphasize on the top-down approach to growth i.e focusing on substantial capital outlay, but also to place focus on the bottom of the pyramid by trying to unleash the potential of the primary sector in the Union Budget should support India's growth momentum in FY 2024.

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Some of the key factors that would propel India's economic growth in the coming years

Government focus on infrastructure development

Infrastructure development has remained recurring theme in India's economic development. The launch of flagship policies like National Infrastructure Pipeline (NIP), and PM Gati Shakti plan have provided the coordination & collaboration that was lacking earlier. Both NIP and PM Gati Shakti are ambitious billion-dollar plans that aims to transform India's infrastructure, elevating it to the next level. These projects are expected to improve freight movement, debottleneck the logistics sector, and improve the industrial production landscape, which would provide the incremental growth in GDP. In its Union Budget FY 2023, the Government has increased the capital expenditure by 35% to nearly INR 7.5 lakh crore – which indicates the strong Government focus on improving the overall infrastructure landscape in India.

Development of Domestic Manufacturing Capability

The Government launched Production Linked Incentive (PLI) scheme in early 2020, initially aimed at improving domestic manufacturing capability in large scale electronic manufacturing and gradually extended to other sectors. At present it covers 14 sectors, ranging from medical devices to solar PV modules. The PLI scheme provides incentives to companies on incremental sales of products manufactured in India. This incentive structure is aimed to attracting private investment into setting up manufacturing units and thereby beef up the domestic production capabilities. The overall incentives earmarked for PLI scheme is estimated to be INR 2 lakh crore. If fully realizing the PLI scheme would have the ability to add nearly 4% to annual GDP growth, by way of incremental revenue generated from the newly formed manufacturing units.

Strong Domestic Demand

Domestic demand has traditionally been one of the strong drivers of Indian economy. After a brief lull caused by Covid-19 pandemic, the domestic demand is recovering. Consumer confidence surveys by Reserve Bank / other institutions are points to an improvement in consumer confidence index, which is a precursor of improving demand. India has a strong middle-class segment which has been the major driver of domestic demand. Factors like fast paced urbanization and improving income scenario in rural markets are expected to accelerate domestic demand further. This revival is perfectly captured by the private final consumption expenditure (PFCE) metric. PFCE as a percentage of GDP increased to nearly 59.2 during the first half of FY 2023⁴, which is the highest level it has achieved during the past few years. Although pent-up demand has played a part in this surge, this is an indication of normalization of demand.

⁴ India Economic Survey FY 2023, Full year data is yet to be released

There are two factors that are driving this domestic demand: One the large pool of consumers and second the improvement in purchasing power.

- The share of middle class increased from nearly 14% in 2005 to nearly 30% in 2021 and is expected to cross 60% by 2047⁵. This expanding middle class household segment is fuelling India's growth story and would continue to play a key role in propelling India's economic growth.
- As per National Statistics Office (NSO) India's per capita income (in current prices) stood at INR 1.72 lakhs in FY 2023 which is nearly double of what it was in FY 2015. This increase in per capita income has impacted the purchasing pattern as well as disposable spending pattern in the country. Consumer driven domestic demand is majorly fuelled by this growth in per capita income.

Digitization Reforms

Ongoing digitization reforms and the resultant efficiency gains accrued would be a key economic growth driver in India in the medium to long term. Development of digital platforms has helped in the seamless roll out of initiatives like UPI, Aadhaar based benefit transfer programs, and streamlining of GST collections. All of these have contributed to improving the economic output in the country. Some of the key factors that has supported the digitization reforms include – the growth in internet penetration in India together with drop in data tariffs, growth in smartphone penetration, favourable demographic pattern (with higher percentage of tech savy youth population) and India's strong IT sector which was leveraged to put in place the digital ecosystem. All these factors are expected to remain supportive, and continue to propel the digitization reforms in India.

⁵ As per the survey conducted by People Research on India's Consumer Economy. Households with annual income in the range of INR 5 – 30 lakh is considered as middle class households

Stainless Steel Industry

Stainless Steel is a value-added product with high corrosion resistant properties. Higher levels of Chromium and additions of other alloy elements (Nickel, Molybdenum, etc.) enhance the corrosion resistance. Compared to traditional steel, stainless-steel has higher resistance to corrosion, superior aesthetic finish and higher life span. These features have helped in increasing the popularity of stainless-steel across the world.

High recyclability, resistance to corrosion and low maintenance properties has made stainless steel a preferred metal for application in diverse sectors railway, metro project, process industries, bridges, nuclear, airport, transportation, and kitchenware. Based on the content of alloying elements stainless steel is segregated into three: 200 series, 300 series and 400 series.

Three Distinct Series of Stainless Steel & their composition			
	200 series	300 series	400 series
Manganese	5.5 - 12%	2% maximum	1% maximum
Nickel	1 - 6%	6 - 22%	0.75% maximum
Chromium	10.5 - 20%	15 - 25%	10.5% minimum
Copper	1.5 - 2.5%	None	None
Iron	Balance	Balance	Balance

Series 300 stainless steel, which is an austenitic stainless steel with chromium nickel alloy dominates the with nearly 55% of domestic SS production. Excellent corrosion resistance, high wear & tear resistance, and higher strength at high temperature are some of the attributes that has made this series popular among all SS variants. 300 series is further subdivided into multiple segments, based on the content of alloying metal.

Stainless Steel Series 300: Subdivision (composition of metals other than iron)					
Alloying Metal	304	304L	316	316L	321
Chromium	18 – 20%	18 – 20%	16 – 18%	16 – 18%	17 – 19%
Nickel	8 – 10.5%	8 – 12%	10 – 14%	10 – 14%	9 – 12%
Molybdenum	0%	0%	2 – 3%	2 – 3%	0%
Titanium	0%	0%	0%	0%	5 x (C+N) Min-0.7%
Others*	2 – 4%	2 – 4%	2 – 4%	2 – 4%	2 – 4%

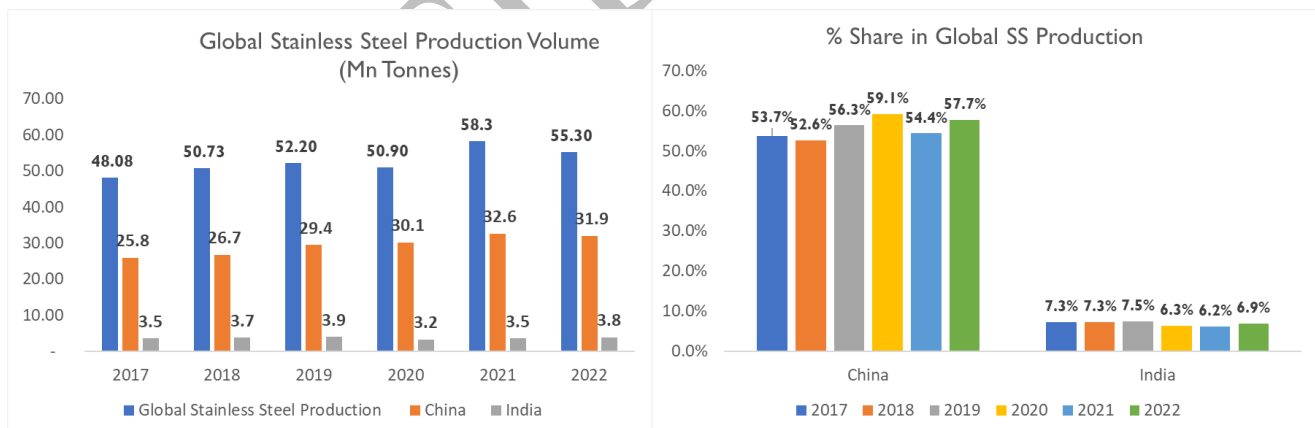
*Others: include traces of carbon, manganese, phosphorous, sulfur, silicon, and Nitrogen

Global Production and Consumption Pattern

Global stainless-steel melt shop production decreased by 5.2% to 55.2 Mn Tonnes in 2022 compared to ~58.3 Mn Tonnes in 2021⁶. In 2022, China with nearly 58% share in global SS production observed moderate 2% decline in 2022 against 8.2% y-o-y increase in the previous year. Talking about India's position in the global stainless-steel market, India with average 7% share in global SS steel output (during 2016-20), remained the second largest stainless-steel producer behind China till 2020. During the first quarter of 2023, approximately 13.7 million tons of SS was produced globally, which was nearly 5% lower than first quarter of H1 2022.⁷

However, in the first quarter of 2023, in global SS production composition Indonesia has maintained its position as the second largest producer of stainless steel globally but its lead over India has narrowed. SS production in India increased by 6.6% in 2023, while Indonesia's increased by 2.2%. This is likely due to the fact that India has been investing heavily in its stainless-steel industry in recent years, while Indonesia's growth has been more reliant on the availability of raw materials.

Globally, cold-rolled flat products is the largest produced stainless-steel product in the world, followed by hot rolled coils, and steel wire rods & bars. According to International Stainless-Steel Forum, cold rolled flat products accounts for approximately 47% of total stainless-steel trade in the world. Hot coils, Semis-flat, Semis Long, Hot Bar/Wire rod, Cold Bar/Wire, Hot Plate & Sheet are another SS intermediary product traded globally.



Sources: International Stainless-Steel Forum

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⁶ International Stainless-Steel Forum

⁷ Internal Stainless Steel Form, Latest Data Release

Semis Long, Hot Bar/Wire rod, Cold Bar/Wire, Hot Plate & Sheet are another SS intermediary product traded globally.

Metal products – manufacturing of kitchen utensils and home ware – is the largest end use of stainless-steel, both globally as well as in India. Globally 37% of total SS consumption goes towards metal products segment while in India 12% of the stainless steel is used in construction and infrastructure, 13% in automobiles, railways and transport (ART), 30 % in capital goods and 44% in durables and household utensils and 1% in others. globally it stood at 37.7%. Process industry & engineering, architecture, building & construction, automotive, railway & transportation, and electromechanical industries are the other major consumers of stainless-steel products.

Global consumption of stainless steel reached approximately 55.3 million tons per annum in 2022, an decrease of nearly 5.2% over previous year. This comes after a 2.2% decline in consumption from 2021, on account of Covid-19 related disruption, the Ukraine and rising energy pricing.⁸

Indian Stainless-Steel Industry

Since 2000, steel production in the country has seen a phenomenal increase as the sector witnessed high investments in capacity addition as well as technology up-gradation. In 2018, India surpassed Japan to become the second largest steel producer in the world, after China. According to World Steel Association (WSA), India produced 125.3 Mn tons of crude steel in CY 2022 and accounted for 7% share in global crude steel production. According to WSA's June 2023 update, India produced approximately 67.9 Mn tons of steel during January – June 2023 period, which nearly 7.4% higher than same period previous year. Unless there are no major disruptions, Indian steel industry would end the year with approximately 136 Mn tons of crude steel.

In 2022, India's crude steel production registered a y-o-y growth of 6% against 18% increase in the previous year while it grew at a CAGR of 4% between 2018-22. Presence of such a vast primary steel manufacturing infrastructure coupled with the low-cost worker has also helped in the growth of secondary and finished steel products. On consumption side, India is also the second largest consumer of finished steel. The emergence of a middle-class consumer segment has altered the consumption landscape in India.

Production and Consumption Scenario

The Indian stainless-steel sector, the second largest producer (in 2022) and consumer in the world, has a total manufacturing installed capacity of more than 6.5 Mn tons of stainless steel annually. The past 4 year data

⁸ International Stainless Steel Forum

reveals that the country's stainless steel production in FY19 touched a level of 5.10 million tonnes. However, in the following two years, production volumes dropped to 3 million tonnes and 2.71 million tonnes respectively in FY20 and FY21, mainly hit by the Covid-19 waves. In FY22, production again picked up and was recorded at 3.5 million tonnes, recording 29% y-o-y growth compared to FY21.

Since 2011, stainless-steel production has increased at a CAGR of 7.8% per annum from ~2.16 Mn Tonnes in 2011 to 3.92 Mn Tonnes in 2019. Barring 2020 for pandemic led decline, India's stainless-steel (SS) production has increased steadily between 2014-21. In 2020, India stainless steel production observed -19.4% over 2019 owing to Covid-19 pandemic induced depressed market condition. However, the industry rebounded well in CY 2021 as India's annual domestic stainless-steel production reached approximately 4.25 Mn tons, increasing by nearly 26% over previous year production⁹.

SS production and consumption observed V shape recovery where volume improved gradually with phase wise unlocking of the economy on the back of government stimulus and efforts put in place by the industry stakeholder. Flat products, which include steel slabs, sheets, plates, and coils account for ~75% of total stainless-steel production in the country.

Despite being one of the largest producers as well as consumer of stainless-steel, the per capita stainless-steel consumption in India remains low. India's per capital stainless steel consumption has increased from 1.2 Kg in 2010 to 2.5 Kg in 2019, however its consumption is comparatively lower compared to world average of 6 Kg per capita, This low consumption pattern is an indication of the inherent opportunities existing in the sector.

Regulatory Scenario

Iron and steel industry play a strategic position in the overall infrastructure industry. Therefore, the government has been taking sustained initiative on yearly basis towards the development of the industry. The Government has de-licensed the manufacturing of steel pipes and tubes, and caps on foreign investment has been removed. This move, as part of the larger industrial sector reforms which was implemented in 1991 and subsequent years, have helped in improving the technology level in the industry, apart from attracting capital. Further trade restrictions (primarily international trade) was also lifted as India became a signatory to global trade pacts. Currently, 100% FDI under automatic route is allowed in the steel sector.

National Steel Policy 2017:

This policy was initiated with the intention to create a globally competitive steel industry in India. It is an updated version of National Steel Policy 2005. The achievement targets outlined under National Steel Policy

⁹ Worldstainless.org, 2022 year to date data at country level has not been released by the organization

2017 is likely to have a favorable impact on supply side dynamics and strengthen the indigenous manufacturing capabilities. Key policy objectives include

- Increase the per capita steel consumption from current 63 kg to 158 kg by FY 2031.
- Reduce the dependency on imports of coking coal from 85% to 65% by FY 2031.
- Domestically meet the demand for high grade automotive steel, electrical steel, special steel etc. by FY 2031.
- Attain global standards in Industrial safety, reduce the carbon footprint and have energy efficient steel production.

Strengthening the raw material supply chain: To reduce dependency on steel imports, in Dec 2020, the Ministry of Steel, Government of India, signed a Memorandum of Cooperation (MoC) with the Ministry of Economy, Trade and Industry, Government of Japan, to boost the steel sector through joint activities under the framework of India - **Japan Steel Dialogue**. On 14th October 2021, the Ministry of Steel also signed MoU with the Russian Federation for cooperation in the field of coking coal, used for steel making. This initiative is expected to strengthen the steel sector in terms of, capacity building, energy efficiency, trade and investment etc. which bodes well for the steel washer including SS washers.

Steel Quality Control Order: To ensure the availability of quality steel to the industry, the Ministry of Steel introduced the '**Steel Quality Control Order**' banning sub-standard/ defective steel products both from domestic players & imports. As per the Order, it is ensured that only quality steel conforming to the relevant BIS standards is made available to the end users in the country. As on Dec 2020, 145 Indian Standards have been notified under the 'Quality Control Order' which covers carbon steel, alloy steel and stainless steel. In addition, goods & articles made up of steel such as stainless-steel pipes & tubes, laminations/ cores of transformers, products of tin plate & tin free steel etc. have also been notified to prevent circumvention of the 'Steel Quality Control Order'. During the year 2020, 78 additional Indian Standards have been notified under the 'Quality Control Order'. The order excludes product meant for export as Indian manufacturers making product for export purpose are required to comply with the destination market standard.

Domestically manufactured iron and steel products policy (DMISP)

On 8th May 2017, the Government released a DMISP policy to prefer the domestically manufactured iron & steel products in Government procurement. To align with the Government "Atmanirbhar Bharat" scheme, Ministry of Steel notified amendments / additions to the DMISP Policy in Dec 2020 which was last revised, 2019. The amended policy further broadens the scope of the policy to promote domestic manufacturing in the steel sector. Domestic steel has been defined as one which has been manufactured in India with value addition ranging from 15-50%. So far (till end of 22nd March 2022), the Policy has led to import substitution

of more than INR 224 Bn worth of steel which indicates increasing usage of domestic steel in government procurement thereby contributing in creating more job opportunities and strengthening the overall economy.

Union Budget 2023-24 Announcement & Steel Promotion Initiatives

- To facilitate availability of raw materials for the steel sector, exemption from Basic Customs Duty on raw materials for manufacture of cold rolled grain oriented (CRGO) steel, ferrous scrap and nickel cathode is being continued.
- 100 critical transport infrastructure projects, for last and first mile connectivity for ports, coal, steel, fertilizer, and food grains sectors have been identified. They will be taken up on priority with investment of Rs 750 bn, including Rs 150 bn from private sources.
- In Dec 2022, the government imposed definitive anti-dumping duty on stainless steel seamless tubes and pipe imports from China for five years to protect the domestic industry. The recommended duty ranges from \$114 per tonne to \$3,801 per tonne.

Demand from Government Initiatives

National Infrastructure Pipeline (NIP)

Good infrastructure is essential to support overall economic growth. As the government targets to make India a USD 5 Tn economy by 2025, infrastructure remains a thrust area for the government. The government remain committed of creating new and upgrading existing infrastructure to raise the quality of life and ease of living in India to global standards. In December 2019, an investment worth INR 102 Tn was announced by the government on infrastructure projects over the next five years under the National Infrastructure Pipeline (NIP). The task force on NIP increased this amount to INR.111 Tn in May 2020 from its initial projection of INR102 Tn which translate in per year spending of around INR 22 Tn. The Centre (39%) and state (40%) are expected to have almost equal share in implementing the NIP in India, followed by the private sector (21%). The amount allocated under NIP will be spent on building highways, railway lines, ports and airports and other social and economic infrastructure.

Sub Sector	Amount to be invested between 2020-25 in INR Bn	% Share in Total Investment
Road	20,338	18.3%
Railway	13,676	12.3%
Aviation	1,434	1.3%
Urban Infrastructure	19,193	17.2%
Industrial Infrastructure	3,150	2.8%
Others	53,514	48.1%
Total	1,11,304	100%

Although substantial investment planned under NIP which will propel the demand for several critical metal component including SS washers.

Urban Infrastructure

The task force National Infrastructure observed that by 2030, around 42% of India's population would be urbanized from the current 31%. Hence, urban infrastructure needs to be modernized at par with global standard to improve the ease of living of its citizen. Atal Mission for Rejuvenation and Urban Transformation, Smart Cities, Mass Rapid Transport System, Affordable Housing, Jal Jeevan Mission etc will be key focus area for development. NIP vision

- All households to have piped water meeting national standards by 2024.
- Waste-water collection, treatment/recycling to national standards in all towns across India
- Urban mobility – mass rapid transit system (MRTS) and bus connectivity within 800 m of homes in more than 50 cities

The Government of India has announced several policies and urban development initiatives. These include three -mega flagship schemes i.e Smart Cities Mission, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Housing-For-All that will have a spillover effect on the demand for overall economic growth.

Union Budget 2023-24 & Infrastructure Sector Announcement

In FY 2023, the capital expenditure was budgeted to be 19% of total expenditure vs 16% in FY 2022 and 12% in FY 2020 as well in FY 2021. The government continued with its thrust on infrastructure expenditure by increasing the capital expenditure on infrastructure investment by 33%, i.e., Rs 10 trillion for 2023–24, amounting to 3.3% of the GDP.

The newly established Infrastructure Finance Secretariat will assist all stakeholders for more private investment in infrastructure, including railways, roads, urban infrastructure and power, which are predominantly dependent on public resources. Regional air connectivity will be improved by the addition of 50 new airports, heliports, water aerodromes and advance landing grounds. States and cities will be encouraged to undertake urban planning reforms and actions to transform cities into 'sustainable cities

of tomorrow'. An Urban Infrastructure Development Fund (UIDF) with an outlay of Rs 100 bn per annum will be established through use of priority sector lending shortfall which will be managed by the National Housing Bank, and will be used by public agencies to create urban infrastructure in Tier 2 and Tier 3 cities. The outlay for PM Awas Yojana is being enhanced by 66% to over Rs 790 bn.

Higher Budgetary allocation in Major end user industries

Centre's Actual Budgetary Support (Capital Outlay Disbursement) (INR Bn)

Sectors	Actual					Estimates	
	FY'17	FY'18	FY'19	FY'20	FY'21	FY'22	FY'23 BE
Roads & Bridges	437.7	535.2	697.6	707.1	922.9	1138.8	1803.0
Railway	452.3	434.2	528.4	678.4	299.1	1170.0	1369.8
Housing	9.8	12.6	10.9	9.6	11.3	15.8	18.1
Urban Development	14.3	32.5	24.4	37.1	17.2	43.6	37.3
Power	20.7	13.2	16.4	7.7	5.6	6.1	13.5
Civil Aviation	27.1	18.4	39.8	0.2	0.4	621.1	0.8

Within the total capital outlay (for sector considered), budgetary support to transport sector particularly railway and roads & highway has always remained in focus. Budgetary allocation for road & highway sector has increased at 21% CAGR between FY 2017-21. In FY 2023, allocation to road sector was up by 58% over the previous year revised estimate while railway was up by 17%.

Atmanirbhar Bharat packages

To support economic revival post Covid-19, the government in May 2020 announced first stimulus package. The first economic stimulus of INR 20 Tn was announced on 13th May 2020 and subsequent two more Atmanirbhar Bharat packages of INR 730 Bn on 12th October 2020 and INR 2.65 Tn was announced on 12th November 2020, bringing the total stimulus package at INR 29.87 Tn. Moreover, the government has decided that Global tenders will be disallowed in government procurement tenders up to INR 2 Bn which will boost demand for indigenously manufactured product. In addition, PSUs are restricting local traders of foreign pipe manufacturers for participation in their tenders, thereby encouraging the growth of domestic players in Indian market.

Production Linked Incentives (PLI) Scheme

The Production Linked Incentives (PLI) Scheme was announced in FY 2021 under which the government announced INR 1.97 Tn to be spent in the next 5 years for PLI schemes in 14 Sectors which include advanced chemistry cell battery, electronic products, automobiles and auto components, pharma, telecom and networking products, textile, food products, white goods, and specialty steel. The scheme targets to create and nurture manufacturing global champions for an Atmanirbhar Bharat, help manufacturing companies

become an integral part of global supply chains, possess core competence and innovative technology, and create employment opportunities.

Various other policy decision such as changing the definition of MSMEs and encouraging the scope for private participation have been introduced as a part of Atmanirbhar Bharat package which will have a favorable impact on domestic manufacturing and SS pipes & tubes.

Sectors for which PLI schemes have seen an increase in FDI inflows from FY 2021-22 to FY 2022-23 include Drugs and Pharmaceuticals (+46%), Food Processing Industries (+26%) and Medical Appliances (+91%). As on 13 June 2023, 733 applications have been approved in 14 Sectors with expected investment of Rs.3.65 trillion.

PM Gati Shakti National Master Plan

On 15 August 2021, the government announced **PM Gati Shakti - National Master Plan** worth INR 100 trillion that aims to boost economic growth (Shakti) through infrastructure building over the next five years. PM Gati Shakti is a national infrastructure master plan that has the potential to bring a transformational change in the multiple sectors including steel and thereby supporting the Government's plan to position India as a global manufacturing hub. As a part of the PM Gati Shakti National Master Plan following announcement were made in Union Budget 2022-23

- The budget announced to develop 100 PM Gati Shakti Cargo Terminals for multimodal logistics facilities during the next three years.
- The government proposes to award contracts for implementation of multimodal logistics parks at four locations through PPP model in FY23.

Under the PM Gati Shakti National Master Plan, 100 critical infrastructure gap projects have been prioritized for development in FY 2023-24 and Rs. 750 billion have been allocated for the same. The various initiatives for infrastructure development under the PM Gati Shakti will propel the demand of steel in various sectors thereby enhancing steel usage and growth of the steel sector.

National Manufacturing Policy

The stated objective of the Government to increase the share of manufacturing sector in national GDP from the current level of 12 – 14% to 25% by 2022 is expected to benefit process control equipment manufacturing. National Manufacturing Policy and Make in India initiatives, implemented to achieve this objective would benefit the segment.

Additionally, the move towards “Industry 4.0,” which focuses on encouraging Companies to adopt best in class manufacturing practices would have a positive impact on process control equipment segment. “Industry

4.0,” which is intended to reshape the manufacturing segment by focusing on automation as well as improving efficiency could create demand for process control equipments and systems.

Major Announcement in Infrastructure sector

- 58% increase in capital expenditure for Roads and Bridges to INR 1.80 tn in FY23 (BE).
- 17% increase in capital expenditure for Indian Railways – Commercial Lines to INR 1.37 tn in FY23 (BE).
- INR 480 bn is allocated for completing 8 mn houses for beneficiaries of PM Awas Yojana.
- National Ropeways Development Programme (Parvatmala) in difficult hilly areas and congested urban areas to improve connectivity and convenience where conventional mass transit system is not feasible. Contracts for 8 ropeway projects for a length of 60 km will be awarded in 2022-23.

Significantly higher capital expenditure planned towards sectors with higher metals consumption intensity such as Railway, Road and Bridges, Water infrastructure and Affordable Housing is positive as this will support demand for metal. Further, anti-dumping duty on stainless steel tubes from China from Dec 2022 will also support the growth of the domestic industry.

SS Sheets

Stainless Steel (SS) sheet is a thin flat piece of stainless steel that has a wide range of applications. Depending on the grade of SS used, size, thickness and finish SS sheet finds application in sectors ranging from architecture, building & construction (ABC), automotive, railway & transport (ART), food industry, process industry, and aerospace, among others. The corrosion resistance attribute of the material, along with the ability to incorporate custom finishes has helped increase the usage of SS sheet.

Thickness (or gauge) of the material is used to differentiate SS sheet from other flat products like plates and foils. Typically, SS flat piece with thickness below 6 mm is considered as a SS sheet, while anything above that falls into the category of SS plates. SS foils, on the other hand are the thinnest of flat products and are thinner than SS sheet. The most commonly used SS grade for making both sheet and plate are 300 and 400 series, each differentiated by the type & percentage of alloy included.

- Type 300 series contains austenitic chromium-nickel alloys and finds applications in construction, transport, food industry, surgical applications, marine, and high-temperature applications. Type
- Type 400 series contains ferritic & martensitic chromium alloys and is widely used for making steel cutleries.
- **SS Finishes / SS finishing sheets**
- Finishing is a design element which becomes significant when the external appearance is of importance. SS finishing steel is used for decorative as well as non-decorative applications, with the type of finish imparted depending upon the end use applications. Today SS sheet is available in a variety of standard as well as specialized designs, depending upon end user customer specifications. All the various finishes are categorized into three broad segments – mill finishes, mechanically polished finishes, and special finishes.
- Apart from appearance, polished SS sheet is also important where a stain free and sterile surface is required. Usage in kitchens and sanitary application is one such example, where a sterile surface as well as low changes of bacterial contamination is important.

Notable type of finishes	
No.1 Finish	Manufactured by rolling heat treated SS sheet. An additional heat treatment follows to give it a uniform microstructure. This is the roughest of all the finishes and is rarely used in fabrication.

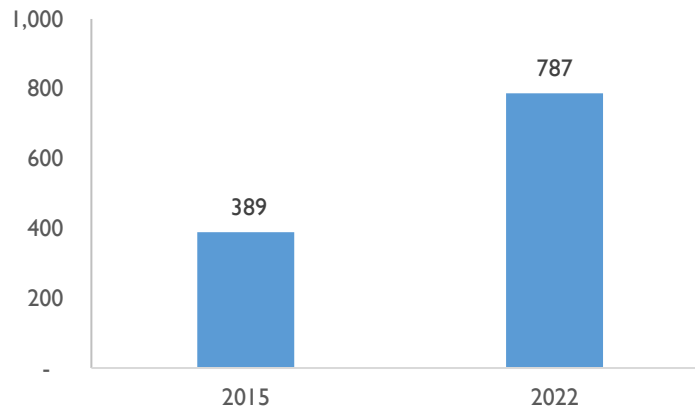
No.2 Matte Finish	One of the most common SS finishes used and has a non-reflective appearance with good flatness. It is the most preferred finish for fabrication operations.
No.3 Brushed Finish	Achieved by either mechanical polishing with finer abrasives or by-passing SS coil through special rolls that emulates the appearance of mechanical abrasion. It is most commonly used in food production & food service.
No.4 Finish	This has much more uniform and smoother finish. No.4 finish finds usage in commercial kitchens, elevators & escalators, hospitals & areas where a sterile & polished surface is required. It is also the preferred finish for architectural applications.
No.6 Finish ¹⁰	Less reflective than No.4 finish. It sports a dull silver white finish and its usage has been declining and is rarely used today.
No.7 & No.8 Finish	Both these finishes possess a high degree of reflectively, imparting a mirror like appearance. This finish has a high maintenance cost, and is commonly used in panels, columns, and exterior cladding in high end office buildings & hotels.

Domestic Consumption Pattern

Annual consumption of SS sheets in India is approximately 787,700 tons in 2022. This includes SS sheets used for functional purposes as well as aesthetic purposes (decorative sheets). Consumption has been increasing by a CAGR of 13% during the last five to six years. Architecture, building & construction (ABC) segment and automotive, railways & transportation (ART) are the two major sectors that are driving the demand for SS sheets.

¹⁰ Common Stainless Steel finish classification does not mention any No.5 finish, hence the absence of such a classification in the table

SS Sheet Consumption in India (in 000 Tons)



Dun & Bradstreet Research

Key Demand Drivers

Two of the key segments that are driving the demand for SS sheets are Architecture, Building & Construction (ABC) and Automotive, Railway & Transport (ART). In ABC, the usage is primarily on roofing and cladding (external and internal), with external cladding by SS decorative sheets. In addition, the usage in elevators & escalators too comes under this broad segment. In ART segment, the usage is primarily in the construction of bus bodies, as well as coaches (metros and railways). Although SS is used in auto components, the usage is mostly SS long products.

Demand Architecture, Building & Construction (ABC) Segment

Changes in building design & construction techniques has led to the introduction of a wide variety of building materials. Key among this is the design element that involves exterior cladding or an outer skin for buildings meant to improve its aesthetics.

Stainless steel sheets (SS sheets) with a wide variety of finishes meets this aesthetic requirement and emerged as one of the several candidates for exterior cladding. However, the factors that tilted the balance in its favor include its superior corrosion resistance, ability to hold its form under extreme natural elements (stress, sun & rain), and flexibility to fabricate into any shape required. Moreover, the cost effectiveness of the material together with its recyclability too helped, with the later gaining prominence due to the increasing interest in green buildings.

The usage of stainless steel (SS) in construction industry is not new, and is used extensively for load bearing, railings, plumbing applications, and HVAC, among others. All these applications were mostly from a functional perspective – utilizing its corrosion resistance and other properties. Its usage as a decorative element is relatively recent, and in a country like India this application trend is still to become widespread.

Increasing focus on aesthetics & design elements:

More and more customers in India are demand for buildings with improved aesthetic and design elements. This is especially true in commercial buildings that cater to ITES, and new age service segments. Two other segment which is witnessing a shift is the retail space, especially large shopping malls and hypermarkets, as well as hospitality space. Compared to these, exterior design (aesthetic appeal) is yet to become a key element in institutional building construction.

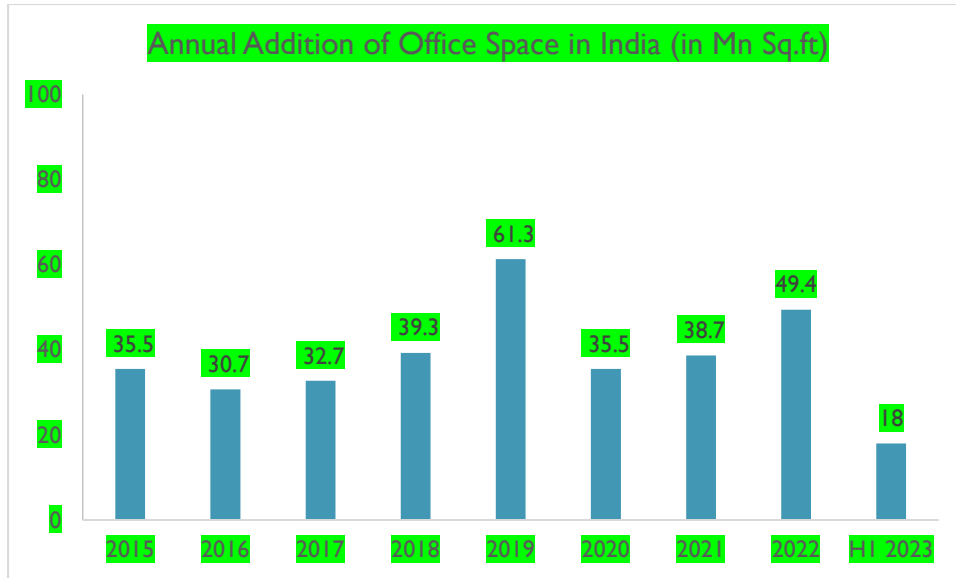
Increasing demand to incorporate aesthetic elements in commercial, retail and hospitality buildings is accompanied by a pickup in construction activity in these segments. Commercial building design (including office space, retail, and hospitality) has undergone a change during this period, as it is increasingly incorporating design elements from western markets. The glass and metal façade buildings that are synonymous with urban conglomerates in western markets is getting replicated in India.

Office building construction scenario in India

Since 2015, India has been adding nearly 35.5 mn sq.ft of new office space every year (except 2019 when the annual addition was in the range of 61.2 mn sq.ft¹¹. With IT-ITES sector accounting for nearly 80% of office space absorption every year, new addition is driven by expected demand from this sector. The dominance of IT-ITES in office building segment is a positive for SS sheet used for decorative purposes, as the focus on aesthetic element in building design is highest among this particular customer segment. Thus the 35.5 mn sq.ft of office space construction every year is providing a huge market for SS decorative steel, for usage in exterior cladding and design¹². During the first half of 2023 (HI 2023), approximately 18 mn sq.ft of office space was added, which represents a decline of 25% over HI 2022.

¹¹ 2019 has been treated as an exception year, and avoided from Average calculation

¹² Cumulative space in top 8 cities in India: Ahmedabad, Bengaluru, Chennai, Hyderabad, Kolkata, Mumbai, NCR & Pune



Source: Knight Frank, Industry Sources

Growth in Organized Retail Space

Currently, retail accounts for a small portion of the Indian real estate market. While the traditional and unorganized retail segment is still the dominant one in the country, organized retail is gaining ground at brisk pace. Malls & hypermarkets, which represent the organized retail space in India, is primarily concentrated in metros and tier I cities. Although few national brands in organized retail have started venturing into smaller towns, this yet to translate into demand for large retail space like malls. This concentration in large urban markets meant, the consumption of SS sheet for decorative purposes has largely concentrated in large cities.

In 2022, top 7 cities in India added nearly 2.6 million sq.ft of mall space, which was nearly 27% higher compared to the previous year. Going ahead, nearly 25 million sq.ft of mall space is expected to be added across these 7 cities in the next 4 – 5 years¹³. This forecast was based on the changing consumption pattern, purchasing power, demographic shift, and aspiration changes in smaller towns. Although the spread of Covid-19 has impacted this prediction, the long-term trend is pointing to higher penetration of mall space in smaller towns.

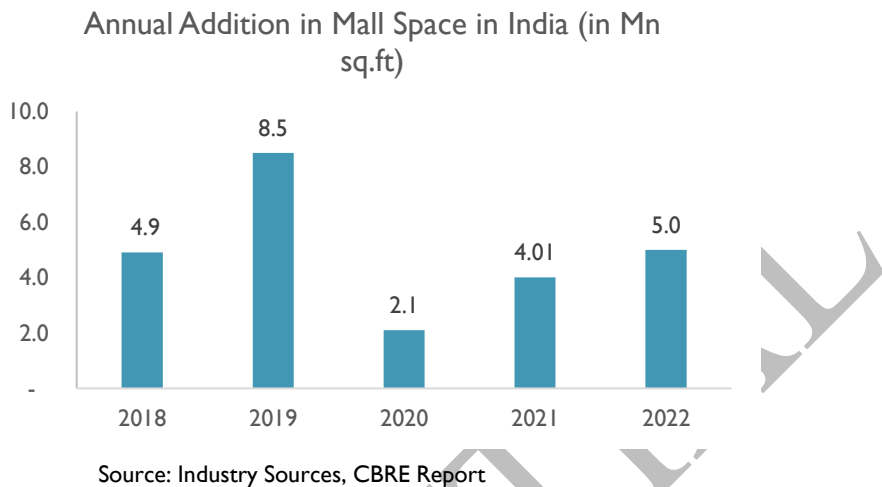
As per a report by CBRE¹⁴, the total organized retail sector stock in India is nearly 77 mn sq. ft, as on H1 2022¹⁵. Annual mall space addition reached a high of 8.5 mn sq. ft in 2019, a record high, increasing by nearly 73% over previous year. The year 2020 is an anomaly, as the spread of covid-19 and resultant lockdown impacted new construction. As a result, mall space addition in 2020 fell by nearly 75% in 2020. However, the

¹³ Anarock and Retailers Association of India

¹⁴ CBRE India Retail H1 2022

¹⁵ Cumulative space across six major cities: Delhi, Mumbai, Bengaluru, Hyderabad, Pune, and Chennai

scenario has improved in 2021 – despite the second wave of the pandemic – with nearly 4.5 mn sq.ft of new mall space addition.



Given this expansion in mall space / organized retail space, the demand for building materials from this segment have witnessed an increased. Exterior metal cladding has become a constant design element in mall construction in India, with most of the malls coming up having a mix of glass and steel-based exterior. As a result, the offtake of SS sheet metal as decorative component in mall space in India is increasing.

Growth in Hospitality Space

Compared to office space and malls, the usage of metal for exterior cladding is relatively low in hotel construction. Given the aesthetic element, together with durability and cost saving the prospect of SS sheet metal usage picking up in hotel construction space cannot be ruled out. This sector could emerge as a demand driver in the coming years, subject to the evolution of architectural design elements.

Green buildings and its impact

According to World Green Building Council, a green building is a building whose negative impact on environment – generated by the way of design, construction & operation – is limited while capable of creating positive impacts. Few of the factors that characterize green buildings include – efficient usage of water & energy, usage of renewable energy, and usage of material that is recyclable and sustainable. Any building which has these attributes built can be categorized as a green building.

Stainless steel products, due to its recycling nature, qualifies as a construction material in green building construction. Apart from its recycling attribute, its long service life (imparted by its resistance to corrosion and ability to withstand natural elements in case of external usage), and hygiene characteristics are also making it a material of choice for the green building industry.

India has risen to become the fourth largest green building market in the world, in terms of build volume. According to Indian Green Building Council, there are nearly 7,000 green certified building projects while the total area that comes under the category of green building is estimated to be nearly 8 bn sq.ft. Such a wide network of projects and large green building footprint points to an aggressive growth in green buildings in India.

The recyclability and lower carbon footprint (due to high life cycle) makes SS sheet an excellent material of choice for green building construction. Given the traction that green building has generated in India, and the future demand – the potential market for SS sheet (for exterior cladding & decorative elements) is huge. Exploitation of this market potential would depend on spread of awareness level of the environmentally friendly attribute of the material.

Demand from Elevators & Escalators

In elevators, SS sheet is used as interior finishing material – serving as a decorative material. Depending on the requirement, SS sheet with suitable finish is used inside elevators. All modern elevators used in residential, commercial, institutional and infrastructure buildings today use SS sheet for interior finishing. Hence, the growth in elevators & its usage is a direct barometer of increasing demand for SS decorative sheet from elevator manufacturers. Apart from elevator, SS sheet also finds usage in escalators which is extensively used in shopping malls, metro stations as well as airports.

Over the last few years, elevator sales in India is approximately 50,000 – 55,000 per annum, while the installed elevator base in the country is nearly 255,000 units per annum. As per OTIS India, India is the second largest elevator market in the world, after China, with residential real estate market accounting for nearly 80% of annual consumption accounted by residential market. Escalators, which is yet to become mainstream, is estimated to be a 3,500 – 4,000 units per annum market. The expansion in mall space, and growth in metro stations are driving the demand for escalators, and these two factors would be instrumental in pulling up the annual volume sales from the current levels.

This strong elevator demand is expected to translate into strong demand for SS decorative sheet, which has become an integral component of elevator. This strong demand for escalator manufacturers would be complimented by the rising demand for escalator market. Although annual volume of escalators sold in India is less than 10% of elevator sales, this segment has the potential to emerge as a strong secondary demand driver in this space.

Demand from commercial kitchens

Usage of SS sheet in kitchen stems from its inert & neutral attribute, making it an excellent antimicrobial material. It is this functional attribute, more than the decorative attribute, that has made SS sheet a preferred material of choice in kitchens. Moreover, its ability to hold original design & color as well as excellent anti scratch attributes too have helped SS sheet become a preferred material in kitchens (mainly commercial kitchens). In commercial kitchens, SS sheet is used in workstations, storage cabinets, exterior material for refrigerators, cooking range, and equipment like ovens & frying stations.

Commercial kitchen is directly linked to the restaurant industry, with an increase in restaurant base directly triggering fresh demand for commercial kitchen equipment. However, the popularity of hyperlocal food delivery services has created a new type of commercial kitchens – cloud kitchens. These cloud kitchens have emerged as the second demand driver in this industry, apart from the traditional restaurant business.

Apart from restaurants (and the newly emergent cloud kitchens), commercial kitchen equipment also finds application in QSR chains, bakeries, cafes, institutions, catering service providers, and industrial kitchens. All these segments together create demand for commercial kitchen ware, which in turn lead to higher consumption of SS sheet by manufacturers of commercial kitchenware.

Demand from Automotive, Railways & Transport (ART) Segment

SS sheet of varying finishes is used in the construction of metro coaches. For example, Jindal Stainless supplies SS sheet of 2J and No.4 finishes that are required for metro coaches. When the metro rail project was launched in India, coaches were imported. However, the expansion of metro rail projects to multiple cities has led global OEMs like Alstom and Bombardier to set up domestic manufacturing facilities, apart from domestic PSU BEML. Together these firms are the major consumers of SS sheets with specialized finishes.

In 2023, India had 15 operational metro rail lines. From 2014 to 2022, the metro route length in India has increased fourfold. In 2014, the total metro route length stood at 248 kilometers, and by 2022, it had expanded to an impressive 845 kilometers. The growth rate has been also impressive in the last decade. Between 2004 and 2014, the average construction speed was approximately 0.5 kilometers per month. However, the following decade, from 2014 to 2023, witnessed an exponential increase in construction speed, reaching an average of 6.0 kilometers per month.

Moreover, in the past three to four years, metro coach manufactures (BEML, Alstom, Bombardier and Titagarh) have together won tenders to supply more than 1,200 coaches¹⁶ (metro coaches and Rapid Rail Transport System coaches).

¹⁶ Government of India

With metro rail expected to become the pillar of urban transport infrastructure across all major cities, the demand for metro coaches is only going to increase. This planned expansion in metro network is thus a big position for SS sheet manufacturers.

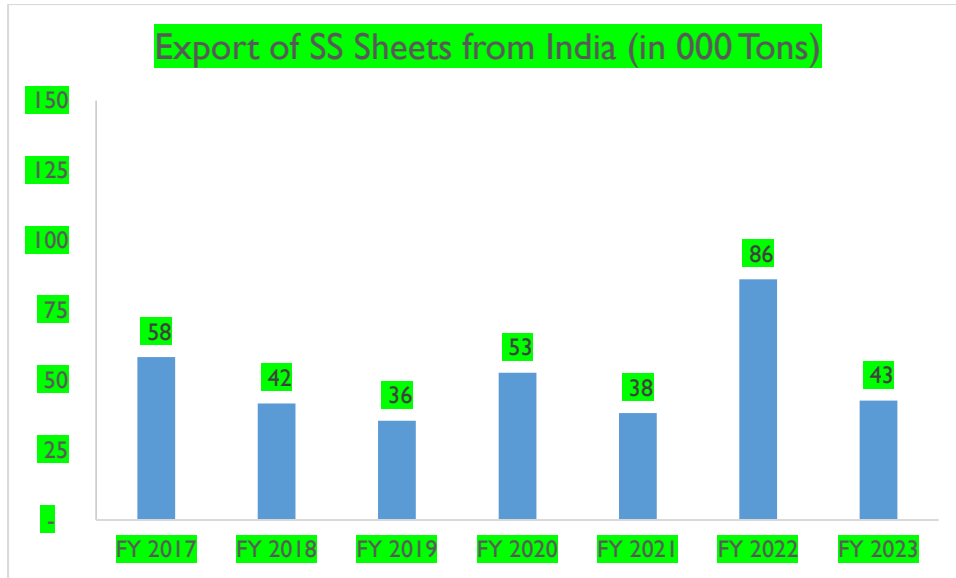
International Trade

Export Demand

Five countries account for nearly 81% of the Indian SS exports in terms of volume. The US and Russia form the largest export market for Indian SS sheet manufacturing industry, accounting for nearly 57% of the total export volume. US alone accounts for nearly 41% of total export volumes, while Russia accounts for 16%. Poland and Italy are the key markets in Europe. Apart from stable demand from building construction and other allied structures, the presence of trade barriers against imports from China and other Asian destinations have worked to Indian SS sheet manufacturing industry.

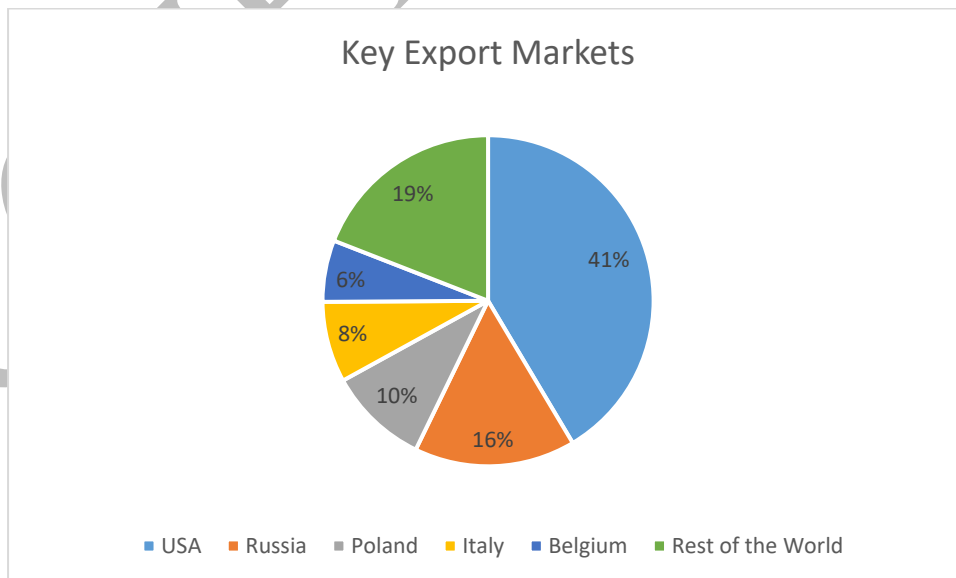
Although India has built up its capacity in SS sheet manufacturing, it is not matching to the excess capacity in markets like China, South Korea, and Japan. Further, Indian players are unable to match the price points at which SS sheet manufacturers operating out of China, South Korea and Japan sell. However, the strong sentiment prevailing against the above-mentioned markets, because of their dumping practices, most of the European countries and the US have imposed strong trade barriers. This includes high duty rates, as well as anti-dumping measures to discourage the dumping practice.

Given the lower manufacturing capacity in US and European market (because of the large-scale migration of manufacturing from West to developing markets), the anti-dumping and adverse trade measures have created a void. This gap has presented an opportunity for countries like India, who are now able to compete better in international markets. Further, the Russia – Ukraine conflict has resulted in Russia being a major export partner for India.



Source: Directorate General of Foreign Trade, Ministry of Commerce
 Analysis based on HS codes 721931, 721932 and 721933

However, the concentration of exports on a handful of markets meant any fluctuation in exports to those markets would directly impact the overall export trend. For example, the ratio is highly skewed towards US and Russia which accounted for more than 50% share in FY 2023. Change in export volume to these markets meant overall export volume has shown a degree of fluctuation. For FY 2017-20 period, annual export volume has varied between 36 – 58 thousand tons. Export volume reached 86 thousand tons per annum in FY 2022, which is the highest in the past four to five years; but declined to 43 thousand tons in FY 2023.



Source: Directorate General of Foreign Trade, Ministry of Commerce

Note: Geographical break-up based on volume of FY23 export figures

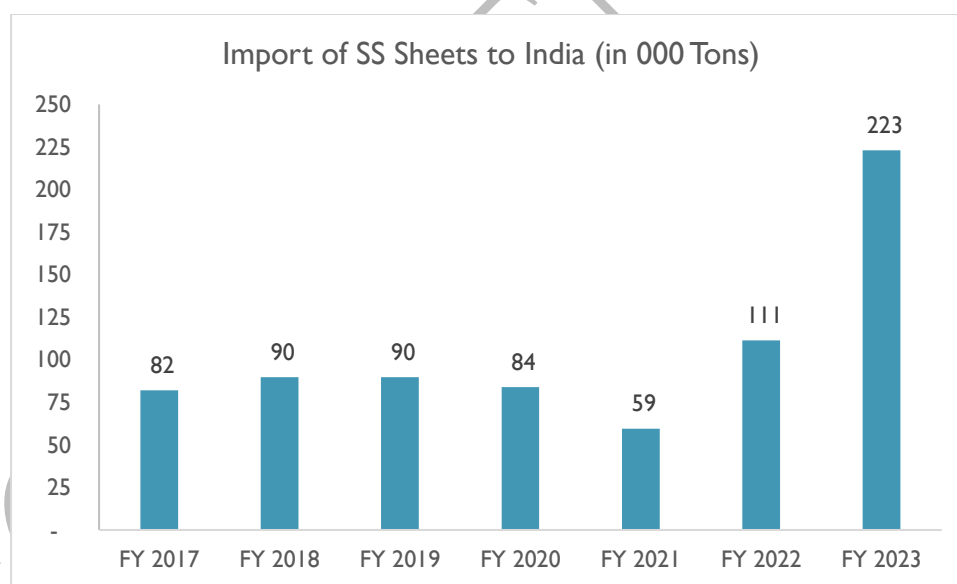
Analysis based on HS codes 721931, 721932 and 721933

Imports to India

Despite the presence of a large steel manufacturing infrastructure – ranked second in the world, in terms of crude steel output – a substantial volume of SS sheet is imported to India every year. During FY 2017-20 period anywhere between 85 – 90 thousand tons of SS sheet was imported to India every year. Although Covid-19 disrupted the imports, pushing it down to 59 thousand tons per annum in FY 2021, it rebounded in FY 2022 and more than doubled in FY 2023.

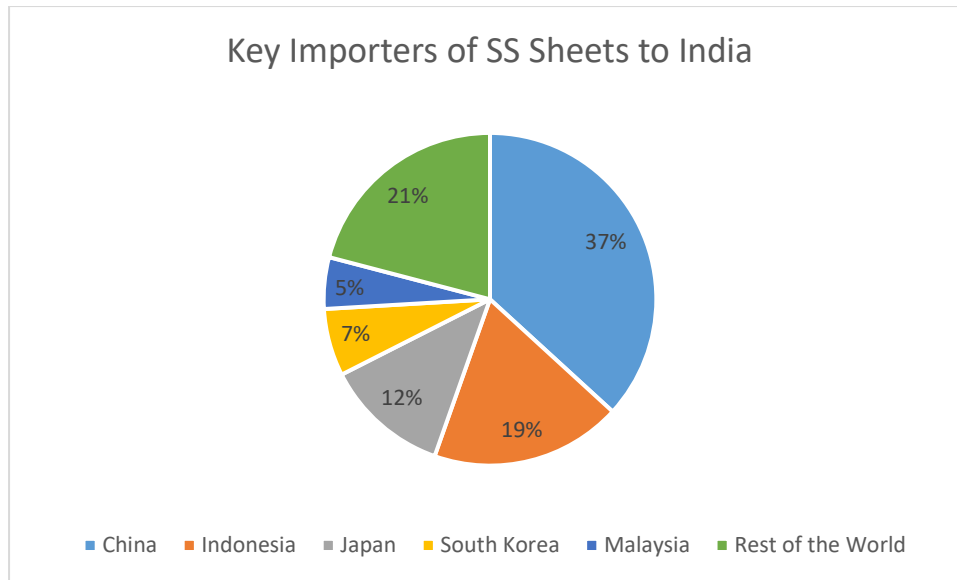
For FY 2023, 223 thousand tons of SS sheet was to be imported to India. This marks the largest volume of imports in recent history. This 100% increase in import volume underscores the strong revival in demand, aided by resumption of construction and other end consuming industries.

The more than doubling of import volume in FY 2023 meant the country incurred an import bill of INR 43.7 Bn towards the import of SS sheet during the year. Discounting the slump in FY 2021, the average import bill of SS sheet imports has stood at nearly INR 19 Bn (during FY 2018-23).



Source: Directorate General of Foreign Trade, Ministry of Commerce
Analysis based on HS codes 721931, 721932 and 721933

Five markets (China, Indonesia, Japan, South Korea and Malaysia) all from the Asian region, accounted for nearly 79% share of SS sheets imported to India during FY 2023. Of these, China is the largest exporter of the commodity, accounting for nearly 37% of total import volume during FY 2023.



Source: Directorate General of Foreign Trade, Ministry of Commerce

Note: Geographical break-up based on volume of FY23 export figures

Analysis based on HS codes 721931, 721932 and 721933

The excessive stainless-steel capacity in markets like Japan, South Korea, China, and Indonesia together with surging demand for SS products in India has resulted in unbridled import of these products to India. Backed by favorable trade measures & agreements, these low-cost manufacturing destinations have stepped up imports to India, in the process creating material injury to domestic industry. As per Indian Stainless Steel Development Association (ISSDA), imports today account for nearly 20% of domestic SS market. This scenario is playing across a wide range of stainless-steel products, including flat products.

In response to the complaints by domestic SS sheet & flat product manufacturers, about the harm caused by dumping of SS flats, the Directorate General of Trade Remedies (DGTR) initiated an investigation. In Dec 2022, to safeguard the interests of the domestic industry the government imposed definitive anti-dumping duty on stainless steel seamless tubes and pipe imports from China for five years.

Competitive Landscape

SS sheet manufacturing in India is a fragmented industry, with a domination of small & medium sized players who make up the unorganized segment. Ease of raw material availability, production process which is not protected by any intellectual property restrictions, and low switching cost have all resulted in low entry barriers. Meanwhile, the ubiquitous usage of SS sheet (across a wide variety of sectors) meant there is a steady demand for the commodity.

These two factors (steady demand & low entry barriers) have made the industry an attractive bet for smaller players. In addition, the lack of product differentiation and fragmented customer base has ensured that smaller players would be successful in finding a market for their products.

However, the recent developments – mostly in product offerings – is reshaping the industry, creating a space for specialized players. Technology advances in SS sheet finishing in the recent years – in response to market demand – have created a new line of product. As SS sheet is finding usage as an exterior cladding material, the demand for matte, brushed, satin and mirror finish has increased. This has created the need for specialized technology for imparting the aforementioned finishes. Capital investment required to upgrade manufacturing capability to produce these finishes is acting as an entry barrier. Smaller firms, catering to smaller customers at a localized market would find it hard to make the necessary investment.

SS sheets with specialized finishes is become a differentiating factor in building construction, and its demand is expected to increase in the coming years. SS sheet manufacturers who have developed the capability to manufacture these finishes has the opportunity to establish a market superiority vis-à-vis smaller players.

Apart from domestic manufacturers, the industry also comprises of a large number of traders / suppliers dealing in imported SS finishing sheets. Given the large volume of SS sheet imported to India, this segment plays a considerable role in shaping the competition in this sector.

At present, product price is the predominant factor considered by customers in choosing SS sheet vendors. Presence of low-cost imports have driven down the prices, impacting the profit margins of both large and small manufacturers. The anticipated change in market, towards sheets with specialized finishes could introduce product differentiation and with it the prospect of a range of premium priced sheets. Although the threat from imports would remain, the capability to supply a wide range of specialized finishes as well as the ability to develop new products as per customer / market specification could act as entry barriers. Established players who has invested in strengthening their product portfolio as well as R&D capability stands to reap the benefit.

This differentiation is most visible in metro coach manufacturing industry. Metro coach manufacturing in India is concentrated among three to four players, who by default forms the entire customer base for SS sheet specifically designed for use in metro coaches. This consolidated industry structure in metro coach manufacturing sector leaves little negotiating room for SS sheet suppliers, limiting their pricing power. On the other hand, the volume of SS sheet procured by these coach manufacturers is very high, which cannot be met by smaller players. The same is true in terms of product quality too, where specialized finishes are demanded. Hence, SS sheet manufacturers with large capacity & a wide product portfolio (with varying finishes) has an advantage, compared to smaller players.

Notable SS Sheet Manufacturers in India	
Panchdeep Metal Corporation	Panchdeep Metal Corporation, based in Mumbai is a leading manufacturer of a variety of SS products, including sheets, rods, pipes, rounds, flats, and coils. The Company services customers in petrochemicals, cement, automobile, oil & gas, and process industry. They are also a supplier to railway industry – for manufacturing of coaches and other components.
Ratnaveer Precision Engineering Limited	Ratnaveer, established in 2000, is a leading manufacturer of SS sheets, washers, hooks, and SS tubes & pipes. The Company's SS sheet product portfolio comprise of a wide range of finishing sheets.
Jyoti Steel India	Jyoti Steel, established in 2010 manufactures SS sheets, metal fasteners, duplex & super duplex steel products. The Company's SS sheet portfolio comprise of Square SS sheet, and SS sheets of variants 316L and 309.
Jindal Stainless Steelway Limited (JSSL)	JSSL is part of Jindal Stainless (India's leading stainless-steel manufacturer). JSSL manufactures and supplies a wide range of stainless steel flat products, including polished sheets to coil products.

Growth Outlook

SS sheet usage has seen a significant growth in the past decade, on the back of novel application in ABC segment as well as emergence of new customer segments like metro railways.

Usage of steel in architecture & building construction was mostly confined to load bearing & structural applications. Usage of specialized products like SS sheet was relatively low. Changes in building design & construction technics have ushered in a change, paving the way for the adoption of SS sheets. While usage of SS sheet as roofing and cladding material has found a ready audience, its usage as a decorative sheet is yet to gain traction.

On the other hand, the growth in metro rail network has presented SS sheet manufacturers with a new customer segment. Given the rapid growth in metro network in the country, this new segment has turned out to be a key demand driver. These two customer segments would continue to be the major demand drivers for this product in the years to come.

Expected growth in demand from ABC segment

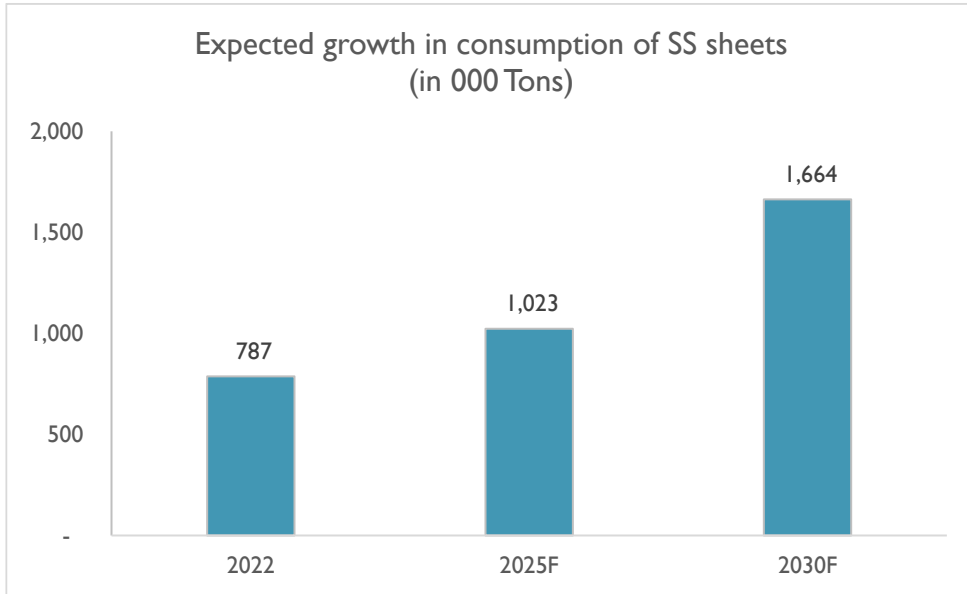
One notable difference would be the increase in product penetration. As the practice of using SS sheet for decorative cladding picks up, the volume of SS sheet consumed by architecture & building construction segment would significantly increase. In addition, the demand would diversify from low value SS sheet to high value SS sheets with specialized finishes. This later development (increase in premium specialized products) would also ensure a strong growth in annual turnover. Apart from this increase in consumption volume due to increase in usage areas, the general growth in office space and retail space would support the future growth in demand.

Expected growth in demand from ART segment

Aggressive expansion of metro rail projects coupled with expansion of existing network would create higher demand for metro coaches. This in turn would ensure higher demand for SS sheet from metro coach manufacturers. Unlike ABC segment, the bargaining power of buyers is high, due to the limited number of buyers. There are only 3 – 4 metro coach manufacturers operating in the country, and SS sheet procurement by these OEMs would be skewed towards established players. This bias is primarily due to the higher production capacity, as well as ability to manufacture a wide variety of SS sheet finishes. Hence larger players have an advantage over their smaller peers.

Thus, the overall demand for SS sheet would continue to remain strong in the coming years. However, the resultant impact on SS sheet manufactures would be different. Smaller players would be better equipped to capitalize on increased demand from ABC segment. Meanwhile the same set of players would find it challenging to cater to the expected demand from specialized customer segments like metro coach manufacturers.

On the back of the higher demand expected from ART and ABC segment, as well as from other segments like process industry & kitchen ware, the annual consumption of SS sheet is expected to exceed 1,020 thousand tons in 2025, and further exceed 1,660 thousand tons by 2030.



Dun & Bradstreet Research, F- Forecast

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SS Washers

A typical washer is a disk-shaped small thin plate that has a hole in the center. There are numerous uses of washers, however it mainly serves as a spacer to absorb a shock and evenly distribute load of a fastener. Washers can also prevent leakage or corrosion, relieve friction, and maintain tension. The size of the hole in the middle of a washer is typically based on the clearance value of the fastener it will be used along with.

Washers are usually metal or plastic and are made in different sizes based on their application. They are made from a variety of materials including stainless steel, carbon steel, zinc, copper, brass, plastic, rubber, fiber, and ceramic. Stainless steel (SS) washers and galvanized carbon steel washers are the most commonly used. While the former offers better strength, the superior corrosion resistance attribute of stainless steel gives it an edge.

Stainless Steel (SS) washers

Stainless steel washers are most used washers applied in fastener assemblies to distribute load from a bolt's top across a wider surface area. Globally, stainless steel washer is a preferred choice for the end-users of washers owing to its numerous positive properties. The notable advantage of stainless steel over other metals is its natural characteristics such as resistance from corrosion and rust, and thus, is most preferred input material for manufacturing washers. Another advantage of SS washer is that they make maintenance tasks much easier, as their load-bearing quality makes the tightening and/or loosening of components hassle-free.

Stainless steel washers are made by the stamping process that uses a die to punch a shape or a form from a flat sheet of stainless steel. Stamping is a fast and smooth process that is capable of manufacturing large number of washers and enables maximum use of metal sheets. Generally, all washer manufacturers attempt to follow standards for manufacturing published by **International Organization for Standardization (ISO)**, in order to maintain the quality of their products and prevention of harm to the environment.

Type of washers

There are mainly three types of washers based on their features and application: **plain washers**, **lock washers**, and **spring washers**. Within each of these types, there are more specialized forms that serve unique purposes.

Plain Washers

Plain washers are the most common type of washers. They distribute the load and protect the object to which the nut or screw is fastened. Moreover, a plain washer can also be used to correct the size difference if the hole is of a larger diameter than the fastener. Plain washers include various other specialized forms that are made for specific purposes. Few of the popular specialized types of plain washers include:

- (i) **Flat washers:** These are flat and circular in shape with a middle hole to accommodate a bolt. The thickness varies according to their application. Flat washers are used for general purposes to distribute pressure or correct size differences of hole.
- (ii) **C-washers:** A C-washer is used where a washer might need to be removed, replaced, or adjusted without removing the fastener. It is similar to a flat washer, but it has a slot cut from the middle hole to form a 'C' shape.
- (iii) **Fender washers:** Fender washers are flat washers with a small hole and relatively large outside diameter. They are commonly used with car fasteners to distribute load over a large surface area.
- (iv) **Countersunk / Finishing washers:** A finishing washer is a type of washer that has a sunken top which helps to catch the fastener. They create a flush surface when secured with countersunk nuts or screws.
- (v) **Torque washers:** A torque washer is similar to flat washer but has a square hole in the middle. It has outer prongs that prevent the bolt from spinning while fastening an object. It is mainly used with a carriage bolt for woodworking.

Lock Washers

Due to various reasons, fasteners carry chances of rotating or disassembling from the assembly. Lock washers secure fasteners from rotating or losing friction. Lock washers are made in different types but all of them work under same principle i.e., they exert a continuous pressure by partially deforming and secures a fastener from loosening. The main types of lock washers include:

- (i) **Split lock washers:** Also known as helical lock washers, split lock washer is a non-continuous circular washer with its designed to bend outwards in opposite directions of each other. When a screw is tightened, split lock washers flatten to add tension to the bolt head against the mating surface to prevent loosening.
- (ii) **External tooth lock washers:** These washers have small prongs along the outside diameter and cylindrical inner diameter. The little prongs are a slightly bent and when the nut is put and tightened on washer, nut gets locked on those prongs. This type of washers is used to lock a fastener into place.
- (iii) **Internal tooth lock washers:** These washers have several little prongs on the inside diameter that bite into the fastener and plain surface on outside diameter. Internal tooth lock washers work well with screws with smaller heads. They are mainly used to lock small-headed fasteners into place.

Spring Washers

Spring washers are metal discs made into an irregular shape to subject the washer to compress under the pressure like a compression spring. They have axial flexibility that enables them to move with vibrations and

thus prevent object from unfastening or loosening. The structure of the washers provides preload between joining surfaces. The specialized forms of spring washers include:

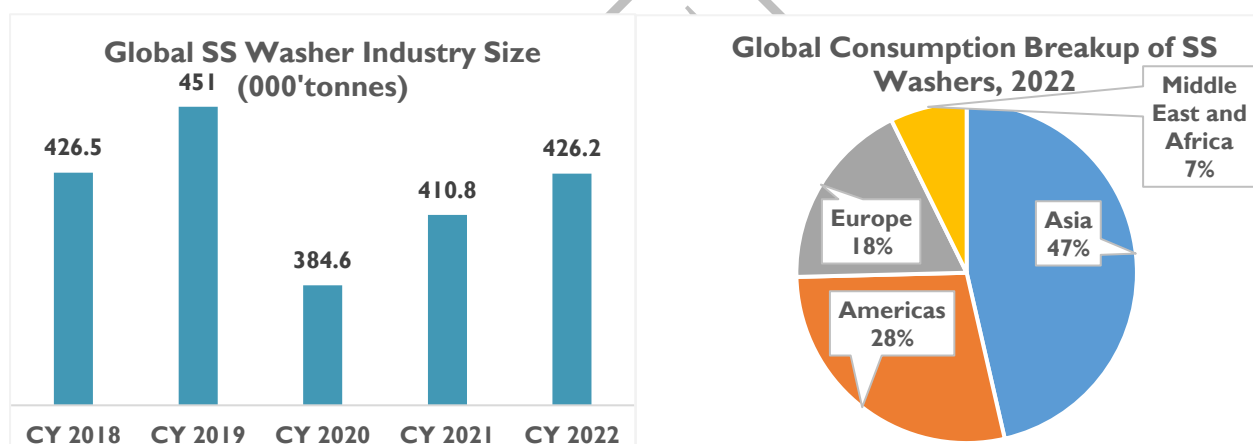
- (i) **Crescent washers:** They are also known as curved washers. Crescent washers look like flat washers that are slightly curved for exerting light pressure and maintaining flexibility. They are mainly used to absorb movement.
- (ii) **Belleville / Conical washers:** These washers have beveled sides and are more like springs than washers. The spring-like properties enable washer to support heavy load with small deflections. They are mainly used in projects that involve thermal expansion.
- (iii) **Dome washers:** These washers look similar to belleville washer but have rounded sides. They can be used wherever crescent spring are used but need to create a flatter surface.
- (iv) **Wave washers:** Wave washers are shaped like a wave and are curved in two directions. This wave-like shape offers moderate pressure capacity and deflection. These washers are used most often as spacers or cushions.
- (v) **Finger spring washers:** Also known as finger disc springs, these washers have curved/bent flanges around the circumference that provide additional spring like qualities. They are used for dampening vibrations and noise.

Apart from these three most widely used types of washers, other types include specialty washers that serve unique and unusual purposes than the traditional washers. They are usually in irregular shape. Such specialty washers may include **square washers** which are used with square-headed bolts and offer a bigger surface than the circular washers, **multiple hole washers** that have more than one continuous hole in order to avoid applying several washers, and other customized washers.

Global Consumption Scenario

SS washer, although a low value product, but is a critical component and are widely used in multiple manufacturing industries, utility sector, infrastructure, and real estate construction, amongst other. Backed by its diversified application, the global consumption of SS washers before falling in 2020 observed a healthy growth of 5.7% in 2019. The global consumption contracted in 2020 by nearly 15% on yearly basis to 384.6 thousand tonnes on the back of Covid-19 induced disruption in economic activity. However, the market demand recovered, and global SS washer consumption registered 6.8% y-o-y growth as industries resumed operation when lockdown and Covid-19 related restriction were relaxed gradually.

In value terms, the revenue from SS washers was estimated to value at ~USD 3,206 in 2022, registering a CAGR of 3.0% between 2018-22. Supported by favorable product attributes, the demand for SS washer is driven by rapid urbanization which has accelerated the pace of the infrastructure developments, real estate construction and industrial production. In line with contraction consumption volume in 2020, the SS washer market in value terms observed y-o-y decline of 13.7% on year basis but with recovering demand from end user's industry, the global SS washers expanded by 12.9% in 2021 followed by 8.4% y-o-y growth in 2022.



Sources: Based on inputs from a primary Survey

Geographically, Asia emerged as the fastest growing region as well as the largest consumer of SS washer in CY 2022. Asia's SS and Middle East & Africa washers consumption grew at CAGR of nearly 22% and 0.3% while consumption in other region such as Americas, Europe, contracted at CAGR of 0.8 and 0.9% respectively. Aftermath of Covid-19 pandemic observed in 2020 led to a fall in consumption demand for SS washers in the these two regions as industrial activity in major end user industries such as automobile and other manufacturing industries, infrastructure, and construction was impacted due to Covid-19 led disruption. However, recovering global GDP led by resumption in economic activity across many major sectors supported the SS washer consumption growth in 2022 across all the regions.

Geography-wise SS washers Consumption Volume (Growth trend)

Regions	2020	2021	2022	CAGR 2018-22
Asia	-13.9%	7.8%	3.7%	22.4%
Europe	-15.6%	5.7%	3.2%	-0.9%
Middle East & Africa	-14.3%	7.2%	3.7%	0.3%
Americas	-15.5%	6.0%	3.1%	-0.8%

Sources: Based on inputs from a primary Survey

Production Scenario

On supply side, the global production of SS washer was estimated at ~507 thousand tonnes valuing USD 3,651 Mn in 2022 with nearly 69% of production concentrated in Asia region followed by America, Europe, and Middle East & Africa region accounting for respective share of 15.6%, ~12.8% and 2.6%. In terms of consumption and production, the global SS washer industry had a production surplus of 81 thousand tonnes where Asia with China being a global manufacturing hub emerged as a production surplus region while other region remained a consumption surplus region. Below table represent region wise demand supply gap situation:

SS Washers Volume in '000 Tonnes in 2022

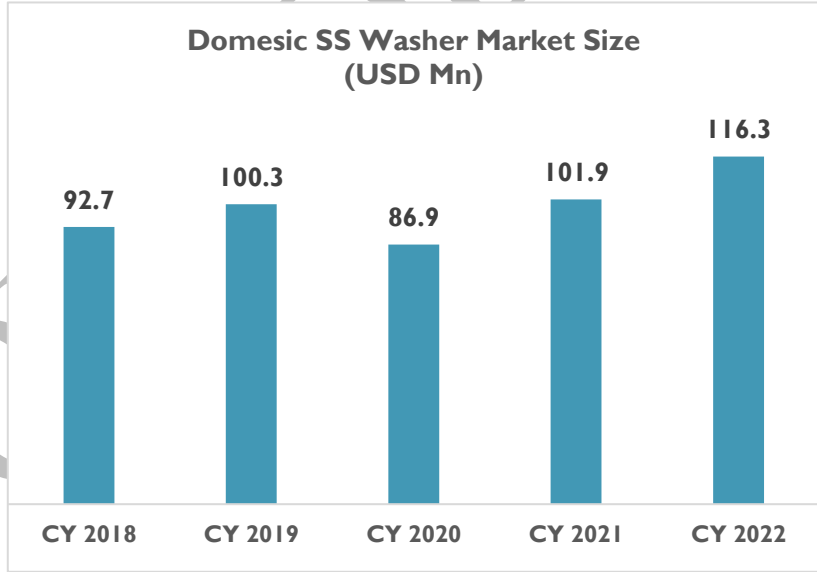
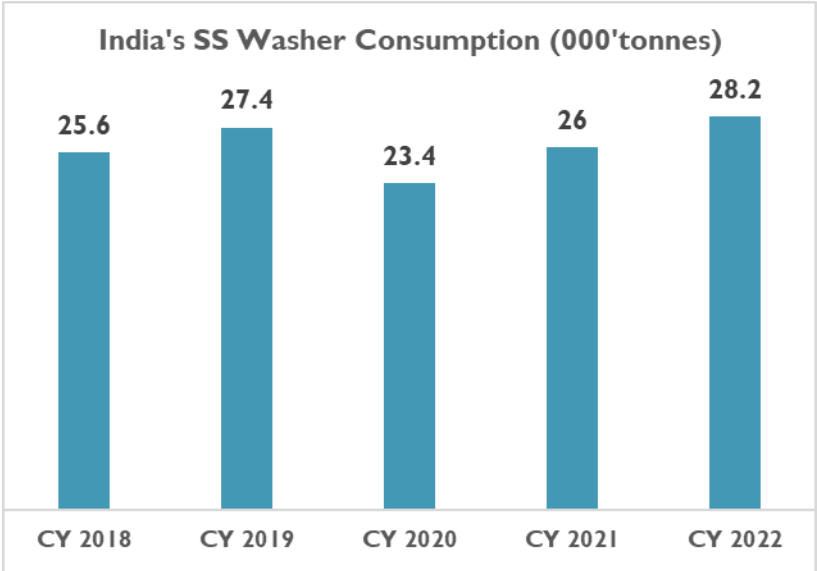
Region	Production	Consumption	Demand Supply Gap
Asia	349	189.2	-159.8
Europe	65	83.9	18.9
Middle East and Africa	13	30.7	17.7
Americas	79	121.2	4.9

Sources: Based on inputs from a primary Survey

Indian Consumption Scenario

Annual SS washer consumption in India surpassed Covid-19 consumption in 2022 to 28.2 thousand tones from the record decline in 2020. Between 2018-22 India's SS washer consumption is estimated to have grown at a flat CAGR of 2.4%. Barring a record decline in 2020 due to Covid-19 pandemic induced depressed market sentiment, the domestic consumption of SS washers registered healthy yearly growth of 7% in 2019 when the domestic consumption touched 27.4 thousand tonnes.

In 2022, the country's SS washers consumption registered 8.5% y-o-y growth preceded by 11% y-o-y growth from previous year. Rising consumption in 2021 is backed by resuming demand recovery in the major end user industries. Incremental demand originating from automobile particularly EV segment, infrastructure and real estate construction, water transportation mainly driven by Jal Jeevan Mission, industrial application, and sharp push to green energy sector especially solar energy has supported the growth of SS washers industry.



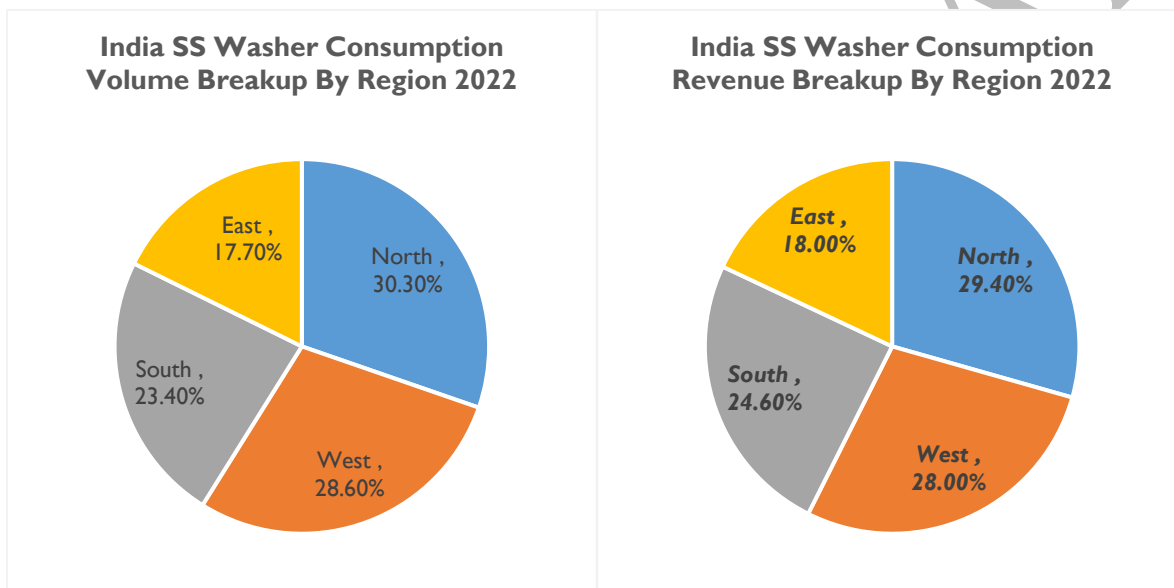
Sources: Based on inputs from a primary Survey

In value term, the domestic consumption of SS washers is estimated to have grown at 5.8% CAGR between 2018-22 to reach USD 116.3 Bn in 2022. Annually, the domestic consumption in value term estimated to have registered 13.2% decline in 2020 in line with falling demand. In 2020, the outbreak of Covid-19 in 2020 had a negative impact on the India SS Washers market owing to the lockdown and subsequent supply chain

disruptions, along with delays in production processes. However, the market recovered in 2021 with the gradual resumption of manufacturing and economic activities and registered yearly growth of 11%.

Regional Breakup

Northern region closely followed by western region have garnered majority share both in terms of consumption volume and value on account of its large population and presence of industries. Gurugram and Manesar in Haryana have the largest automotive manufacturing industry of Maruti Suzuki coupled with Noida and Gurugram as the major corporate hubs in the northern region with the greatest number of office space have support the demand for SS washers.



Sources: Based on inputs from a primary Survey

In western region, rapidly growing construction and industrial sector in Gujarat and Maharashtra coupled with highest foreign direct investment inflow in these states in 2019-2022 where Gujarat accounted for about 37% of the country’s total FDI followed by Maharashtra accounting for about 27%. Moreover, Gujarat and Maharashtra are the states with largest number of manufacturing and automotive industries in the country which supports high share of western region in the SS washer’s consumption.

India Production Scenario

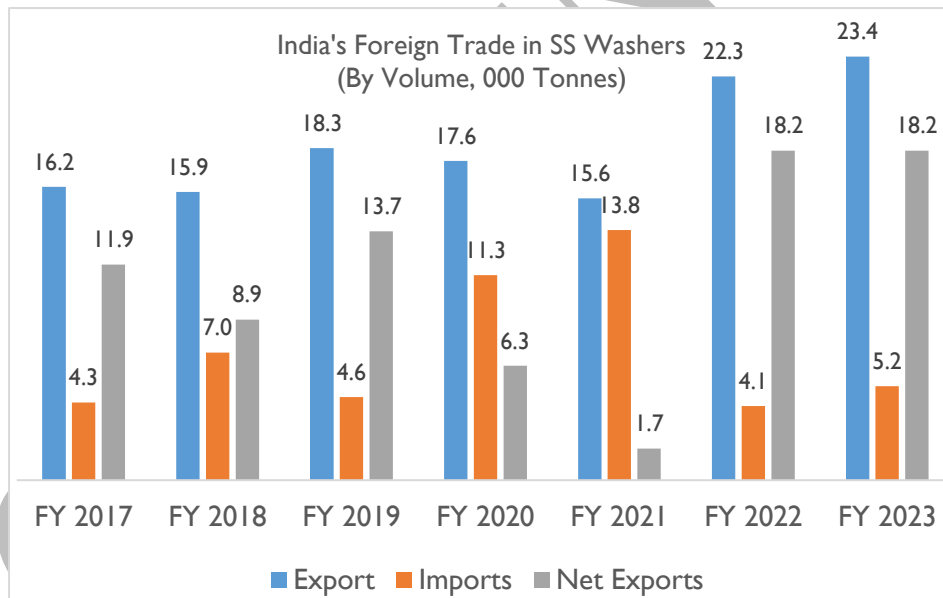
India’s annual production volume was estimated at 33.9 thousand tons with production turnover valuing at USD 133 Mn in 2022. The government initiatives like “Make in India”, Atma Nirbhar Bharat and “Production Linked Incentive” scheme are significantly supporting the market growth. These scheme aims to enhance skill development and create best infrastructure in India and push the industrial sector across the country. Furthermore, the government is focused to make India a manufacturing hub and towards this, the government is developing industrial corridors spread across the country.

In terms of industrial park penetration, **Maharashtra leads the other states with having presence of 728 industrial parks** followed by **Karnataka, Andhra Pradesh, and Rajasthan with 539, 400 and 370 industrial parks, respectively**. Growing development of industrial plant is expected to support the domestic consumption of SS washer. It will also help the industry to evolve as a leading producer and export of SS washers in the world.

Foreign Trade

Trade Volume

In terms of volume, India remained a net exporter of SS washers during the period FY 2017-23, with annual export volume increasing from 16.20 thousand tonnes in FY 2017 to 23.4 thousand tonnes in FY 2023, registering a CAGR of 6.3% during the period. After witnessing a 12% decline in FY 2021 amidst weak global demand owing to Covid-19 induced depressed market sentiment, SS washer export volume observed healthy y-o-y growth of 43.2% in FY 2022 but the growth slowed down to 5% in FY 2023 over uncertain global sentiments related to recessionary fears and the Russia – Ukraine war.

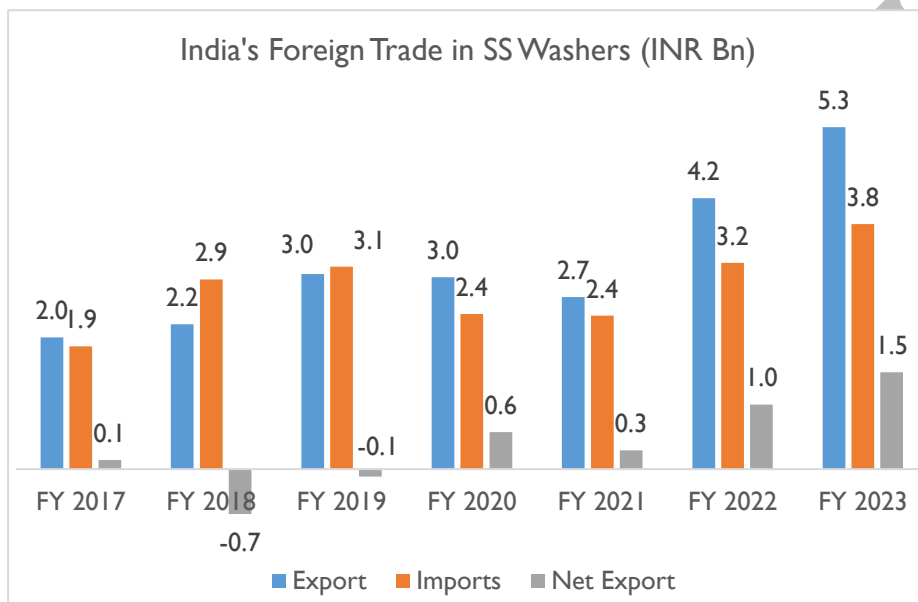


Source: Ministry of Commerce & Industry, Trade Statistics

During FY 2017-23, India's SS washer imports have grown by a CAGR of 3% in terms of volume. However, on y-o-y basis, annual imports are estimated to observe a sharp decline of nearly 70% in FY 2022. This decline in import can be attributed to expanding domestic manufacturing which has accelerated the export volume and translated in declining import volume. However, imports picked up in the corresponding year recording 27% growth in FY 2023 over the previous year.

Trade Value

In terms of value, India remained a net exporter of SS washers in FY 2022. India's export revenue from SS washers grew at a CAGR of 17.2% while its import bill grew at a CAGR of 12.2% during FY 2017-23. In absolute terms, the export value reached INR 5.3 billion whereas import bill reached INR 3.8 billion in FY 2023. On y-o-y basis for FY 2023, the country's SS washers export revenue grew by 26.2% against 57.5% growth in the previous year. On the other hand, import bill increased by 18.8% y-o-y in FY 2023 against 34.5% growth in the previous year. India's net trade position has been growing consistently since FY 2021.



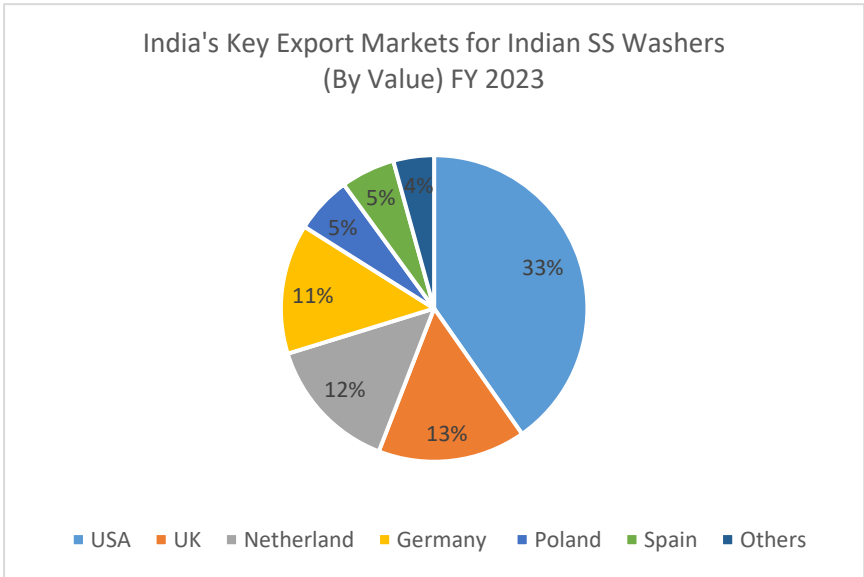
Source: Ministry of Commerce & Industry, Trade Statistics

In FY 2022, even with falling import volume, the SS washers import bill grew by 34.5% which can be attributed to depreciating rupee value translating in higher landing cost of imports. On a contrary, the import volume surged in FY 2021 by 22% but import bill decreased by 1% which can be attributed to appreciating rupee value during the year. In FY 2022, rupee depreciated by 3.5% against dollar against 3.4% gain in the previous year. In FY 2023, the rupee continued its fall as it depreciated by nearly 8% and impacted the value of imports which increased by 18.8% over the previous year.

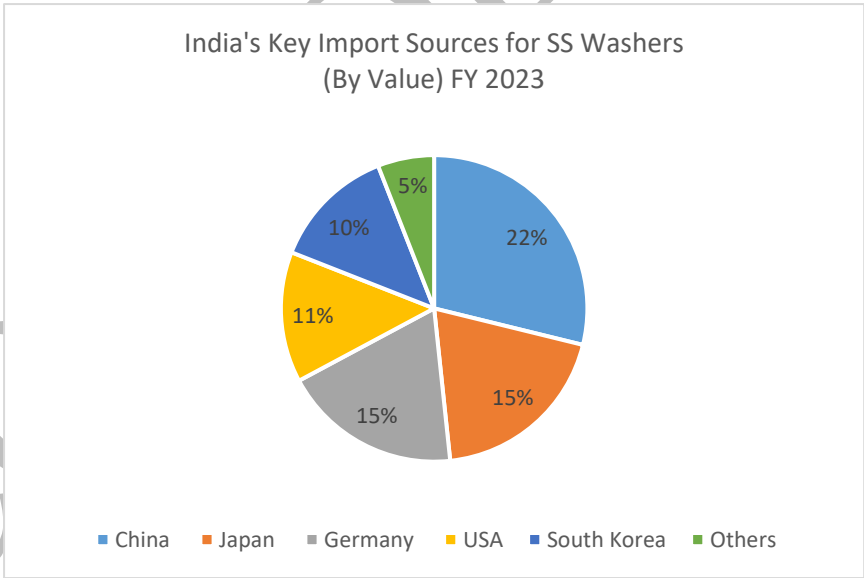
Major Trading Partners

India's export market for SS washers is diversified with the country exporting SS washer to nearly 155 nations. In FY 2023, USA continued to remain India's largest export market with 33% share in the total SS washer exports. Export of SS washers to the US market has steadily grown at a CAGR of nearly 36% during FY 2018-23 to reach the value of INR 1.74 billion from the level of INR 0.37 billion in FY 2018. As a result, the share of USA in India's SS washer export has increased from 17% to 33%.

UK, Netherland, Germany, Poland and Spain were the other major export markets for SS washers in FY 2023. However, UK's share in India's SS washer exports has gradually declined from 19.5% in FY 2018 to 13% in FY 2023. Together, these top five countries accounted for nearly 82% of the total SS washers' exports in FY 2023.



Source: Ministry of Commerce & Industry, Trade Statistics



Source: Ministry of Commerce & Industry, Trade Statistics

For Imports, China's has emerged as the largest import source of SS washers for India followed by Japan and Germany in FY 2023. Previously, South Korea and Japan were India's largest import sources in FY 2018 (19.24% in SS washer imports to India), but gradually it has lost its share to other major markets such as China and Germany.

China's share in SS washer import to India has increased from 8.8% in FY 2018 to 22% in FY 2023. In absolute terms, its import to India has increased at a CAGR of nearly 26% during FY 2018-23 to reach INR 857 million in FY 2023. During the last three years, Japan has emerged among the top two largest import source of SS washers for India with the share of nearly 15% in total imports to India. Similarly, Germany's share in India's total SS washer imports has increased from 10.2% in FY 2018 to 15% in FY 2023, growing at a CAGR of nearly 9% to reach INR 579 million in FY 2023 from INR 299.9 million in FY 2018.

Indian Government, in a notification dated 7 September 2017, communicated the imposing's of counter veiling duty (CVD) on import of stainless-steel hot rolled and cold rolled products from China, for a period of five years. This was culmination of an enquiry by the Directorate General of Anti-Dumping and Allied Duties, in response to an increase in import of low / subsidized price SS flats from China. Although the measure focuses on import of SS tubes & pipes, it can be construed as an indication of the Government to protect the domestic steel industry, against cheap imports.

The CVD investigations were initiated on 12th April 2016 by the Directorate General of Anti-Dumping and Allied Duties (DGAD) in response to a surge in subsidized imports of stainless-steel flat products. These imports were distorting the domestic market, which was under huge stress and was leading to financial stress in the industry. Extensive investigations were carried out by DGAD and the final findings were issued by the DGAD vide notification dated 4th July 2017.

Following are the details of the duty imposed:

Heading	Description of Goods	Country of Origin	Country of Export	Producer	Exporter	Duty as % of Landed Value
7219 or 7220	Flat-rolled products of stainless steel*	China PR	China PR	Any	Any	18.95%

**Flat-rolled products of stainless steel, whether hot rolled or cold rolled of all grades/series; whether or not in plates, sheets, or in coil form or in any shape, of any width, of thickness 1.2 mm to 10.5 mm in case of hot rolled coils; 3 mm to 105 mm in case of hot rolled plates & sheets; and up to 6.75 mm in case of cold rolled flat products. Product scope specifically excludes razor blade grade steel.*

Prior to this, the anti-dumping duty was already in place on:

- Hot-rolled austenitic stainless steel flat products; whether or not plates, sheets or coils (hot-rolled annealed and pickled or black) of rectangular shape; of grade either ASTM 304 or 304H or 304L or 304N or 304LN or EN 1.4311, EN 1.4301, EN 1.4307 or X5CRN11810 or X04Cr19Ni9, or equivalents thereof in any other standards such as UNS, DIN, JIS, BIS, EN, etc.; whether or not with number one

or black finish; whether or not of quality prime or non-prime; whether or not of edge condition with mill edge or trim edge; of thickness in the range of 1.2mm to 10.5mm in Coils and 3mm to 105mm in Plates and Sheets; of all widths up to 1650 mm (width tolerance of +20mm for mill edge and +5mm for trim edge). (Custom Notification No. 28/2015- Customs (ADD) dated 05/06/2015).

- Cold-rolled flat products of Stainless Steel of width of 600 mm up to 1250 mm of all series not further worked than cold-rolled (cold-reduced) with a thickness of up to 4 mm (width tolerance of +30 mm for mill edged and +4 mm for trimmed edged)

The sunset review of above investigation was initiated on 8th October 2021. The Authority called for responses from all interested parties including importers and exporters. In the notification dated, 21st December 2022, additional time till 29th December 2022, had been granted to all interested parties¹⁷.

Key Demand Drivers

Washers are primarily used as spacer to absorb a shock and evenly distribute load of a threaded fastener. The versatile applications of washers along with various engineering products such as nuts, bolts, and fasteners used in almost every industry has supported the demand for washers. Amongst several type of washers available, washers made from SS steel are the most widely used material in washers. These are widely used in automobile industry, residential, commercial and infrastructure construction and in several other manufacturing and utility sector. SS washers with having better corrosion and chemical resistance are commonly used in a salty environment like saltwater, chlorine, coastal area. In industrial sector, SS washer thus find diversified application specialty chemical, petrochemical, power, industry. sea water equipment, and many other engineering applications.

A brief overview and outlook of leading end user industries for SS washer is presented below to gauge the evolving demand scenario of SS washers in India.

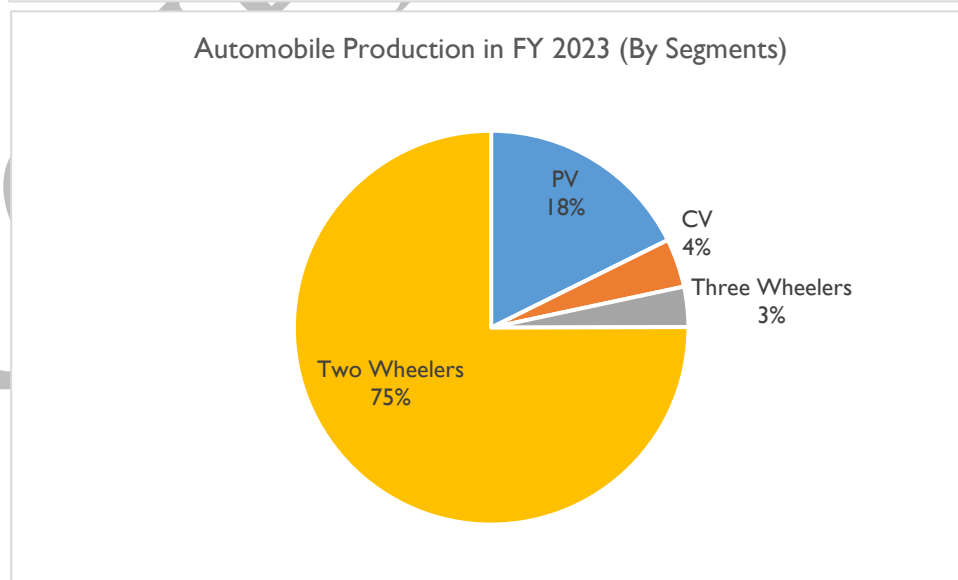
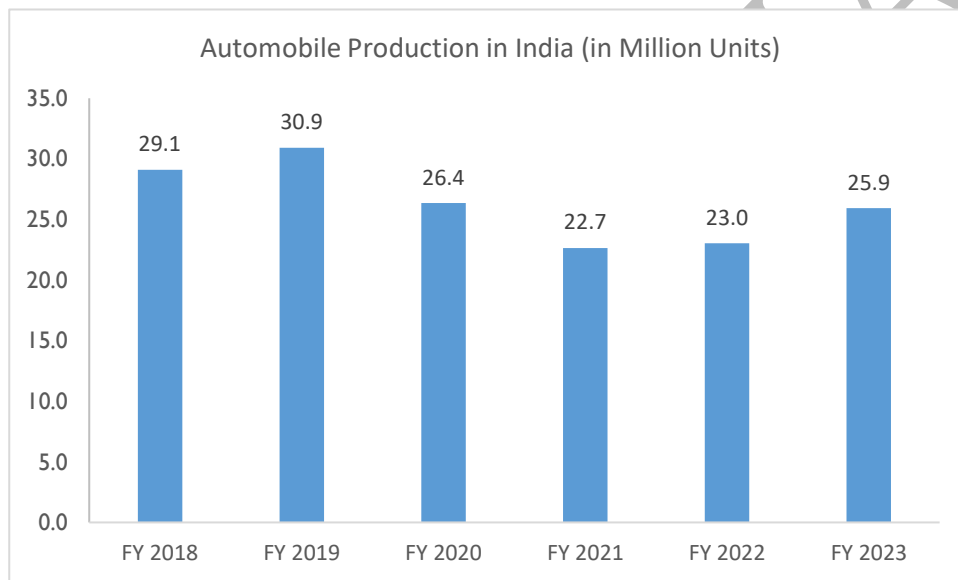
Automobile Industry

Auto and auto component manufacturing is a key economic sector, contributing to nearly 2.3% to the nation's Gross Domestic Product (GDP), 25% to the national manufacturing GDP, and 4% to overall annual exports. The sector employs nearly 5 million people, underlining its importance to the industrial sector. Development in the automobile sector has strong backward and forward linkages. It governs the fortune of several industries in manufacturing segments including iron & steel and its allied metal product like SS washer.

The rise in automobile production and sale in India over the last couple of decades have translated into positive demand for SS washers in automobiles. Apart from the natural growth in demand due to rise in

¹⁷ Directorate General of Anti-Dumping and Allied Duties have not updated the status post 29th December 2022

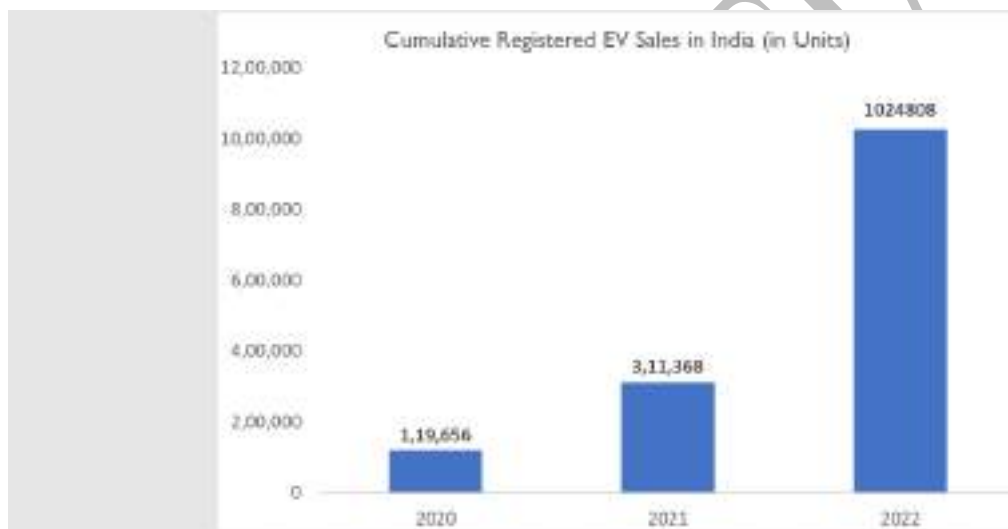
automobile production, the regulatory changes that is happening across global automobile industry too have positive implication on increasing usage of stainless steel in the sector. The industry associations are pushing for a sustainable development of domestic automobile industry and aims to evolve India a global destination of choice for design and manufacturing hub of automobile. Thus, industry stakeholders are proactively working to enhance the competitiveness of the domestic automobile industry by reducing cost of vehicles, increasing productivity, and achieving global standards of quality. The stringent norms and efficiency standards are thus forcing automobile manufacturers to increase the proportion of special stainless steel used in vehicles. The high strength to weight ratio, high durability, tolerance, and good corrosion resistance attributes have also contributed to an increasing usage of stainless steel in automobiles.



Source: Society of Indian Automobile Manufacturers

The overall domestic production surged to 30.9 Mn units in FY 2019 before plummeting for two consecutive and then witnessed a growth of 1.2% in FY 2022 with 22.9 units. Production improved further in FY 2023, to reach 26 million units.

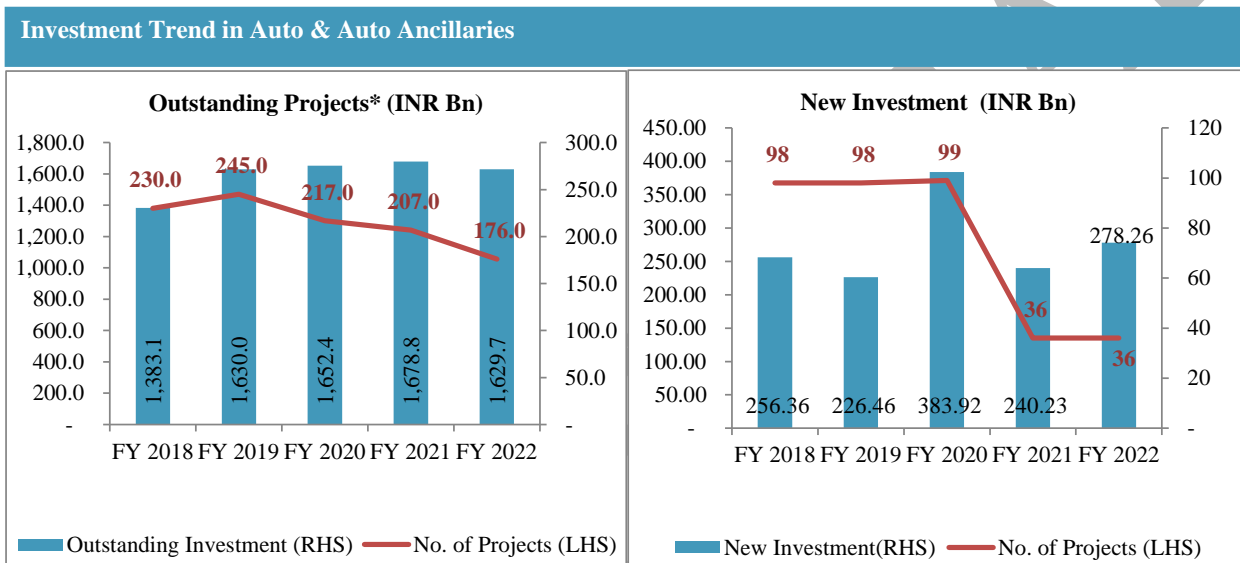
The COVID-19 pandemic worsened the vehicle demand in FY 2021 as industry lost 2 months in FY 2021 because of Government enforced lockdown. During FY 2022, the overall industry production of ICE-based vehicle registered flat growth of just 0.01% on account of 3% decline in two-wheeler segment which impacted the overall production volume while domestic sales in other segments recovered.



Sources: Dun & Bradstreet Desk Research

On contrary, the moderating production volume in overall ICE based vehicle is compensated by shift towards EV in India. During Jan-Dec 2021, cumulative EV sales in India touched 10,24,808 units which was 229% higher compared to the corresponding period last year. NITI Ayog, has revealed its plan of achieving 100% electrification target in two-wheeler space by 2026, for which the agency is working in partnership with private sector. Given the track record of EV sales in India, chances of achieving these targets by 2030 looks slim. Since then, the Government has scaled down this 100% electrification target to 30%, on the face of resistance from automobile industry players. If India achieves the 30% electrification target by 2030, that will result in Indian EV stock crossing 100 million units. To achieve this goal, it is estimated that nearly USD 190 – 200 Bn of investment is required across vehicle manufacturing, charging infrastructure, and battery manufacturing which will support the SS washers consumption too.

Policies such as Automobile Mission Plan 2016-26 Phase-II, Faster Adoption & Manufacturing of Electric Hybrid Vehicles (FAME) Scheme (I & II) and most recently introduced the PLI scheme for automobile and auto components would result in increasing demand for stainless steel washers (owing to their large-scale usage in automobile production). Together, these policies have helped in improving the manufacturing practices, quality standards, and efficiency standards in Indian automobile industry while vehicle Scrappage Policy 2021 it is likely to encourage new vehicle purchases thereby domestic automotive market and benefitting allied industries. Substantial outstanding investment and increase in announcement of new projects in auto and auto ancillaries augurs well for the SS washer industry in India.



Construction

Corrosion resistance, and long lifespan have all led to wide acceptance of SS washers in construction sector application. Infrastructure development, and a surge in real estate construction (residential & commercial) have created a high demand for SS washers. In past, the boom in construction which accompanied the strong economic growth in the country have supported the rising consumption of SS washers.

However, the sector has been severely hit by the occurrence of COVID-19 pandemic which has turned the overall business sentiment pessimistic. The construction activity in India have moderated over the last few fiscals due to combination of factors such as liquidity squeeze, higher cost of capital, delay in project clearance and bottlenecks in execution. In FY 2021, the construction sector severely impacted by Covid 19 Pandemic and where Construction sector GVA contracted by 8.6% against subdued 0.98% change in the previous year. In FY 2022, as per the government advance estimate, construction sector GVA is expected to expand by 10.7% on y-o-y basis, owing to government’s increased on infrastructure projects and increasing demand for

residential and commercial segments post pandemic. The real estate and professional services segment are estimated to register 4% growth in FY2022

Favorable policies such as 100% FDI under automatic route in the construction industry is permitted in completed projects for operations and management of townships, malls/shopping complexes, and business constructions which would thereby boost the growth of construction sector in India. The growing construction of malls, hotels, office spaces and residential units would generate demand for stainless steel washers thereby resulting in growth of the market in India in coming years.

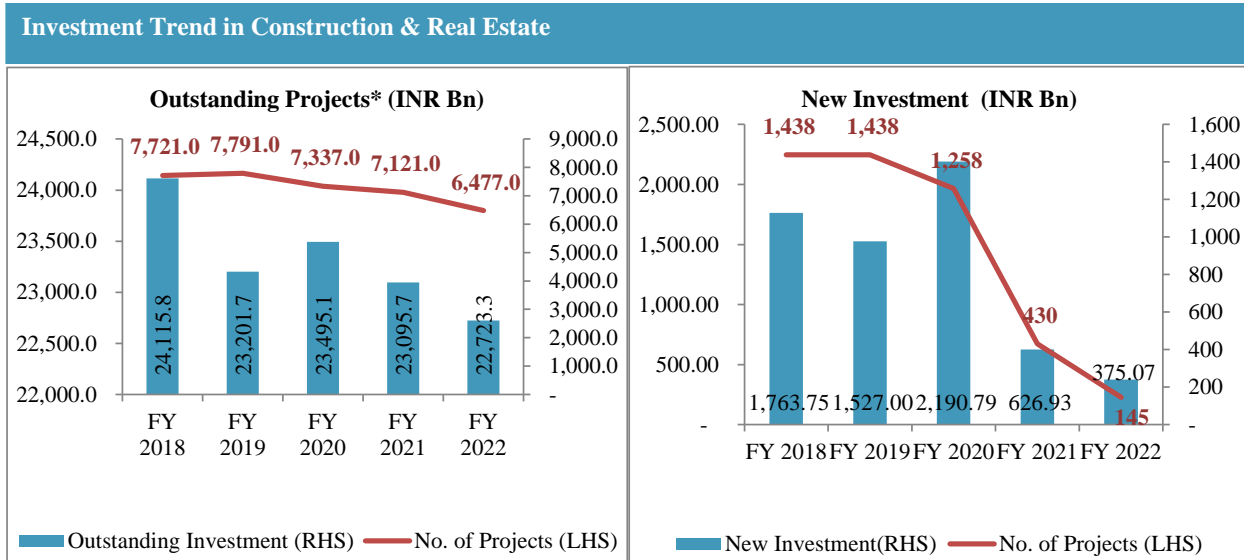
In residential space, new launches increased by around 9% y-o-y with about 150,000 units recorded in 2022 across the top seven cities. Additionally, sales of residential units witnessed an increase of 5% with over 135,000 units sold in 2022. The government initiatives including **Pradhan Mantri Awas Yojana** to prioritize affordable housing segment is contributing the sale of residential units in the country.

India	2021	2022	y-o-y Growth %
New Launches	139,256	150,000	8%
Sales	128,282	135,000	5%

Cities	New Launches (In Units)		Residential Sale (In Units)	
	H2 2022 (YoY change)	2022 (YoY change)	H2 2022 (YoY change)	2022 (YoY change)
Mumbai	42,968 (26%)	90,434 (29%)	40,969 (19%)	85,169 (35%)
Bengaluru	22,197 (29%)	43,420 (42%)	26,686 (15%)	53,363 (40%)
NCR	34,507 (96%)	63,233 (207%)	29,359 (24%)	58,460 (67%)
Pune	21,247 (6%)	38,640 (-5%)	21,613 (9%)	43,410 (17%)
Chennai	7,846 (7%)	15,416 (21%)	7,297 (18%)	14,248 (19%)
Hyderabad	22,491 (18%)	43,847 (23%)	16,353 (32%)	31,046 (28%)
Kolkata	5,644 (6%)	12,330 (64%)	5,819 (-37%)	12,909 (-10%)
Ahmedabad	10,424 (24%)	20,809 (42%)	5,865 (25%)	14,062 (58%)
All India	167,323 (30%)	328,129 (41%)	153,961 (15%)	312,666 (34%)

- In terms of sales, Mumbai, Bengaluru, and Delhi NCR accounted for about 63% of sales with Mumbai dominating the yearly sales of residential units acquiring about 27% of total share in 2022.

- Mumbai topped the new launch segment as well with about 28% of total new launches across seven big cities of India in the year 2022. Mumbai, Bengaluru, and Delhi NCR accounted for 60% of the total new launches in 2021.



Even though the new project announcement has declined sharply, the outstanding investment value in construction sector and new project announced value is substantial which is likely to have a favorable impact on the SS washer application in construction space. India residential sector has been witnessing a significant increase in demand in 2022 and is estimated to witness 5% capital value growth in 2022

India's Upcoming office projects

State	State Name of the Project	Expected Completion
Bengaluru	<ul style="list-style-type: none"> • UB City • Tata Business Park 	<ul style="list-style-type: none"> • 2023 • 2023
Chennai	<ul style="list-style-type: none"> • Infiniti Towers • Equitas IT Park • DLF Downtown Phase I 	<ul style="list-style-type: none"> • 2023 • 2023 • 2023
Delhi-NCR	<ul style="list-style-type: none"> • The 9X Business District • DLF Cyber City Phase 3 	<ul style="list-style-type: none"> • 2023 • 2023
Hyderabad	<ul style="list-style-type: none"> • SAS Downtown • Phoenix Triton 	<ul style="list-style-type: none"> • 2023 • 2023
Kolkata	<ul style="list-style-type: none"> • The 42 • New Town IT Hub 	<ul style="list-style-type: none"> • 2023 • 2023
Mumbai	<ul style="list-style-type: none"> • Cyber City • One BKC • Centarus • Oberoi Commerz 3 	<ul style="list-style-type: none"> • 2023 • 2023 • 2023 • 2024
Pune	<ul style="list-style-type: none"> • One Alpha • The Orion • Tata Business Park 	<ul style="list-style-type: none"> • 2023 • 2023 • 2023

Solar Industry

SS washer also find significant application in solar panel mounting system, racking and installation. Solar grounding washer SPC-GW-25 made in stainless steel are preferred during to its durability. Thus, investment in solar industry towards solar panel to support solar industry expansion present promising opportunity for the SS washers industry.

Major Highlight of Solar Industry

Solar power is the largest component of RES capacity in India, accounting for nearly 46.3% of total RES installed capacity as on 1st January 2023. Capacity addition in solar power segment has happened at a brisk pace increasing from just under 1 GW as on 1st April 2012 to nearly 64 GW as on 1st January 2023.

Solar Power Generation in India: Growth in Installed Generation Capacity						
As on	1 st April 2012	31 st March 2018	31 st March 2020	31 st March 2021	31 st Oct 2022	31 st Mar2023
In GW	0.94	21.65	34.63	40.08	61.6	67.1

Source: Central Electricity Authority

Although India’s solar installations have grown almost tenfold from about 3 GW in FY 2014 to about 67.1 GW as on 31st March 2023, the growth in India’s solar capacity has been driven mainly by imported PV modules that enjoy nearly 90% share, as their costs are up to 30% lower. The manufacturing process of solar cell/module starts from silicon-polysilicon-ingots-wafers-cells-module. However, India currently produces only cells and modules with imported material. Solar cells are imported primarily from China, Malaysia, Singapore and Taiwan. **Domestically, India has about 3 GW of cell and 9-10 GW of module manufacturing capacity. However, only 2.3 GW and 5.5 GW of it, respectively, are actively in use while the annual requirement for the next 10 years is estimated around 30 GW, necessitating imports.** The industry lacks economies of scale, and R&D investment has also been insufficient. India’s investments in technological know-how remain low compared to other developed nations and China. The ministry of new and renewable energy’s scheme of incentivizing developers to set up manufacturing units is struggling to take off as the industry reels under the impact of the safeguard duty.

To push domestic manufacturing, India has announced to impose 25% Basic Customs Duty (BCD) on Cells & 40% BCD Modules effective from 1st April 2022. The customs duty will replace a 15% safeguard duty currently imposed on imports from China and Malaysia. The development follows the government announcing a production-linked incentive (PLI) scheme that offers manufacturers in 10 sectors, including those of high-efficiency solar modules, a total benefit of ₹1.97 trillion.

Solar Energy Target

Aggressive push for clean technology for sustainable development adopted by the Government to achieve the twin objective of reduction of carbon footprint as well as to reduce dependency on hydrocarbon-based power generation will continue to augment growth of the renewable energy sector. The Govt. has committed to reduce carbon emissions by 30% to 35% and increase renewables to 40% of the energy mix by 2030. Progressing with bullish approach on renewables, India has raised 450 GW of renewable energy by 2030. Moreover, a significant portion of new power installations will continue to come from renewables led by solar. Of the FY 2030 target, 280 GW of total 450 GW would come from solar power. To achieve the pledged target, around 25 GW of solar energy capacity is needed to be installed every year, till 2030.

Year	Solar	Total RES
2022	100	175
2030	280	450

Source: Ministry of New and Renewable Energy, RES- Renewable Energy Sources

The domestic manufacturing of solar part is likely to benefit several government initiatives that have been announced in the past such as production-linked incentive (PLI), domestic content requirement for CPSU scheme and KUSUM scheme. Additionally, recent announcement pertaining to BCD on solar cell and module will also help with augmenting domestic manufacturing thereby pushing SS washer application in solar sector.

Water Resource Infrastructure

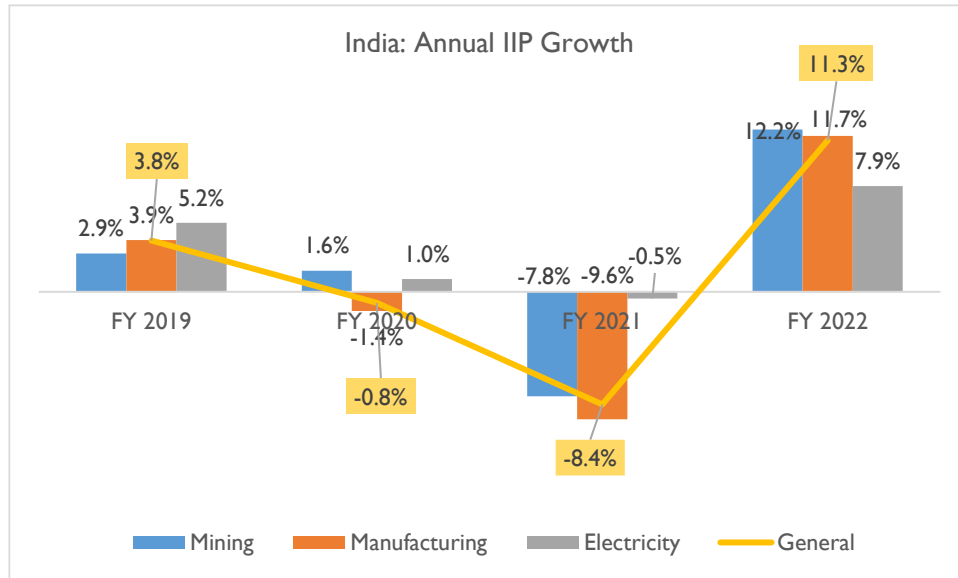
The government announced to launch The **Jal Jeevan Mission (Urban)** which aims at universal water supply in all 4,378 Urban Local Bodies with 28.6 Mn household tap connections, as well as liquid waste management in 500 AMRUT cities. It will be implemented over a period of 5 years, with an outlay of INR 2,870 Bn.

In the wake of drying conventional surface water and growing freshwater demand from various end-user segments, India is rapidly progressing towards a *water scarce nation* from *water stressed nation*. Consequently, the nation is exploring and investing in various water treatment technologies to support the nation's increasing freshwater demand for potable use. Since, SS washers possess better chemical resistance, their usage in wastewater treatment and water desalination industry is expected to grow in the wake of substantial investment planned to secure the supply of drinking water in India. As per industry sources, the size of India desalination plant valued at USD 830 Mn in 2018 and is projected to grow at a CAGR of 9% to reach USD 1.4 Bn by 2024. Many new desalination plants have been proposed to be set up in various states in coastal regions such as Chennai, Gujarat, Mumbai and Andhra Pradesh.

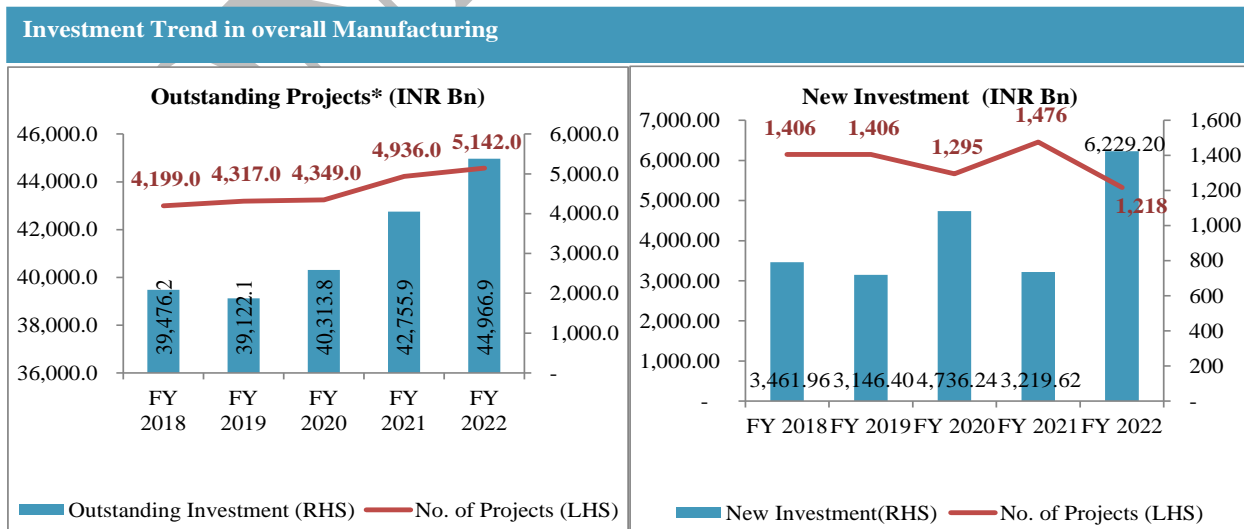
Besides water desalination, the government has also announced to launch The **Jal Jeevan Mission (Urban)** which aims at universal water supply in all 4,378 Urban Local Bodies with 28.6 Mn household tap connections, as well as liquid waste management in 500 AMRUT cities. It will be implemented over a period of 5 years, with an outlay of INR 2,870 Bn.

Industrial Sector Growth

Rapid industrialization in Indian economy, aided by favorable government policies, robust demand scenario, and penetration of export markets have led to capacity expansion in Indian manufacturing industries including automobile, chemical, electronics, pharma, oil & gas, fertilizers and many others. The resultant increase in demand for plant and machinery has had an equally strong demand for components used in manufacturing these equipments including SS washers.



Industrial sector performance as measured by IIP index exhibited recovery in FY 2022 and registered 11.3% y-o-y growth as the economic activity resumed operations across all sectors backed by supportive government measure to revive economic growth. Prior to FY 2022, industrial growth observed a fluctuation and registered -0.8% decline in FY 2020 and even as steeper fall in FY 2021 on the back of Covid-19 pandemic. Decline in manufacturing activity was steepest. Historically, weak manufacturing sector growth have forced manufacturers to reduce production volume as well as put capacity expansion plans on hold. This generic slowdown in industrial sector is believed to have a cascading impact of various input and component that support the manufacturing and overall industry activity. The contracting industrial activity thus impacted the SS washers consumption in India which fell by nearly 15% in 2020. However, with recovering industrial sector activity in FY 2022, the SS washer in India is poised for a healthy growth in 2022.



Sources: CMIE Capex

Steady increase in outstanding investment and sharp increase in new projects value in overall manufacturing sector presents favorable opportunity for the SS washer industry in India.

Competitive Scenario

Washers' industry in India is highly fragmented in nature comprising large number of small players. Washer's manufacturing companies use various metals such as steel, copper, Aluminium, and rubber for manufacturing different types of washers. Among these, the most preferred washers, by domestic as well as global end-users, are stainless steel washers due to their corrosion and rust resistance properties. Generally, all washer manufacturers attempt to follow standards for manufacturing published by International Organization for Standardization (ISO), to maintain the quality of their products as per global standards and prevent any harm to the environment.

Within the washer industry, SS washers holds a distinguished position due to its numerous product attributes. These include resistance to corrosion, superior protection from abrasion & friction, and ability to retain mechanical properties at extreme temperatures. In addition, the recyclable nature of stainless steel gives it an advantage over other metal types. All these applications make SS washers ideal choice for demanding application, where other washers do not fare well.

However, the superior performance of SS washers can be attained only by ensuring high quality stainless steel as well as standardized manufacturing process. Availability of a steady supply of stainless steel is an integral factor. It is here the established players have managed to create an advantage, as well as maintain it. By means of backward integration as well as recycling of waste stainless steel produced during the manufacturing process, they have managed to create a steady supply of raw materials. This in turn have helped in creating a niche position in the washer industry.

These attributes meant SS washer is considered more as a value-added product, compared to other metal washers. The specialized product application also helps SS washer command higher price compared to other metal washers.

Apart from a mass production of generic washers, few industry players – mostly organized players – also produce customized washers for specific purposes according to the customer requirements. The Indian washer industry not only fulfils major portion of domestic washer's demand but is also one of the major exporters of different types of washers of global standards.

Globally, China has predominantly been the largest manufacturer and supplier of washers in the world. However, the aftermath of Covid-19 has brought some noticeable changes in the global-supply chains owing to the worldwide anti-China sentiment. Like other industries, this is the most opportune time for washer

manufacturers in India to focus on enhancing their production capabilities and capture a significant share in global market.

The biggest challenge for the industry is the rising cost of key input materials such as stainless steel, copper, aluminum, and other metals. Few large companies have undertaken backward integration in order to reduce dependency on outside raw material suppliers and cut down input cost to a certain extent. Such a strategy gives an edge to companies to compete better in terms of price as well as helps in achieving higher profitability. The well-known washers manufacturing companies include Ratnaveer Precision Engineering Limited, Suchi Fasteners, Navgrah Fasteners, Gujarat Washers, SBP Automotive, Special Washers (India), Gala Precision Engineering, etc. The following table includes brief information of the companies:

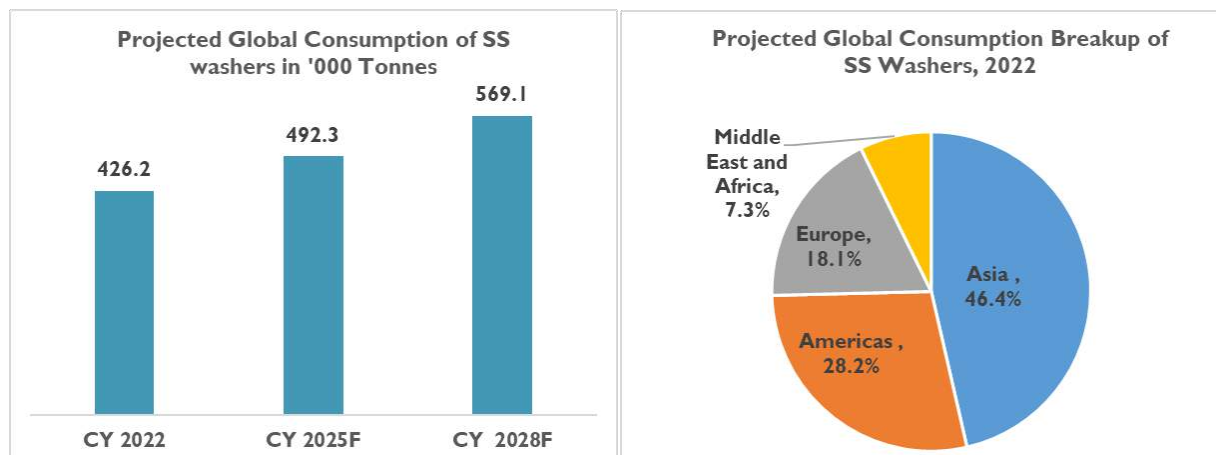
Name	Description
Ratnaveer Precision Engineering Limited	<p>Ratnaveer Precision Engineering Limited is the leading manufacturer, exporter, and supplier of stainless-steel washers in India. It is one of the largest manufacturers of washers, producing around 3500 - 4000 MT per annum (in FY 2022 the production volume was 3,707 MT) and enjoys economies of scale. The company has a wide product portfolio of more than 2500 different sizes and types of washers, that meets the requirement of wide range of customers across segments including some of the Fortune 500 companies. The company generated around 20% of the revenue from exports in FY 2022. Ratnaveer Precision Engineering Limited is one of the largest exporter of stainless-steel washers in India and the one of the few to have backward integration in washers manufacturing process, due to which it has a competitive edge over its competitors in terms of better pricing and raw material supplies. .The company has achieved revenue of INR 428.47 crore in FY 2022 of which INR 83.7 crore was from export of stainless-steel washers.</p> <p>Revenue in FY 2022: INR 428.47 Crore</p>
Suchi Fasteners Private Limited	<p>Established in 1980, Suchi Fasteners is one of the well-known washers manufacturers and suppliers in India. The company maintains high quality production of bur free, smooth, and flat washers. At present, the company manufactures and exports aluminium, brass, copper, silicon, bronze, and stainless-steel washers. It</p>

	<p>specializes in countersunk type finishing cup and flanged washers as per global standards. The company generates ~70% of the total revenue from exports.</p> <p>Revenue in FY 2022: INR 118.49 Crore</p>
Navgrah Fastners Private Limited	<p>Navgrah Fastners, established in 2006, manufactures stainless steel washers, sheet metal parts, stampings, solar mounting hooks, connectors, and accessories. It mainly specializes in stainless steel washers and various hooks (haken) and all fastening parts for the solar mounting systems in stainless steel with powder coating or shot blasting. The company generates 64-66% of the total revenue from exports and rest comes from domestic sales.</p> <p>Revenue in FY 2021: INR 33.01 Crore</p>
Gujarat Washers	<p>Started in 1982, Gujarat Washers offers a wide gamut of washers which includes industrial metal fasteners, fastener nuts, washers, etc. The company is well-known for its stainless-steel washers and was recognized as the First Manufacturer of Stainless-Steel Spring Washers in India. The company has also gained recognition as one of the prominent industrial hardware fasteners, belleville spring washers and industrial washers exporters.</p>
SBP Automotive Private Limited	<p>SBP Automotive is an experienced automotive washer manufacturer and supplier, catering to a variety of industries such as automotive, manufacturing, mining, engineering and many other. The company offers copper washers, aluminium washers, spring washers and steel washers which come with a wide range of materials for different applications. Majority of the revenue comes from domestic sales with exports accounting for mere 1-2% of the total revenue.</p> <p>Revenue in FY 2022: INR 5.2 Crore</p>
Special Washers (India) Private Limited	<p>Established in 1996, Special Washers (India) is an ISO 9001-2008 Certified manufacturer, exporter, and supplier of industrial fasteners and sheet metal components including industrial washers, industrial screws, bolts, metal nuts, metal rivet,</p>

	<p>etc. The company offers products in various metals such as stainless steel, copper, phosphorous, and bronze.</p>
Mitter Fasteners	<p>Mitter Fasteners, established in 1982, manufactures nuts, bolts, and sheet metal components which adheres to the national and international standards such as ISO, JIS, DIN, etc. The company supplies its products to major OEMs in India and major buyers in Europe. Some of the major customers include Mahindra Rise, Ashok Leyland, Nissan, Anixter, Claas, Omax, Asal, Dana, etc. The company has an in-house manufacturing facility for Zn plating, heat treatment, and state of the art metallurgical lab.</p>
Gala Precision Engineering Private Limited	<p>Started its operations in 1995, Gala Precision Engineering is a manufacturer, supplier, and exporter of high-end technology solutions in the fields of surface engineering, and high-performance springs. In 2014, company expanded its product range of disc springs by adding bearing series disc springs and serrated washers. In 2018, the company launched gallock wedge lock washers and started supplying them to OEMs in India and major customers in Europe, USA, etc. Today, the company is a major trade partner for gallock washers to one of the globally top 3 wind turbine manufacturers. Currently, it generates 40-45% of the total revenue from exports.</p> <p>Revenue in FY 2022: INR 146.06 Crore</p>
Autotech Industries (India) Private Limited	<p>Based in Chennai, Autotech Industries (India) is involved in manufacturing of autotech engine components, autotech transmission components, and autotech hydraulic components since 1984. The company specializes in engine, transmission, clutches, axle, chasis, fuel system, and assemblies. It supplies and exports automotive products to major OEMs in India and other countries in the world. The company has five plants in Ambattur Industrial Estate. The company generates 82-85% of the total revenue from exports.</p> <p>Revenue in FY 2022: INR 538.32 Crore</p>

Global Growth Outlook

Going forwards, global SS washer consumption is slated to grow at CAGR 4.6% between 2018-25 and at 5% between 2025-28 to reach 492.3 thousand tonnes and 569.1 thousand tonnes, respectively.



Sources: Dun & Bradstreet Research

Increasing demand from construction of residential and office spaces coupled with ongoing infrastructural development projects across the world on the back of growing population and rising income are expected to drive the SS washers consumption during the forecast period. Besides above, the rising manufacturing activity particularly in emerging sector such as renewable energy, electric vehicle etc. along with other traditional end user sector such as automobile, consumer durable & electronics, oil & gas, and others to support urbanization are expected to aid the industry growth.

Regional Outlook

Geographically, the consumption breakup is expected to remain the same in 2028 but Europe and Americas is expected to lose marginal share to Asia and Middle East & Africa region. During the forecast period 2022-28, *Asia is projected to continue growing at highest CAGR of 5.7%*, followed by *Middle East & Africa growing at 5.2% CAGR, Americas at 4.8% and Europe at 3.5% CAGR*. In value term, the global size of SS washers is projected to grow at CAGR of 6.3% between 2023-28 to grow from USD 3,206 Mn to 4,618 Mn.

Asia

China, Japan, and India are major countries within Asia region that expected to lead the SS washer consumption owing to the presence of large number of industries. China, being the largest producer, consumer, and exporter of steel globally, retained its dominance in global SS washer industry in 2021 while Japan emerged as the second largest market for SS washer as it has the third largest automobile producing market in the world. Beside Japan, China, India, and South Korea have strong presence in

automobile sector which is expected to push SS washers consumption during the forecast period.

Besides automobile, major upcoming infrastructural development projects including construction of office spaces by Hines and DNR group in Bengaluru, India, Sichuan-Tibet railway project in China, construction of 6,500 residential units per annum between 2022-26 and completion of 1,600 new hotel rooms in 2022 in Philippines and introduction of “Build! Build! Build!” programme (2017-2022) under which construction of about 102 airport projects is scheduled in Philippines would create demand for stainless steel washers during the forecast period.

Europe

In Europe, SS washer consumption is estimated to grow at healthy CAGR of 3.5% by volume and 4.8% by value to 103 thousand tonnes and USD 900 Mn between 2022-28, respectively on the back of the ongoing construction of five largest office buildings and rapid infrastructural development in the region. The construction of **five largest office** building that commenced construction in 2022 include below

- **The Scaling Hub, Netherlands**– USD 1.5 Bn
- **The Post Tower, Germany**– USD 1.4 Bn
- **The Platform, UK**– USD 1.3 Bn
- **The Edge, Netherlands**– USD 1.2 Bn
- **The Forge** – USD 1 Bn

The completion of the above five projects is scheduled of last quarter of year starting from 2024-25.

Beside above , infrastructural development projects including construction of Lyon-Turin high speed rail between France-Italy, Peljesac bridge in Croatia, Fehmarnbelt tunnel connecting Denmark and Germany would surge the demand for stainless steel washers in the coming years.

Additionally, Europe has strong presence in manufacturing sector and manufacturing is one of the largest economic sectors in the country generating about two-thirds of the Europe’s economic output. Presence of large number of manufacturing industries is expected to aid the consumption SS washers market during forecast period too. As per our analysis, Germany and France are two major country that leads the SS washers market in the Europe region as Germany is the world’s fifth largest steel exporter and exports steel to more than 200 countries. Germany also accounted for nearly 15% share in India’s total import of SS washers by volume in FY 2022. While rapidly growing construction sector and expansion of commercial spaces in France has made the country and attractive consumption market for SS washers.

Middle East and Africa

In Middle East & Africa, SS washer consumption is estimated to grow at healthy CAGR of 5.2% by volume and at ~6.6% CAGR by value to 41.5 thousand tonnes and USD 353 Mn by 2028, respectively owing to presence of countries like Morocco, United Arab Emirates and South Africa which are the major manufacturing hubs in the region coupled with **Turkey** and **Dubai** dominating the automotive sector of the region.

Furthermore, the ongoing construction of mega projects including **Regalia residential tower in UAE**, **Kenya standard gauge railway**, **Konza**-a technology city in Kenya, **Neom business city** in Saudi Arabia, **Davinci residential towers in UAE**, **Jeddah central redevelopment project in Saudi Arabia** and many others are expected to boost the demand for stainless steel washers and support the projected SS washer consumption in the region.

Our analysis reveal, Turkey followed by Saudi Arabia as the two major nation driving the consumption of SS washer consumption in the region. Turkey dominated the overall Middle East and Africa stainless steel washers as the automotive sector is one of the largest industrial sectors in the country and 15th largest in the world. Additionally, Turkey is the manufacturing hub and thus supports the production, export and engineering of global brands for international markets.

Americas

In America, SS washer consumption is estimated to grow at healthy CAGR of 4.6% by volume and at ~6.3% CAGR by value to 160 thousand tonnes and USD 1,371.5 Mn by 2028, respectively. Increasing real estate construction in both residential and commercial spaces and ongoing construction of mega infrastructure projects would augment the growth of Americas SS washers. As of March 2022, around 144.7 million square feet of office space was under construction in U.S. nationally which is expected to create demand for SS washers. Furthermore, construction of ongoing mega projects including JPMorgan Chase's new office in New York, Amazon Headquarter 2,830 Brickell office spaces, California high speed rail, Buffalo Bills stadium would have a favorable impact on SS washers demand.

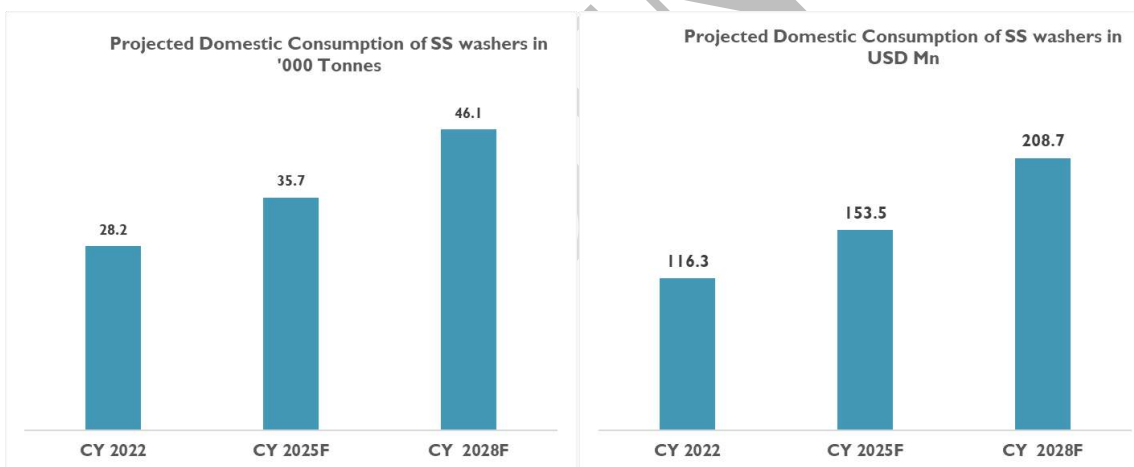
Additionally, large scale presence of leading automotive OEM in USA is expected to push the regions SS washer consumption growth. With large population base and large population and largest automobile industry in Detroit city, USA retained its dominance as the largest consumption market for SS washers in Americas region in 2021. . Detroit city in USA has the biggest automobile industry dominated by three large companies namely **General Motors**, **Ford** and **Chrysler**. Strong presence of auto manufacturing base has potential to create demand for lock and keyed washers owing to their large-scale usage in automotive applications.

Canada is the other leading country for SS washer in the America region as it is major exporter of steel to the USA and Mexico.

Indian Growth Outlook

The Union Government has formulated “National Steel Policy 2017”, which is expected to guide the growth of Indian steel industry for the next decade. As per the policy, the installed steel production capacity in India is expected to reach 300 million tons by 2030 while the production of crude steel would reach 250 million tons. These aggressive goals are on the back of the expected demand from construction as well as consumer products like automobiles.

Despite becoming one of the fastest growing economies in the world, the infrastructure sector in India is yet to develop fully. Therefore, substantial government expenditure is planned in major end user industries under National Infrastructure Pipeline and recently announced PM Gati Shakti project. The National Infrastructure Pipeline aims to improve the ease of living for its citizen. It will include projects in various sectors such as housing, safe drinking water, access to clean and affordable energy, world-class educational institutes, healthcare for all, modern railway stations, airports, bus terminals, metro and railway transportation, logistics and warehousing, irrigation projects, etc.



Sources: Dun & Bradstreet Research

Thus, the aggressive public and private investment sprucing up in the infrastructure would translate into higher demand for various steel product including SS washers.

We expect domestic SS washer consumption volume to grow from about 28.2 thousand tonnes in 2022 to 35.7 thousand tonnes by 2025, growing at CAGR 8.2% between 2015-28 and later reaching 46.1 thousand tonnes by 2028, translating into 8.8% CAGR between 2025-28. In value term, the SS value consumption in India is slated to grow at average annual rate of 7.2% between 2022-28 to reach USD 208.7 Mn.

However, overall economic activity faces a major downside risk if RBI with recent hike in repo rate continue to increase repo rate amidst rising inflationary pressure. This may the fresh capital investment in the various sector and may temporarily affect the end user industries demand for SS washers.

On supply side, supportive policy announcement like Atmanirbhar Bharat, PLI, amended DMISP policy and Make in India scheme are expected to have a lasting favorable impact on domestic manufacturing and strengthening the supply side dynamics.

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SS Sheet Metal Components

Global Consumption Pattern

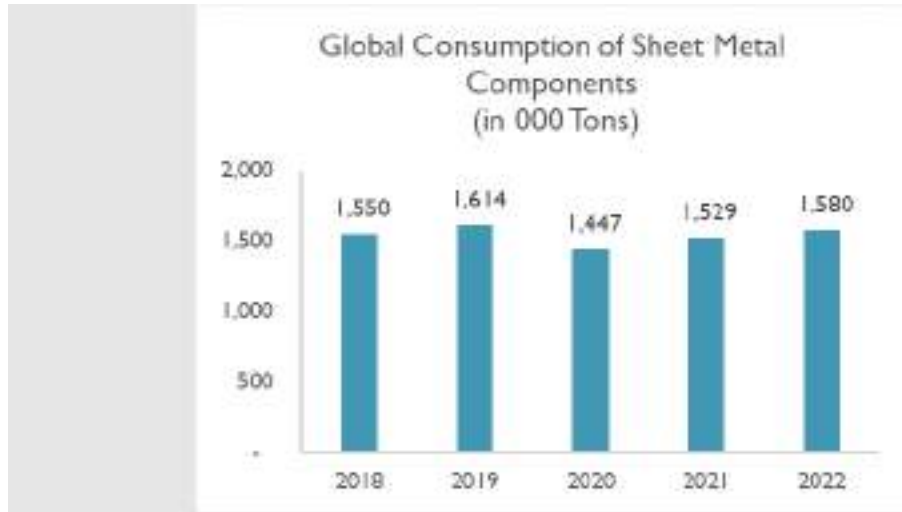
Globally, consumption of sheet metal components is approximately 1,580 thousand tons per annum in 2022, while annual production is approximately 1,750 thousand tons per annum. Consumption has picked up in 2022, growing by 3% from 2021 after a 10% decline in the previous year to the Covid-19 induced disruptions.

Although consumption volume in 2021 is well below the post covid-19 (2019 consumption) scenario, the year-on-year growth during 2020-21 indicates the strong optimism. This is based on the higher growth rate in consumption during 2020-21, as against growth registered in 2018-19.

In terms of sales value, global sales of SS metal components touched USD 13.4 Bn in 2022, the strongest growth in the past four years. Sales value has even surpassed the 2019 figure, indicating the strong rebound in demand post the Covid-19 disruptions.

Few common types of sheet metal components include:

- **Sealing Caps Core Plugs & Welch plugs:** Manufactured out of Mild Steel, Stainless Steel, and Brass material being used the Engine & Transmission blocks. These components are available in both Cylindrical and Conical type.
- **Clamps, Clips & Brackets:** These are being used in Automotive, Tractor, Earthmoving equipment, and Farm equipment as per customers' requirements
- **Push Nuts, U-clip Nuts, Self-threading Nuts:** These components are made out of medium carbon and high carbon steel with hardening & tempering and Electroplating with Hydrozen De embrittlement process.
- **Constant Pressure Hose Clamps:** These are manufactured out of high carbon steel and carbon alloy steel for the fuel and liquid rubber pipes/hoses in the Engines and other applications.



Based on inputs from primary survey

Region Production & Consumption Volume in 2022 (in 000 Tons)

Region	Production Volume	Consumption Volume
Asia	1219.7	684.3
Europe	236.0	286.7
Middle East & Africa	45.0	120.6
Americas	300.9	488.8

Based on inputs from primary survey

Regional Production & Consumption Value in 2022(USD Million)

Region	Production Value	Consumption Value
Asia	USD 9,660 Million	USD 5,479 Million
Europe	USD 2013 Million	USD 2,577 Million
Middle East & Africa	USD 375 Million	USD 1047 Million
Americas	USD 2,543 Million	USD 4,299 Million

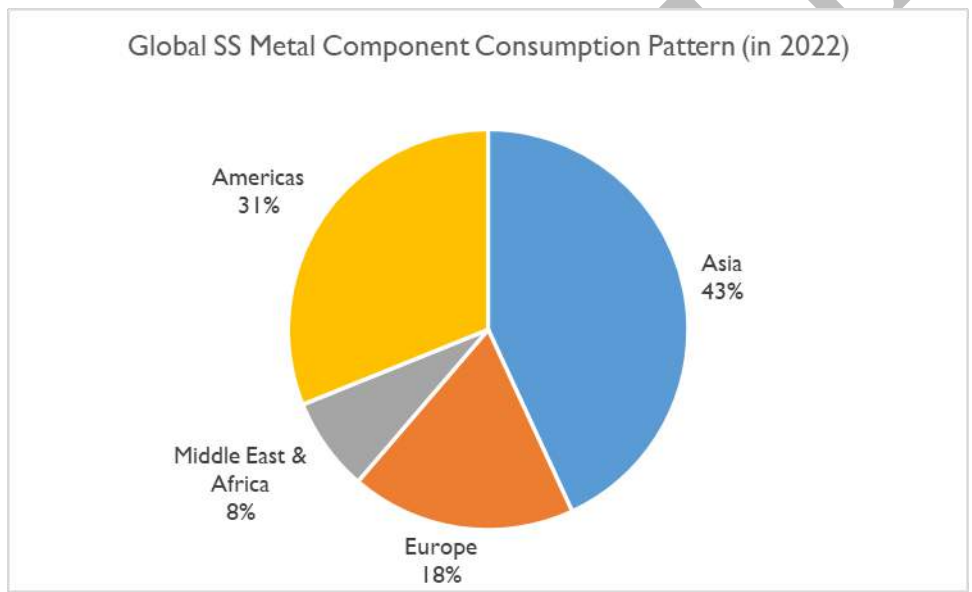
Based on inputs from primary survey

Asia is the leading market, both in terms of consumption and production. The shift in global manufacturing, from Europe and North America to Asian market on the back of cost differences and environmental concerns

have shifted production of a wide range of products & components. The ascendancy in SS metal components is a result of this development. In 2022, Asia accounted for nearly 67% of total annual production and 43% of total annual consumption.

China and Japan are the two largest consuming markets in Asia, followed by India. Strong growth in real estate construction, automobile manufacturing, and general capacity expansion in manufacturing industries have created demand for SS metal components. Both production & consumption of the product in European and American market has been declining, as bulk of manufacturing shifted to Asia.

America is the second largest consumer of SS metal components, after Asia. In 2022 America (North and South) accounted for nearly 31% of total global consumption. Europe accounted for 18% of consumption while Middle East & Africa accounted for the remaining 8%.



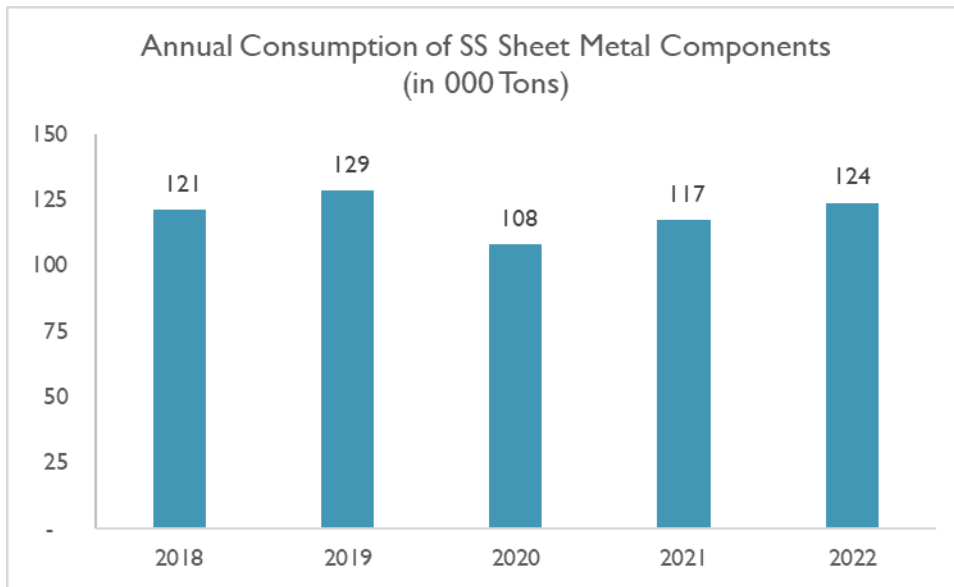
Based on inputs from primary survey

Domestic Consumption Pattern

The annual volume of SS sheet metal components consumed in India is approximately 124 thousand tons in 2022, which is worth USD 787 Mn. Annual consumption volume dropped in 2020, as demand was severely impacted by the spread of Covid-19 pandemic.

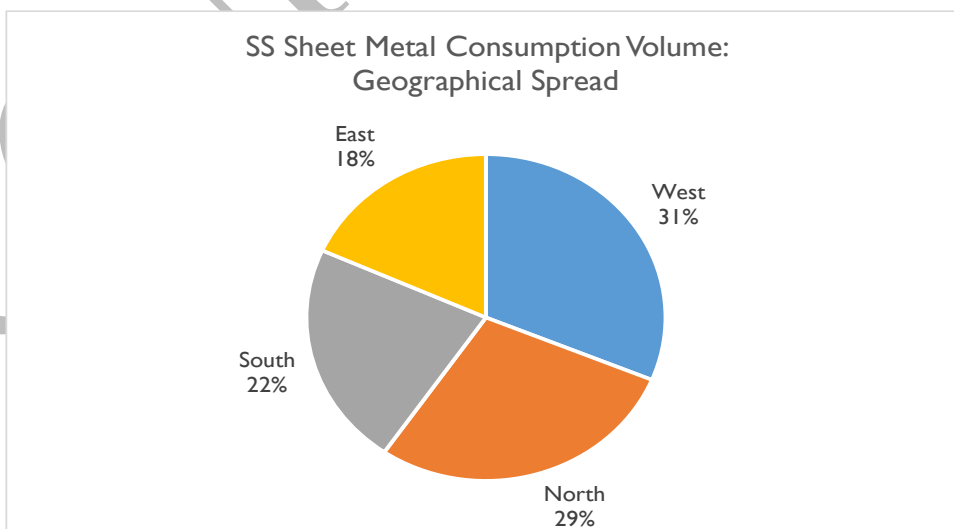
Demand landscape has improved in 2022 due to increasing manufacturing units and focus of Indian government to invest more in infrastructure activities in 2022 which were halted due Covid-19 pandemic. In response the consumption volume has picked up, increasing by nearly 5.6% over previous year. Despite this growth, annual consumption volume is yet to reach the post covid-19 levels.

Meanwhile, domestic production of SS sheet metal components is estimated to be 147 thousand tons in 2022, while the value of production stood at USD 900 Mn.



Based on inputs from primary survey

Demand is highest in the Western region, predominantly due to the presence of a fledging industrial sector in Maharashtra & Gujarat. In addition, a stable construction sector has also aided the western region. Backed by strong demand from these two-customer segment, Western region is estimated to have accounted for 31% of total SS sheet metal component consumption in India. Northern & Southern region formed the second and third largest geographical market, accounting for approximately 28.5% and 22.2% of total consumption volume respectively. Remaining consumption was accounted by Eastern region, making it the smallest market.



Based on inputs from primary survey

Competitive Scenario

Sheet metal component manufacturing as such is an extremely fragmented industry with unorganized segment having a sizable market share. The industry is characterized by low entry barriers – in terms of openly accessible not too complex manufacturing process, ease of availability of raw materials as well as labor force, lower capital investment requirement, and absence of any regulatory hurdles. These attributes make the industry an attractive proposition for smaller player to enter. On the demand side, the near universal application of sheet metal components has ensured a stable demand. Together these two factors (low entry barriers and a stable demand) have given the industry its fragmented nature.

Majority of these attributes hold true for SS sheet metal components too. The only difference is the usage of specialized input material (stainless steel), which is priced higher than other steel grades. Although this pose a challenge – compared to other metal grades used – it is not strong enough to alter the competitive nature of the industry. Hence the competitive landscape in SS sheet metal component manufacturing is almost like that prevalent in the larger sheet metal component manufacturing industry.

Despite the commoditized nature of the product, there exists few factors that could provide a manufacturer in this industry a competitive edge. Creating a strong product portfolio catering to multiple industries / applications, backward integration), and well-developed R&D capabilities to create new products. Among these, backward integration has a far-reaching impact and probably plays a larger role in improving operational efficiency and controlling cost.

Stainless steel manufacturing is a consolidated industry with large players, and they enjoy higher bargaining power vis-à-vis SS sheet metal components. Given the fragmented nature of SS sheet metal component manufacturing, they are not equipped to country moves by stainless steel industry to increase their product price or prioritize supply to other applications / consumer segments. It is here that backward integration makes a difference. Backward integration – be it by acquiring a stainless-steel melt shop or utilizing scrap manufacturing during the process as an input material – ensures SS sheet metal manufacturer have access to steady supply of quality raw materials.

Notable SS Sheet Manufactures	
Viman Engineering Private Limited	The Company manufactures & exports a wide range of washers, and sheet metal components for application in automotive, solar, medical device manufacturing and heavy engineering industries, among others.

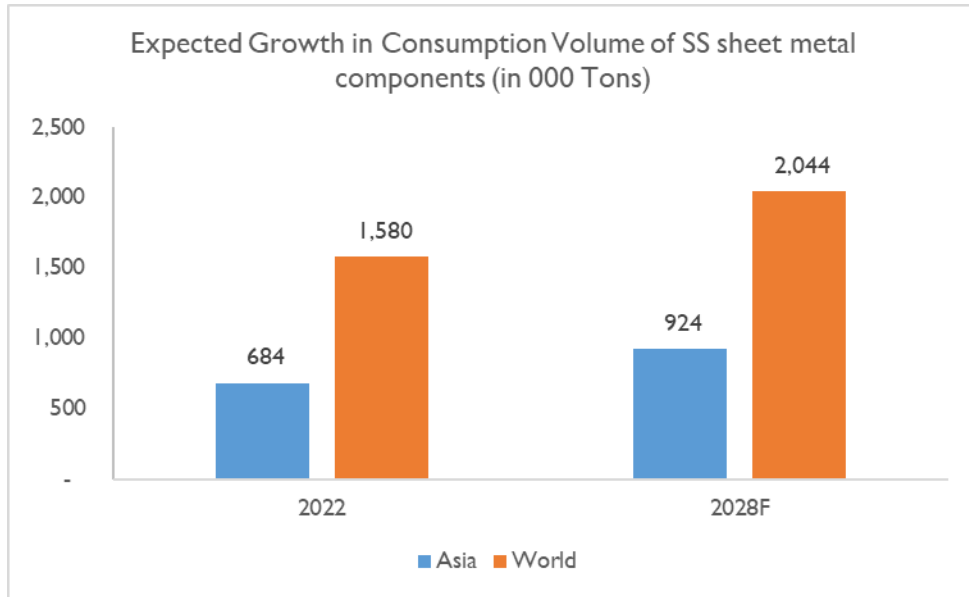
RAAMPS Industries	The Company, established in 1984 manufactures sheet metal components for automobile , telecommunication, oil & gas, home décor, solar, and heavy engineering, among others.
Ratnaveer Precision Engineering Limited	Ratnaveer, established in 2002, manufactures SS washers, pipes & tubes, and sheet metal components. In SS sheet metal components, the Company focuses on solar power generation sector where it is used in mounting of solar panels.

Global Growth Outlook

Demand from Asian markets would be the key factor in driving the global demand for SS sheet metal components forward. By 2028, the total volume of SS sheet metal components consumed in Asian market is expected to reach 924 thousand tons per annum. This converts into a compounded growth rate of 4% during 2022-28 period.

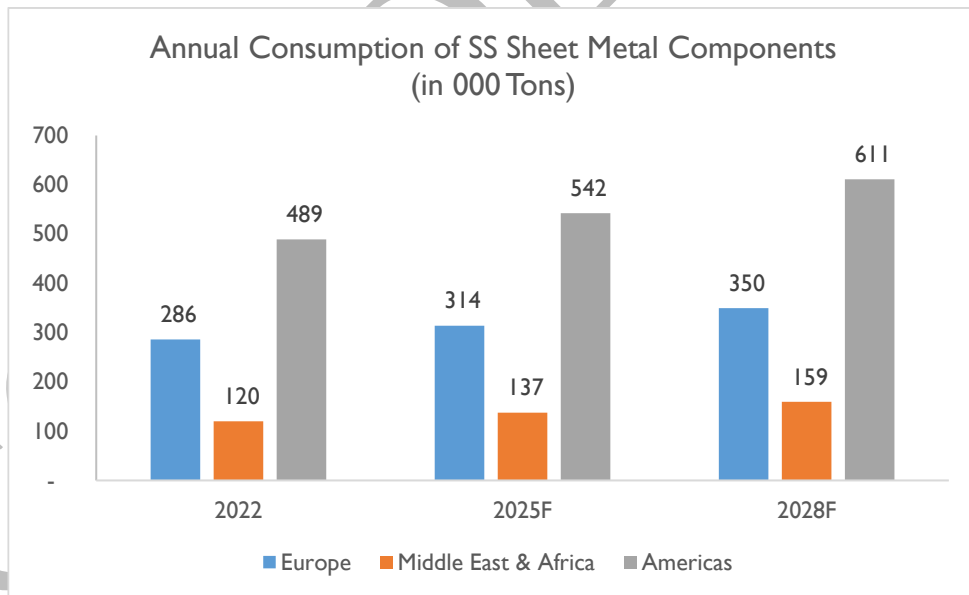
On the back of this strong demand in Asia, the global consumption of SS sheet metal components is expected to reach 2,044 thousand tons per annum by 2028. Consumption in Asian market is expected to account for nearly 45% of total global consumption in 2028.

In value terms, the total value of SS sheet metal components consumed in Asia is expected to reach USD 8.2 Bn per annum in 2028, increasing by a CAGR of 6.9% between 2022-28. On the back of this strong growth in Asian market, the global sales of SS sheet metal components is expected to grow by a CAGR of 6% during 2022-28 to reach USD 18.7 Bn.



Dun & Bradstreet Research

Among other markets, Middle East & Africa is expected to grow the fastest, by a CAGR of 5.7% during 2022-28 period while consumption growth of SS sheet metal components in Europe and Africa would be 3.3% and 3.6% respectively.

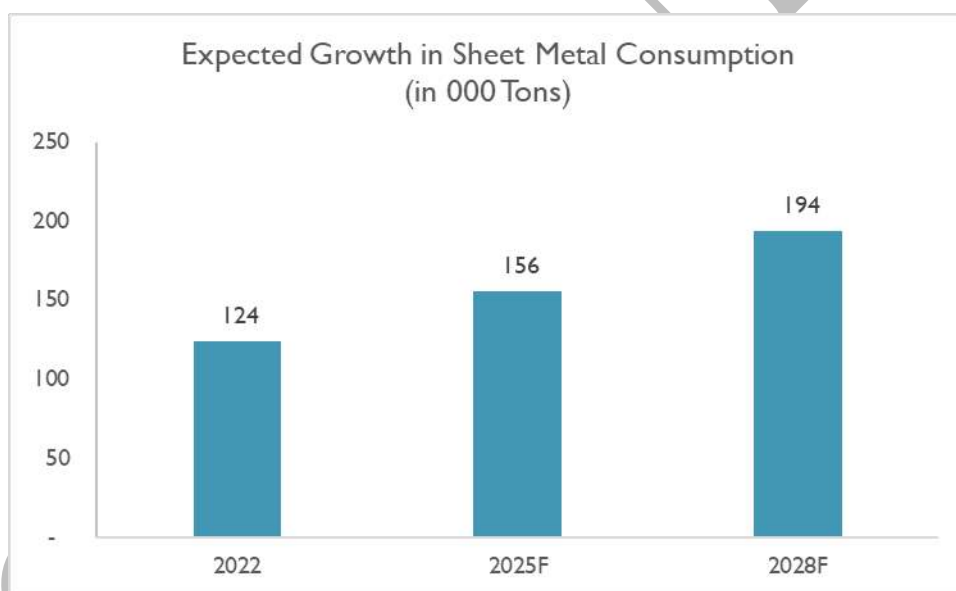


Dun & Bradstreet Research, F - Forecast

India Growth Outlook

Indian economy has rebounded strongly, after two years of slow growth one of which is on account of Covid-19 induced disruptions. Demand for consumer products, ranging from consumer durables to big ticket purchases like automobiles & residential units has witnessed a strong recovery. This overall improvement in demand scenario has helped in the revival of industrial growth.

SS sheet metal components, which has a near universal application across manufacturing sector has benefitted by this revival in industrial activity. Barring any exception event (similar to the scale of Covid-19 pandemic), Indian economy is widely expected to return to a long-term growth path. This would help SS sheet metal component industry to put the recent dip in production (in 2020 and 2021) behind it. Going ahead, the annual consumption volume of SS sheet metal components is expected to touch 156 thousand tons in 2025, and further to 194 thousand tons in 2028. This would help increase the annual sales turnover in the sector – which currently stands at USD 787 Mn – to USD 1,019 Mn in 2025 and further to USD 1,336 Mn in 2028.

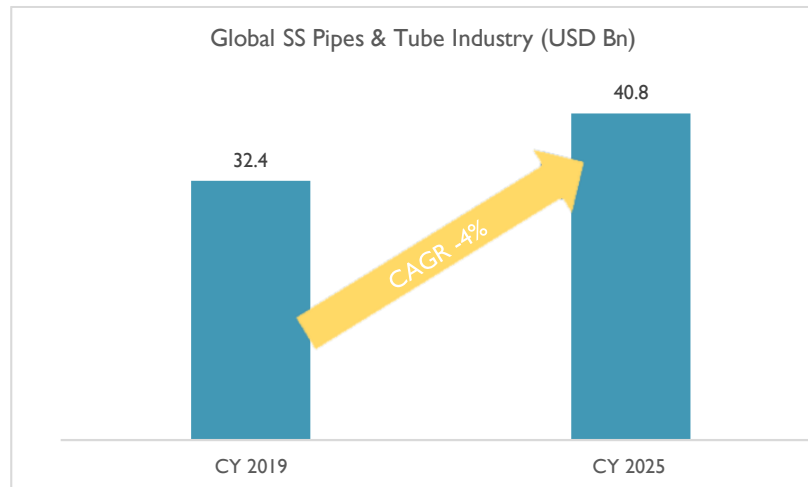


Dun & Bradstreet Research

Stainless Steel Pipes and Tubes

Global Scenario

Globally, the SS pipes and Tube industry was valued at nearly USD 32.7 Bn in 2021¹⁸ contributing ~23% share in global pipe & tube industry. In coming years too, the SS pipe & tube is expected to observe stable growth of ~4% through 2025 with market size estimated to cross USD 40 Bn.



Sources: Dun & Bradstreet Desk Research & Estimates

Demand Landscape

The oil & gas industry is among the major consumer segments for steel pipes and tubes used for transportation of gas & liquid as well as for upstream, midstream, and downstream processing of crude oil. With global economies gradually recovering from the pandemic impact, the demand for oil & gas is expected to resume quickly. Spreading Covid-19 cases at the start of 2022 once again shed some uncertainty over the economic recovery but this time the surge in infection caused muted impact on oil demand. Moreover, mobility indicator continued to remain strong lending the positive outlook for the Oil demand in 2022.

According to the International Energy Agency (IEA), from 97 Mn barrels per day (BPD) in 2018, the oil demand is expected to increase by 5.5 mb/d in 2021 and by 3.3 mb/d in 2022 while it is estimated to return to the pre-pandemic level at around 99.7mb/d in 2022 projected to reach 103 mbd by 2030. However, the current Russia-Ukraine conflict could change the demand-supply dynamics between various countries in the coming years.

As a result, new pipelines projects are being commissioned, pipelines capacities are being expanded and increasing offshore activities such as deep and ultra-deep-water production and development are having a positive impact on the steel pipe segment.

Further, with development of new natural sources such as natural gas and shale gas the pipeline segment is expected to witness increasing demand. Also, stainless steel seamless pipes may witness the development of innovative technology in directional drilling which requires use of high strength and versatile properties. Seamless pipes are preferred because welded pipes can leak and corrode thus causing damage to the encompassed fluid.

Developed nations are taking measures to cut down on carbon emissions. High efficiency generation of seamless steel pipes are being increasingly being used in industrial boiler applications which include ultra-supercritical pressure boilers, pressurized fluidized bed boilers and high-efficiency industrial waste incineration boilers among others primarily to control carbon dioxide emissions. Seamless pipes are preferred in such segments owing to their higher strength, durability, and corrosion resistance properties.

Global stainless-steel pipe manufacturers are also exploring options for producing stainless steel welded pipes that are custom made for specific industries. For this purpose, manufacturers are using different proportions of the alloy mix and offer various geometries, which enables them to cater to a wide cross-section of diverse demands. Also, stainless steel welded pipes are being increasingly used for specialized applications in biochemistry and medical devices wherein companies are investing in their research and development efforts to cater to the specialized needs of these end-use industries.

Few industries specific research analysis, highlight that the steel tube market dominates the overall industrial tubes market where overall global industrial tube market was estimated to be valued at ~USD 478 Bn in 2018 and is further slated to observe decent 5.8% CAGR between 2018-23. Attributed to its metal properties, SS tubes is expected to witness growing application in global petrochemical, chemical industry, energy & power and automotive. Stainless steel is widely used in manufacturing of SS pipes, Mechanical Tubes, Heat Exchanger Tubes, Structural Tubes, Hydraulic & Instrumentation Tubes and Others (Capillary Tubes, Boiler Tubes, Precision Tubes).

The pipeline segment is expected to register steady growth within the US, which being a leading producer of oil & gas accounts for nearly 23% and 17% share in global gas and oil production. According to Global Data's report, 'North America Oil and Gas Projects Outlook to 2025 – Development Stage, Capacity, Capex, and Contractor Details of All New Build and Expansion Projects', North America is expected to witness the operational commencement of 603 projects during 2021-2025. The US dominates the upcoming project landscape in North America, with nearly 70% share of the total projects which are expected to start

operations by 2025. Out of these, newly announced projects dominate with 83% while the remaining are expansion projects mainly in the upstream sector. Major upcoming projects in the US, such as the Alaska LNG liquefaction plant worth USD 43 Bn and Cameron LNG Liquefaction Plant worth USD 33 Bn, are expected to drive the need for oil & gas equipment including steel pipes & tubes.

Europe, with more than 80% of the oil & gas production taking place offshore, is among the major producers and consumers of seamless steel pipes owing to the on-going oil & gas exploration activities followed by cyclical maintenance in the region. However, with the European Union extending the annual tariff quotas on steel product categories (which includes non-alloy hot and cold rolled sheets, gas pipes, seamless stainless tubes and pipes, large, welded tubes etc.) for the next three years (starting July 1, 2021), it could lead to a demand – supply mismatch in the region.

Asia Pacific seamless steel pipes market is expected to show robust growth owing to the increasing demand for oil and gas, adoption of advanced technologies, rising industrialization and infrastructural growth including water management, among others. South Korea, China, India, and Japan are some of the key countries contributing to the high demand for seamless pipes in the Asia Pacific. Being the highest steel producer, China occupies a large share in the seamless steel pipe production due to easy availability of raw materials which makes it easy for manufacturers to avail the same at lower costs for their end use as well for import purpose.

Indian Steel Pipe and Tube Industry

Since 2000, steel production in the country has seen a phenomenal increase as the sector witnessed high investments in capacity addition as well as technology up-gradation. In 2018, India surpassed Japan to become the second largest steel producer in the world, after China. According to World Steel Association (WSA), India produced 125.3 Mn tons of crude steel in CY 2022 and accounted for 6.2% share in global crude steel production. In 2022, India's crude steel production registered an y-o-y growth of 6.3% at a CAGR of 3.9% between 2017-22.

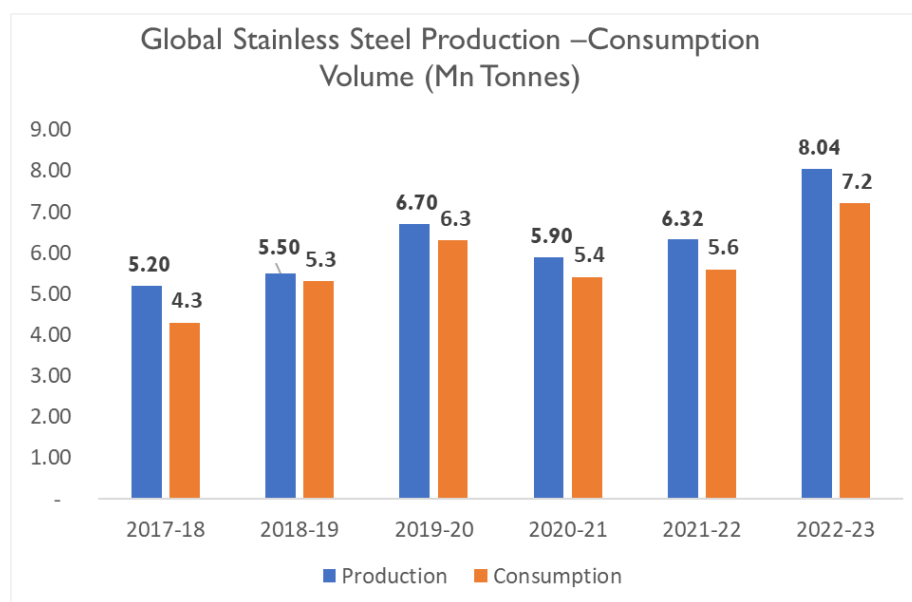
On consumption side, India is also the second largest consumer of finished steel. The emergence of a middle-class consumer segment has altered the consumption landscape in India, and with it the industrial production. The country's overall finished steel consumption in India is estimated to have been growing at 7% per annum since 2016 till 2019 to reach 102.6 Mn Tonnes but in 2020, it dropped by 14% against 6% y-o-y growth in 2019. Compared to 2020 finished steel consumption in India increased by 6.9% to 113.2 Mn tons in 2022, up from 106 Mn tons in 2021.

Steel Pipe and Tube Segment

Steel pipes & tube segment constitute ~8% share of the total steel consumption. Subdued industrial activity, and economic uncertainty have dampened the demand scenario, leading to lower consumption. However, economic recovery in 2021 points towards rising consumption of finished steel, consequently driving the steel production. During 10M FY 2022, the country's finished steel production was 21.06% higher than previous year output and it stood at 93.3 Mn tonnes while its consumption was ~15% higher and stood at 86.83 Mn tonnes.

Presence of such a vast primary steel manufacturing infrastructure has also helped in the growth of secondary and finished steel products. In pipe & tube segment, India has emerged as one of the major producers of steel pipes after Europe and China. The country has a well-developed steel manufacturing industry capable of manufacturing crude steel to value added steel products including pipes & tubes. Availability of raw material, cheap labor, and ability to produce steel as low cost have supported India's progress in steel pipe and tube industry.

As per industry sources, the country's current manufacturing capacity of steel pipes and tubes stand at around 21.5 Mn tonnes which is further split into welded, seamless, and casted pipes with respective capacity of 16.3 Mn Tonnes, 1.5 Mn Tonnes and 3.7 Mn Tonnes. Within welded pipes segment, ERW capacity is estimated at 9.5 Mn tonnes and SAW pipes at 6.80 Mn Tonnes.



Sources: Dun & Bradstreet Desk Research & Estimates

Annual production of steel tubes & pipes in India is estimated to reach 6.22 Mn Tonnes in FY 2022 while apparent consumption¹⁹ is estimated at 5.55 Mn Tonnes, but it continued to remain lower compared to the pre-pandemic level (FY 2020). Rising output is backed by resuming demand recovery in the major end user industry demand. The country's 10M FY 2022 steel pipes & tubes output was up by 8% while its consumption was up by 4% on y-o-y basis to reach 5.18 Mn Tonnes and 4.63 Mn Tonnes, respectively.

In value terms, the size of the Indian steel pipes & tube industry is estimated at nearly INR 550-600 Bn. With nearly 10 Kg per capita consumption (PCC), steel pipes & tubes consumption in India is less than half of the global average (21-22Kg PCC) and about one fifth of the Chinese (55-60Kg PCC) which indicates huge opportunity for growing penetration of steel pipes & tubes in the Indian market.

In terms of market segmentation, steel pipes & tube industry is equally split between ERW and SAW & Seamless pipes (S&S pipes) while by volume the ratio stands at 70:30, respectively. ERW pipes find prominence because of their diverse applications as well as implementation of advanced technology such as the Direct Forming Technology (DFT) which allows for customized sizes and cost savings on raw material.

¹⁹ Apparent Demand is derived demand from Production + Import – Exports, a proxy indicator to represent the consumption trend of a product.

Demand Landscape

Stainless steel pipes and tubes are one of the important products in the steel industry and it find wide application in oil & gas, capital goods, power and several other. In the industrial sector, it is used in the manufacturer of the heat exchanger, condensers, and similar industrial equipment that are used in chemical plants, fertilizer plants, pharmaceuticals, sugar, dairy & dairy products, water desalination and automotive industry amongst other. Additionally, steel pipes & tubes also find application in construction. Oil & gas and chemical & petrochemical industry – are the two largest consumers of steel pipes and tubes – is driving the demand across the world. Thus, demand for steel pipes & tubes is linked to the demand scenario and capex plans prevalent in its end-user industries.

Demand from Oil & Gas sector

Oil & Gas sector is one of the largest end user industries for steel pipes and tubes including SS pipes and tubes with pipelines being the major mode of transport for petroleum, oil, and lubricants. Therefore, oil & gas industry has a close linkage that dictate steel pipes and tube demand in the country. Stainless steel offer good resistance to high-pressure and high-temperature and so is widely used in refineries, pipelines, storage capacity, gas terminals, and retail outlets.

India is currently the 3rd largest energy and oil consumer in the world after China and US. The Indian Oil & Gas (O&G) industry is distinguished in the global context as it contributes to 4.6% of the global oil demand with consumption of 4.8 barrel per day in 2021. As per IEA recent published report (under stated policy scenario), India's oil consumption is projected to rise by 50% by 2030 comparison to global demand growing by 7%. India's oil consumption is expected to grow by 4.8 million barrels per day (mbd) in 2019 to 7.2 mbd in 2030 and 9.2 mbd in 2050. India will continue to remain the third largest consumer of oil in 2030.

For Natural gas, the country's consumption projected to double to 133 billion cubic meters in 2030 from 64 BCM in 2019 as against a 12% rise in global gas demand. Currently, India is also the 4th largest refining capacity globally after US, China, Russia, having total refining capacity of 249.87 Mn Metric Tonnes per annum (MMTPA) as on year ending on 1.04.2021 while per day refining capacity stood at 5 Mn barrel. As per IOC, a leading Indian Refiner, the country needs to add 2 Mn barrel per day by 2030 to support the country's economic expansion.

The wide network of oil & gas pipeline infrastructure has been a major factor in driving the demand for steel pipes & tubes. With Indian economy registering one of the highest growth rate in the world – a pattern that is expected to continue in the future – energy demand in the country would only increase. Aggressive expansion of oil & gas pipelines to meet this demand is set to continue, which in turn would keep the consumption of steel pipes & tubes by the industry stable.

Demand from Pharmaceutical Industry

Indian pharmaceutical industry is ranked as the third largest in the world, in terms of volumes of drugs manufactured and thirteenth largest, in terms of value. The Country is also the world's largest supplier of cost-effective generic drugs, and accounts for one fifth of the global trade in generic drugs. India has achieved an enviable position in global generic drug market on the back of its strength in organic chemical synthesis and process engineering.

As the acceptance of generic drugs increases in the developed markets, particularly the US, India's position in the global generic market will continue to rise. The move in the US market towards an affordable healthcare framework, aided by supportive Government policies, will augur well for Indian companies already present in the US market. Exports, which has been the mainstay of Indian pharmaceutical space, would be instrumental in driving the future growth.

On the domestic front, the favorable demand created by increasing older population, and rise in incidences of lifestyle diseases would continue to facilitate domestic revenue growth. However, the lifestyle disease segment is largely addressed by patented drugs by innovator pharmaceutical companies, who are primarily multinational players. The presence of Indian generic pharmaceutical companies in this segment is low.

On the back of the above favorable factors, the compounded annual growth rate in the pharmaceutical industry is expected to be higher than the growth rate recorded in the last decade. During the time FY 2021-30, the annual turnover in Indian pharmaceutical industry is expected to grow by a CAGR of 10%, to reach INR 7,840 Billion.

This aggressive growth in sales can be supported only by an aggressive expansion in manufacturing capacity. Consequently, pharmaceutical industry is expected to witness strong growth in both greenfield and brownfield capacity expansion projects. The relaxation in foreign investment norms would address the credit availability issues that generally hobble capacity expansion projects. Subsequently the demand for capital goods, including steel pipes & tubes used in pharmaceutical manufacturing plants would increase, and serve as a strong demand driver for the domestic steel pipes & tubes industry.

Demand from chemical & petrochemical industry

Steel pipes and tubes form the backbone of fluid and gas transport system in process industries. The type and grade of steel pipes & tubes used depends on the environment where it is installed as well as the nature of products that are transported. In chemical & petrochemical plants, pipes and tubes are exposed to toxic environment leading to corrosion. The anti-corrosive property of SS pipes & tubes is the preferred fluid & gas transport system in these plants. Hence, the growth in chemical & petrochemical manufacturing capacity in the country has directly contributed to higher demand for SS pipes & tubes.

Annual production of basic chemicals – organic, inorganic, alkali chemicals, dyes & pigments, and pesticides – is estimated to be 12.7 Mn Tonnes in FY 2022²⁰. Alkali chemicals – consisting of soda ash, caustic soda, and liquid chlorine – accounted for 71% of production volume in FY 2022, followed by inorganic chemicals, and organic chemicals. On the other hand, annual production of major basic petrochemicals is estimated to 19.4 Mn Tonnes in FY 2022 while the total production of basic major chemicals and basic major petrochemicals reached 32.1 Mn Tonnes.

Demand from capital goods industry (manufacturing of heat exchanges, condensers & similar equipments)

Capital goods like heat exchanges and condensers are integral part of process industries, ranging from manufacturing of food & beverage products, chemicals, pharmaceuticals, petrochemicals, plastic products, rubber products, and paper & paper products.

Pipes & tubes made of SS is considered the most ideal material for heat exchangers, because of the anti-corrosion nature. SS heat exchangers provide good resistance to corrosion and it also helps in minimizing the deposits of limestone and other residues. SS High Precision and Heat Exchanger Tubes are widely used in process industries, ranging from chemicals, petrochemicals, fertilizer, sugar, and dairy & dairy. Additionally, SS pipes and tubes also find applications in water desalination plants & other water treatment plants, as well as power plants. The corrosion resistance, and high resistance to chemicals are the two key reasons for this preference for stainless steel over other materials.

Rapid industrialization in Indian economy, aided by favorable government policies, robust demand scenario, and penetration of export markets have led to capacity expansion in Indian manufacturing industries, ranging from textiles, chemicals to fertilizers. The resultant increase in demand for process plant equipment & other industrial machineries have had an equally strong demand for stainless steel used to manufacture these equipment's. The demand for process plant equipment and other industrial equipment's of similar kind is linked to the industrial scenario prevalent in the country.

Demand from Automobile Industry

In automobile manufacturing, SS pipes & tubes are used in the production of components ranging from exhaust systems, transmission systems, oil & fuel flow systems, and coolant circulation systems, to name a few. Thus the rise in automobile production and sale in India over the last couple of decades have translated into positive demand for SS pipes & tubes.

²⁰ Annual Report FY 2023, Ministry of Chemicals (FY 2023 data is yet to be released)

Annual production of automobiles reached a high of 26.3 million units in FY 2019, before dropping to 21.5 million units and 18.6 million units in the subsequent years. Improvement in demand in FY 2022, as the impact of Covid-19 pandemic wore off, has resulted in an improvement in production volumes. Annual production has improved to 26 million units in FY 2023, registering a strong recovery from the steep drop that happened in the previous year. Such large production volume has created strong demand for all types of auto components as well as related input materials. SS pipes & tubes too have benefitted by the presence of such a strong automobile manufacturing infrastructure.

Demand from architecture, building & construction (ABC) segment

Superior aesthetics, corrosion resistance, and long lifespan have all led to wide acceptance of SS tubes for architecture, building & construction application. Infrastructure development, and a surge in real estate construction (residential & commercial) have created a high demand for stainless steel, along with other building & construction materials. In past, the boom in construction which accompanied the strong economic growth in the country have resulted in higher consumption of stainless steel.

However, the sector has been severely hit by the occurrence of COVID-19 pandemic which has turned the overall business sentiment pessimistic. The construction activity in India have moderated over the last few fiscals due to combination of factors such as liquidity squeeze, higher cost of capital, delay in project clearance and bottlenecks in execution. In FY 2021, the construction sector GVA contracted by 8.6% against subdued 0.98% change in the previous year. During FY 2022, surge in the Delta variant during the second wave of pandemic starting from end of February and strengthening till May 2021 was a drag on the overall economic recovery. On sequential Q-o-Q basis, India's GDP fell by 17% in Q1 FY 2022 as compared to the previous quarter output (Q1 FY 2022 change over Q4 FY 2021). However, it registered healthiest ever quarterly growth in Q1 FY 2022 while much of this sharp surge in GDP growth was attributed to the low base-effect (as country observed a contraction of nearly 24% in GDP during Q1 FY 2021).

The country rebounded well from the Covid slump in subsequent quarters. With supportive government measure, India managed to registered growth for five consecutive quarter starting from Q3 FY 2021. For FY 2022, the country's GDP grew by 9.1% while construction sector GVA grew by 14.8% on y-o-y basis. Such a strong growth in building construction is expected to revive the demand for SS tubes & pipes. Furthermore, the construction GVA continued its strong growth in FY 2023, when it registered a growth of 10% over previous year.

Impact of Covid-19 on Steel Pipes & Tubes

The onset of Covid-19 in 2020 disrupted the capital expansion plans in the manufacturing sector. The tepid demand scenario forced the India Inc to defer its capacity expansion plans. This trend was observed across

all major sectors in the manufacturing space. Such a steep decline in capital expenditure pattern across the manufacturing industry proved detrimental to the steel pipe industry. As the demand for steel pipe & tube is tied to industrial construction, the dip in capital investments translated into lower demand in FY 2021.

Capital expenditure pattern in India was already on the wane in FY 2020, as the economic growth slowed down, on account of unfavorable economic factors. The scenario worsened in FY 2021 as the impact of Covid-19 added on to the already pessimistic mood in Indian corporate sector.

In FY 2022, the business operation gradually returned to normalcy with gradual relaxation in restriction announced to curb second wave. Furthermore, the government continuing effort to scale up vaccination, strengthen healthcare infrastructure, living with virus attitude and other economic measure to restore the economy back on the growth trajectory supported the growing consumption volume of steel pipes & tubes during YTD FY 2022. During 10M FY 2022, the country's consumption of steel pipes & tubes registered 4% y-o-y growth.

Competitive Landscape

Compared to carbon steel pipes, SS pipes & tube manufacturing sector is consolidated in nature, with few major players accounting for majority market share. Capital intensive nature of the industry coupled with challenging operating environment has erected steep entry barriers in SS pipes & tube sector, handing incumbents a definite advantage. It is estimated that the capex required to set up a SS pipe & tube manufacturing facility is ~15 times that required to set up a carbon steel pipe manufacturing facility of similar capacity. Such a high capital requirement translates into higher upfront investment, which dampens the interest of smaller players.

SS pipes & tubes are used in harsh environment as well as for specialized application in mature sectors like oil & gas, petroleum refining, chemical, pharmaceutical, and other similar process industries. Compared to carbon steel pipes, the volume requirement is higher while breaking into large consumer segment is challenging and time consuming. Since, SS tubes form an integral part of any new expansion project in the above-mentioned consumer industries, products are subject to rigorous testing for technical competence post which price comes in.

Although this increases the time required for a manufacturer to bag new orders, a successful track-record provides an advantage which can be leveraged in future contracts & requirements. Any new player entering this industry will have to invest considerable time and capital to develop products that meet the customer standards as well as prove their superiority over existing players.

All these attributes have resulted in creating a high entry barrier in the domestic SS pipes & tubes industry, resulting in a consolidated market. This consolidated nature augurs well for incumbent players as they are

well placed to exploit the opportunities arising because of capital investment across key end user consumer segments.

Major Players

Ratnamani Metals & Tubes Limited, Jindal SAW, Maharashtra Seamless Limited, Man Industries and Welspun Corp are few of the major players in Indian steel pipe & tube segment. All these companies have a wide product portfolio, offering SAW, ERW, Seamless and Stainless-Steel Pipes & Tubes. Among these Ratnamani and Jindal SAW have an established SS pipes & tubes business, placing them as market leaders in this segment. Other notable players include Skoda Tubes, Maxim Tubes Company Private Limited and Shubhalaxmi Metals & Tubes Private Limited.

Notable Players in Indian SS Pipe & Tube Industry							
Company	By Variety-Type				By Raw Material Type		
	ERW	SAW	Seamless	DI	Carbon Steel	Mild Steel	SS
Ratnamani Metals & Tubes Limited	✓	✓	✓	✗	✓	✗	✓
Jindal SAW Limited	✗	✓	✓	✓	✓	✗	✓
Welspun Corp	✓	✓	✗ ²¹	✗ ²²	✗	✓	✗
Skoda Tubes	✗	✗	✓	✗	✗	✗	✓
Maxim Tube Company Private Limited	✗	✗	✓	✗	✗	✗	✓
Shubhalaxmi Metals & Tubes Private Limited	✗	✗	✓	✗	✗	✗	✓

Dun & Bradstreet Research, Company Websites

Order Book Position Ending on 31st December 2022 (in INR Crore)

	FY 2019	FY 2020	FY 2021	As on 31 st Dec 2022
Ratnamani Metals & Tubes	1,500	1,380	1,498	1,900
Jindal SAW	8,340	5,700	5,961	4,681
Maharashtra Seamless	810	625	8,370	1,619

²¹ Announced the Entry into SS seamless pipe segment in FY 2021.

²² Announced the Entry into DI pipe segment in FY 2021. Greenfield facility coming up at Anjar, Gujarat to be commissioned by April 2022 .

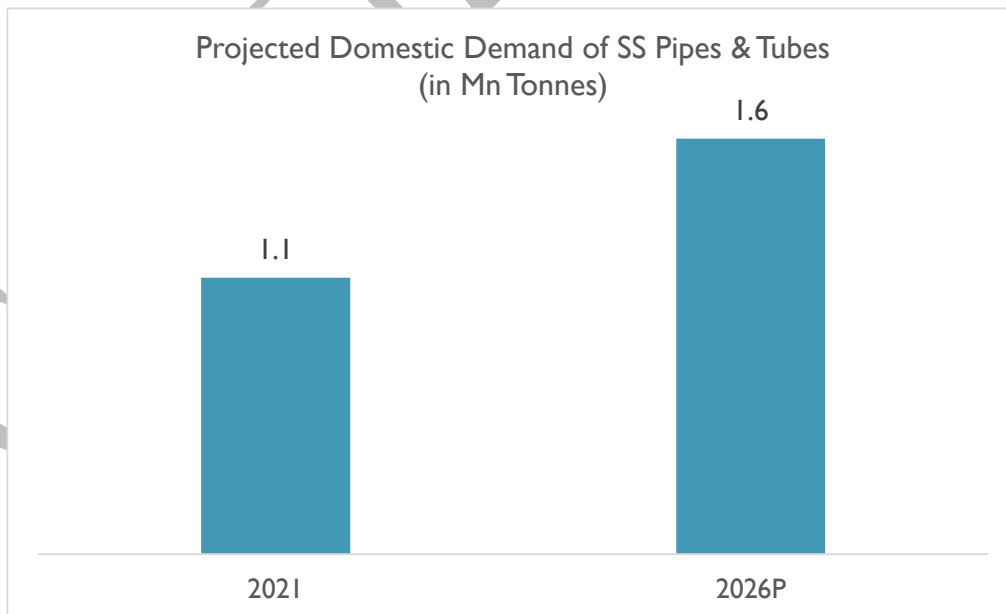
Welspun Corp	14,100	5,700	4,800	4,700
Man Industries	2,000	1,500	1,600	NA

Center for Monitoring Indian Economy

Growth Outlook

From demand perspective, India's growth scenario for steel pipes and tube including SS pipes and tubes remains intact on the back of substantial government expenditure planned in major end user industries under National Infrastructure Pipeline and recently announced PM gati Shakti project. The various initiatives for infrastructure development under the PM Gati Shakti will propel the demand of steel in various sectors thereby enhancing steel usage and growth of the SS pipes & Tubes. We expect domestic SS pipes & tube industry to grow from about 1.1 Mn tonnes currently to 1.6 Mn Tonnes by 2026, growing at CAGR 8.5%.

This coupled with supportive policy reform through scheme like Atmanirbhar Bharat, PLI, amended DMISP policy and Make in India will give push to domestic manufacturing and strengthen the supply side dynamics. However, domestic SS face a major downside risk from rising imports, mainly from low-cost destination like China which is creating material harm to the domestic industry. Given the higher input cost and other overheads, domestic manufacturers find it difficult to compete with Chinese imports based on price. Only government level initiatives, to create a level playing field would help in nullifying this challenge. In addition to above, the high probability of RBI moving away from maintaining accommodative monetary policy amidst rising inflationary pressure may further intensify the fresh capital investment in the sector.



Sources: Dun & Bradstreet Estimates

Financial Analysis

Revenue Growth Pattern

In order to study relative performance of the industry players, the financial analysis of six companies has been undertaken which include Suchi Fasteners Ratnaveer Precision Engineering Limited,, Navgrah Fastners, and SBP Automotive, Gala Precision Engineering, and Autotech Industries (India). The companies selected here fall in the same revenue range as Ratnaveer Precision Engineering Limited.

Till FY 2019, the washer industry in India registered a significant growth in sales. However, during past two consecutive years, the industry witnessed a slowdown in demand, resulting in drop in revenue of many companies. The revenue de-growth in FY 2020 could be attributed to the prevailing slowdown in major end-user sectors such as automobile, followed by worldwide pandemic-led disruptions in the last quarter of the financial year. The operations and production activities were highly impacted due to Covid-19 induced lockdowns and strict restrictions imposed by Central and State Governments in the late part of FY 2020 and in the beginning of FY 2021. FY 2022 saw a revival in growth, as normalcy began to return as covid-19 related restrictions were removed.

Year-on-Year Revenue Growth (%)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Suchi Fasteners	7.1%	48.1%	-5.4%	-8.2%	43.9%
Ratnaveer Precision Engineering Limited	-8.1%	30.9%	25.6%	22.5%	18.5%
Navgrah Fastners	22.6%	3.9%	7.0%	-10.8%	50.1%
SBP Automotive	9.2%	13.4%	-28.6%	27.8%	17.2%
Gala Precision Engineering	14.8%	21.3%	0.8%	1.3%	40.0%
Autotech Industries (India)	9.7%	29.3%	-13.4%	8.8%	23.5%

Source: Ministry of Corporate Affairs, Dun & Bradstreet Research

However, with the gradual opening up of the economy and easing of Covid restrictions by governments, economic activities in the country started picking up. The demand for washers, however, remained low due to sluggish demand scenario in end-user industries. The demand scenario which improved temporarily after the first wave was again affected with the weak consumer sentiments due to second wave of pandemic.

Despite slowdown in demand, large companies like Ratnaveer Precision Engineering Limited s could not only survive the slowdown but also registered a significant growth in revenue during FY 2020 and FY 2021. The slowdown in demand and pandemic-led disruptions mainly affected the operations of small companies

operating at lower scales. With the rapid rollout of vaccines across the world and improvement in demand scenario, the industry may witness a gradual pick-up in demand in coming years.

Operating Cost Trends

The key operating cost for washers manufacturing companies is the raw material cost, which accounts for major portion of total operating expenses. Typically, a raw material cost for washers manufacturers accounts for 70%-80% of total revenue and varies according to the metal or material used in the production. For the companies under coverage, the raw material cost ranges from ~40% to highest 85% of their net sales.

Cost of Materials Consumed	FY 2019	FY 2020	FY 2021	FY 2022
Suchi Fasteners	78.47%	76.91%	78.95%	75.48%
Ratnaveer Precision Engineering Limited	79.47%	81.22%	85.00%	87.18%
Navgrah Fastners	82.25%	81.42%	80.73%	78.4%
SBP Automotive	61.40%	51.19%	57.30%	65.25%
Gala Precision Engineering	43.45%	37.84%	37.57%	40.50%
Autotech Industries (India)	36.37%	40.57%	29.55%	45.23%

Source: Ministry of Corporate Affairs, Dun & Bradstreet Research

Key input materials like stainless steel, aluminum, and iron are witnessing a continuous rise in prices and demand, but relatively low supplies. The industry has seen significant rise in stainless steel prices in past few years owing to various global factors such as continuous rise in trade value of Nickel, freight shortages, and increase in fuel prices.

Furthermore, the recent Russia-Ukraine war has worsened the scenario. Russia is one of the major producer of steel and nickel and controls around 8% of the global supply. The war-induced sanctions imposed on it will result in a curtailed supply globally. Though India does not depend on Russia for nickel, it is still feeling the squeeze, since the overall supply has been affected and resulted in extreme price volatility. However, post clarity on the war situation, steel prices may cool off to sustainable levels.

Other Major Cost Heads

Salary & Wages	FY 2019	FY 2020	FY 2021	FY 2022
Suchi Fasteners	6.96%	7.23%	7.67%	6.13%
Ratnaveer Precision Engineering Limited	2.75%	1.96%	1.70%	1.82%
Navgrah Fastners	2.03%	1.94%	3.32%	3.0%

SBP Automotive	11.10%	14.31%	13.14%	10.74%
Gala Precision Engineering	17.81%	18.94%	16.82%	14.16%
Autotech Industries (India)	15.07%	13.13%	10.59%	11.26%
Interest Expenses	FY 2019	FY 2020	FY 2021	FY 2022
Suchi Fasteners	1.16%	1.21%	0.97%	0.93%
Ratnaveer Precision Engineering Limited	3.24%	4.08%	2.40%	2.72%
Navgrah Fastners	1.80%	1.70%	1.35%	2.3%
SBP Automotive	0.85%	1.22%	0.81%	0.50%
Gala Precision Engineering	4.94%	5.48%	5.59%	3.33%
Autotech Industries (India)	0.31%	0.58%	0.41%	0.24%

Source: Ministry of Corporate Affairs, Dun & Bradstreet Research

Profitability Scenario

The increasing cost of key inputs is estimated to be putting pressure on profitability margins, which can be seen with the decline in EBITDA and net profit margins of most of the companies covered. With rise in raw material cost and other expenses like salaries & wages, EBITDA margins of the companies have been affected significantly in FY 2021. Subsequently, net profit margins of some companies have also been affected adversely on y-o-y basis. FY 2022 witnessed improvement in margin for most of the players, as economy turned favorable as covid-19 restrictions were lifted.

PBITDA	FY 2019	FY 2020	FY 2021	FY 2022
Suchi Fasteners	5.48%	7.21%	3.33%	8.01%
Ratnaveer Precision Engineering Limited	8.49%	8.34%	5.88%	6.78%
Navgrah Fastners	6.26%	6.42%	7.00%	6.69%
SBP Automotive	5.78%	7.87%	6.28%	4.23%
Gala Precision Engineering	14.05%	10.67%	12.68%	15.52%
Autotech Industries (India)	20.21%	19.98%	27.86%	25.81%
PAT	FY 2019	FY 2020	FY 2021	FY 2022
Suchi Fasteners	2.56%	3.72%	1.23%	4.85%
Ratnaveer Precision Engineering Limited	2.93%	2.74%	1.76%	2.23%
Navgrah Fastners	2.36%	2.63%	3.60%	2.19%

SBP Automotive	2.95%	3.33%	1.94%	1.23%
Gala Precision Engineering	3.90%	1.24%	1.76%	5.60%
Autotech Industries (India)	11.12%	12.24%	18.93%	17.92%

Source: Ministry of Corporate Affairs, Dun & Bradstreet Research

Key Risks & Challenges

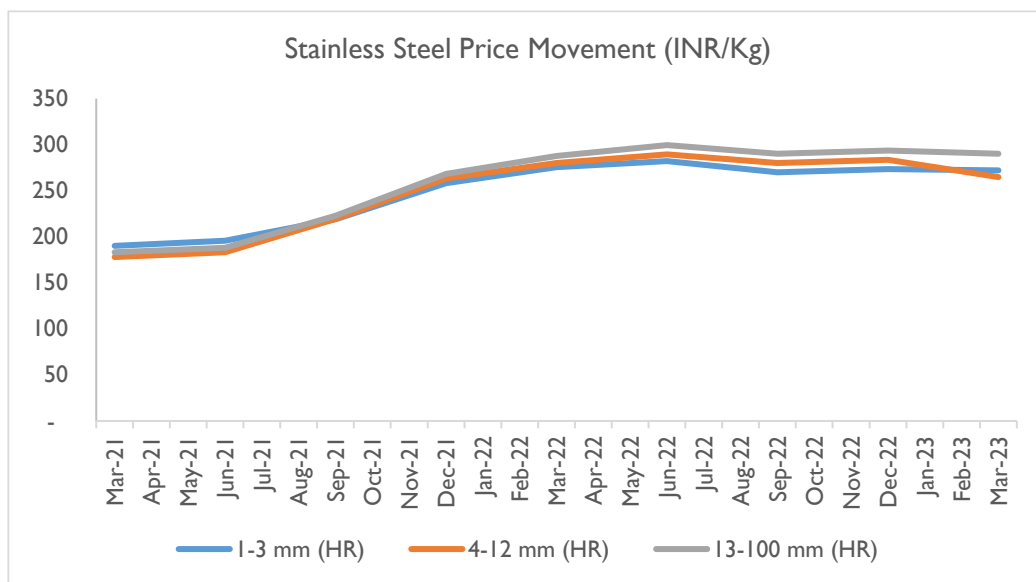
Delays in construction projects

Demand for SS pipes is largely dependent on development projects undertaken by government entities or agencies. A major economic downturn for example Covid-19 Pandemic like crisis have potential to disrupt industry demand/delay for various projects. Delay in new projects announcement, clearances, required approval, project implementation and funding issue in industrial and infrastructure projects pose potential risk to pipes demand. The capital investment scenario in Indian industrial sector has been pessimistic in the past couple of years. The mounting NPA (non-performing assets) have forced banks to go slow in offering credit. Furthermore, the drop-in demand scenario is discouraging corporate sector to invest in new plants / capacity expansion.

Thus, the demand for industrial equipment's and consumables used in setting up industrial infrastructure projects. On overall basis, SS steel pipes and tube sector have also been impacted by this development in the last two year. Accordingly, capex in overall steel pipes and tubes industry have also observed moderation during FY 2020 and FY 2022. Number of outstanding and new projects announced has gradually reduced over the past three years.

Raw material: availability & price

With raw material cost being the single largest operating cost, change in price of steel (finished steel as well as stainless steel) will have a direct impact on the production cost of SS sheet metal components. 2021 witnessed an upward movement of SS prices in India, as well as globally. Several factors ranging from supply disruptions due to restrictions in freight movement, surcharge on raw materials (like nickel), and higher overall demand have resulted in this price hike. This has in turn increased the raw material procurement cost of SS sheet metal component manufacturers. However, moderation of prices in 2022 meant the input prices incurred by manufacturers witnessed a moderation.



Source: CMIE Industry Outlook, Prices quoted in Mumbai market

Threat of imports

Increasing import from is cited as major threat to stainless steel product manufacturer including SS based pipes & Tubes. In Union-Budget 2021-22, the government announced revocation of CVD on imports of certain hot rolled and cold rolled stainless steel flat products originating or exported from China (uptill 30th September 2021) and subsequently extended it upto 31st Jan 2022 . Moreover, the budget also announced the revocation of the provisional CVD on import of flat products of stainless steel, originating or exported from Indonesia.

As a result, India observed sharp surge in stainless-steel imports in FY 2022 where India’s import intensity for stainless steel flat product market is almost 5 times higher at about 25% as compared to 5-6% for the overall steel industry. Industry sources suggest, during the four months in FY 2022 India SS import surged sharply by over 177% as compared to last year FY 2021 average and by 159% from FY 2017 average (a base year prior to the imposition of CVD on China). China and Indonesia share in India’s basket of SS import during July 2021 inched up to 66% and 15% with total share from these two countries reaching to over 81%. This is substantially high in comparison to during H2 FY 2018 (post CVD imposition), when China's share stood at 27% and Indonesia's share at 3%. This surge in imports is backed by the non-WTO compliant subsidies of 20-30% that is extended to their stainless-steel manufacturers by China and Indonesia and has resulted in imbalances in Indian as well as in global market.

The detail review of the industry development over the last two three years also suggests a large part of import from Indonesia are being driven by the Chinese companies operating from Indonesia. China has been investing aggressively in Indonesia to scale up SS capacity and displace India as a second largest SS player in

world. Indonesia currently has a total installed capacity of 5.5Mn tonnes, which is higher than India (5 Mn tonnes) and the country is estimated to have replaced India to become the second largest SS producer globally in 2021.

In addition, Indonesia's SS capacity is also 25 times more than their total annual domestic consumption requirement of just 0.2 MTPA which serve India as a fertile dumping ground for Indonesian SS flat product exports as Indonesia is a part of India's free trade agreement (FTA) with the Association of Southeast Asian Nations (ASEAN).

This surge in cheaper import is severely hurting the supply dynamics of domestic SS industry with underutilized domestic capacity which is dwindling somewhere near 60%. Majority of underutilized capacity is concentrated in MSME segment which contributes about 28% share (1.4 Mn Tonnes) in total SS capacity of India. Under-utilization of domestic capacity are adding its resulting woes to the domestic SS industry such as falling revenue, declining profitability, significant unemployment, bringing fresh investment at halt, turning many companies out of business, and converting many manufacturers into trader. A profitability comparison of EBDITA to net sale ratio between carbon steel and SS manufacturer clearly state the low profitability of SS steel players. During FY 2021, the EBDITA margin of carbon steel companies like Tata Steel, JSPL, and JSW, , was 40%, 30%, and 28.6% respectively in comparison to SS companies such Shah Alloy, Jindal Stainless (Hisar) Ltd and Jindal Stainless Ltd for which it stood at 15.8%, 14.8% and 13.9% respectively.