Industry Report on Steel Wire

8th May 2025

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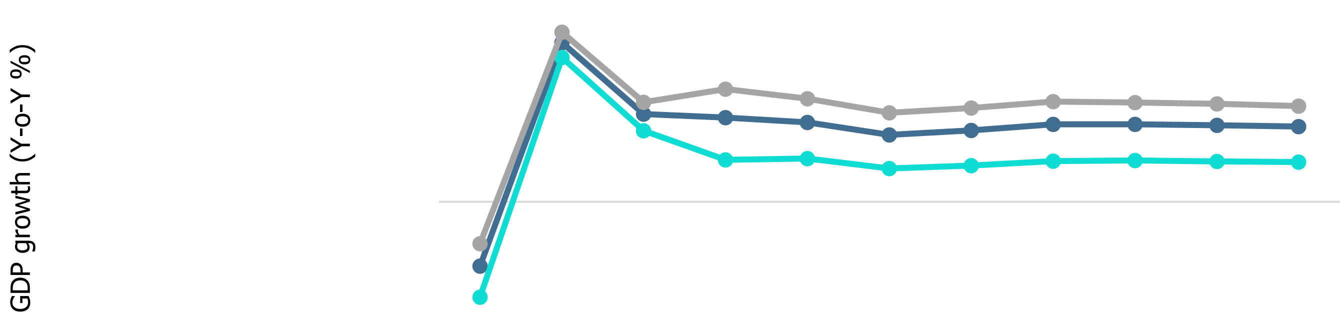
1 Economic Outlook

1.1 Global Economy

Global growth, which reached 3.5% in CY23, is estimated to stabilize at 3.3% for CY24 and projected to decrease at 2.8% for CY25. Global trade is expected to be disrupted by new US tariffs and countermeasures from trading partners, leading to historically high tariff rates and negatively impacting economic growth projections. The global landscape is expected to change as countries rethink their priorities and policies in response to these new developments. Central banks priority will be to adjust policies, while smart fiscal planning and reforms are key to handling debt and reducing global inequalities.

Chart 1: Global Growth Outlook Projections (Real GDP, Y-o-Y change in %)



	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
World	-2.7%	6.6%	3.6%	3.5%	3.3%	2.8%	3.0%	3.2%	3.2%	3.2%	3.1%
Advanced Economies	-4.0%	6.0%	2.9%	1.7%	1.8%	1.4%	1.5%	1.7%	1.7%	1.7%	1.7%
Emerging Market and Developing Economies	-1.7%	7.0%	4.1%	4.7%	4.3%	3.7%	3.9%	4.2%	4.1%	4.1%	4.0%

Source: IMF – World Economic Outlook, April 2025; Notes: P-Projection, E-Estimated

Table 1: GDP growth trend comparison - India v/s Other Economies (Real GDP, Y-o-Y change in %)

	Real GDP (Y-o-Y change in %)										
	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
India	-5.8	9.7	7.6	9.2	6.5	6.2	6.3	6.5	6.5	6.5	6.5
China	2.3	8.6	3.1	5.4	5.0	4.0	4.0	4.2	4.1	3.7	3.4
Indonesia	-2.1	3.7	5.3	5.0	5.0	4.7	4.7	4.9	5.0	5.1	5.1
Saudi Arabia	-3.6	5.1	7.5	-0.8	1.3	3.0	3.7	3.6	3.2	3.2	3.3
Brazil	-3.3	4.8	3.0	3.2	3.4	2.0	2.0	2.2	2.3	2.4	2.5
Euro Area	-6.0	6.3	3.5	0.4	0.9	0.8	1.2	1.3	1.3	1.2	1.1
United States	-2.2	6.1	2.5	2.9	2.8	1.8	1.7	2.0	2.1	2.1	2.1

Source: IMF- World Economic Outlook Database (April 2025)

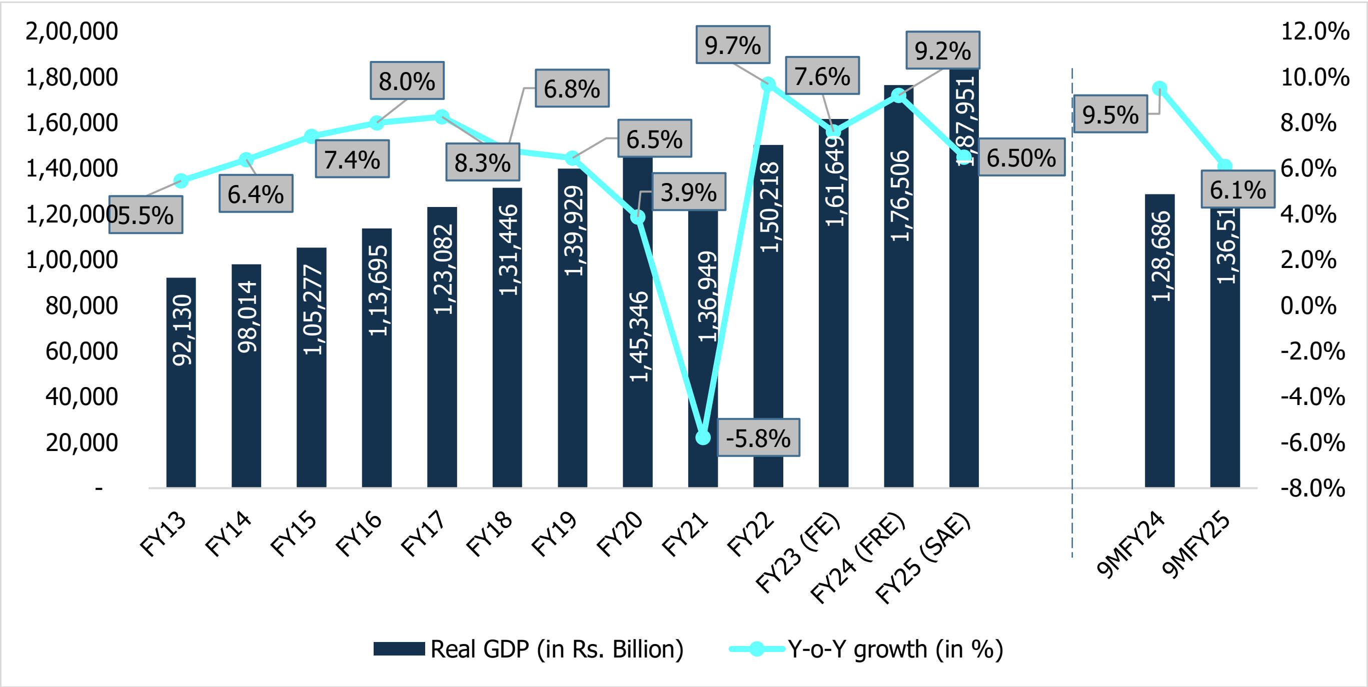
Note: P- Projections, E-Estimate; India's fiscal year (FY) aligns with the IMF's calendar year (CY). For instance, FY24 corresponds to CY23.

1.2 Indian Economic Outlook

1.2.1 GDP Growth and Outlook

Resilience to External Shocks remains Critical for Near-Term Outlook

Chart 2: Trend in Real Indian GDP growth rate



Source: MOSPI; Note: SAE – Second Advance Estimates, FE – Final Estimate, FRE- First Revised Estimates

India's real GDP grew by 9.2% in FY24 (Rs. 176,506 billion) which is the highest in the previous 12 years(excluding FY22 being 9.7% on account of end of pandemic) and is estimated to grow by 6.5% in FY25 (Rs. 187,951 billion), driven by double digit growth particularly in the Manufacturing sector, Construction sector and Financial, Real Estate & Professional Services. In 9MFY25, GDP grew 6.1% Y-o-Y, with private consumption increasing by 7.6% and government spending increasing by 3.8% Y-o-Y.

GDP Growth Outlook

FY26 GDP Outlook: Real GDP growth is projected at 6.5%, driven by strong rural demand, improving employment, and robust business activity. The agriculture sector's bright prospects, healthy reservoir levels, and robust crop production support this growth. Manufacturing is reviving, and services remain resilient, despite global uncertainties. Investment activity is gaining traction, supported by healthy balance sheets and easing financial conditions. However, risks from geopolitical tensions, global market volatility, and geo-economic fragmentation persist

Persistent geopolitical tensions, volatility in international financial markets and geo-economic fragmentation do pose risk to this outlook. Based on these considerations, the RBI, in its April 2025 monetary policy, has projected real GDP growth at 6.5% y-o-y for FY26.

Table 2: RBI's GDP Growth Outlook (Y-o-Y %)

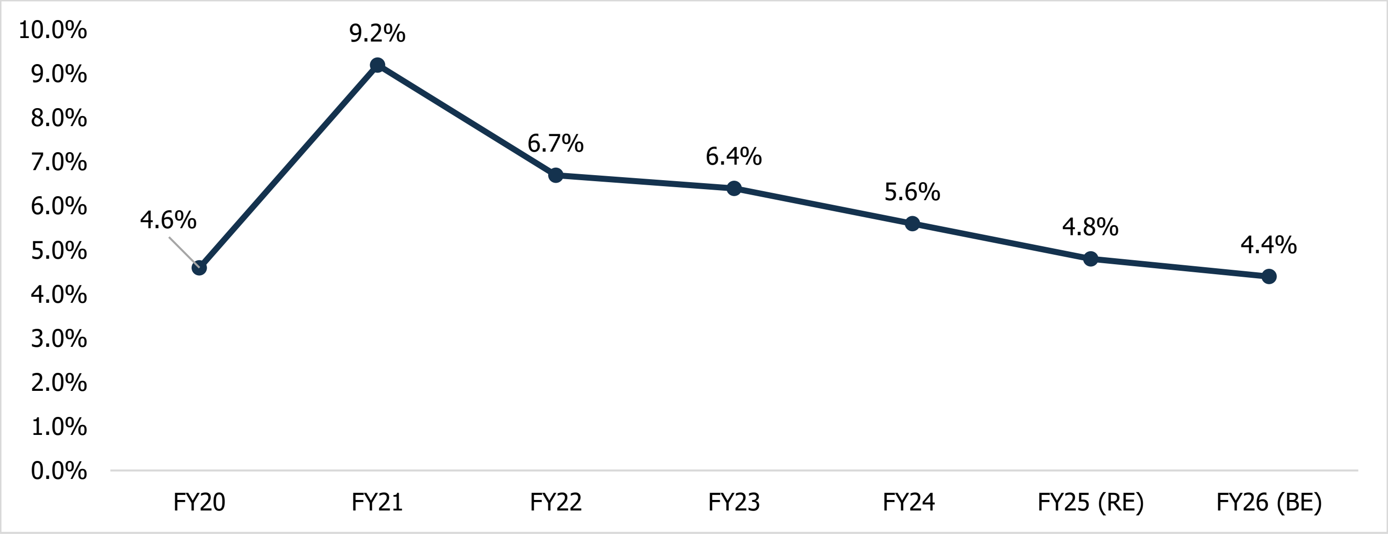
FY26P (complete year)	Q1FY26P	Q2FY26P	Q3FY26P	Q4FY26P
6.5%	6.5%	6.7%	6.6%	6.3%

Source: Reserve Bank of India; Note: P-Projected

1.2.2 Fiscal Deficit (as a % of GDP)

In FY21, India's fiscal deficit was 9.2% due to the impact of COVID-19, since then it has seen a steady improvement is expected to reduce to 4.8% of GDP FY25 (RE), driven by strong economic growth and higher tax and non-tax revenues. The government aims for further fiscal consolidation, setting a target of 4.4% of GDP for FY26 to maintain fiscal prudence.

Chart 3: Gross Fiscal Deficit (% of GDP)

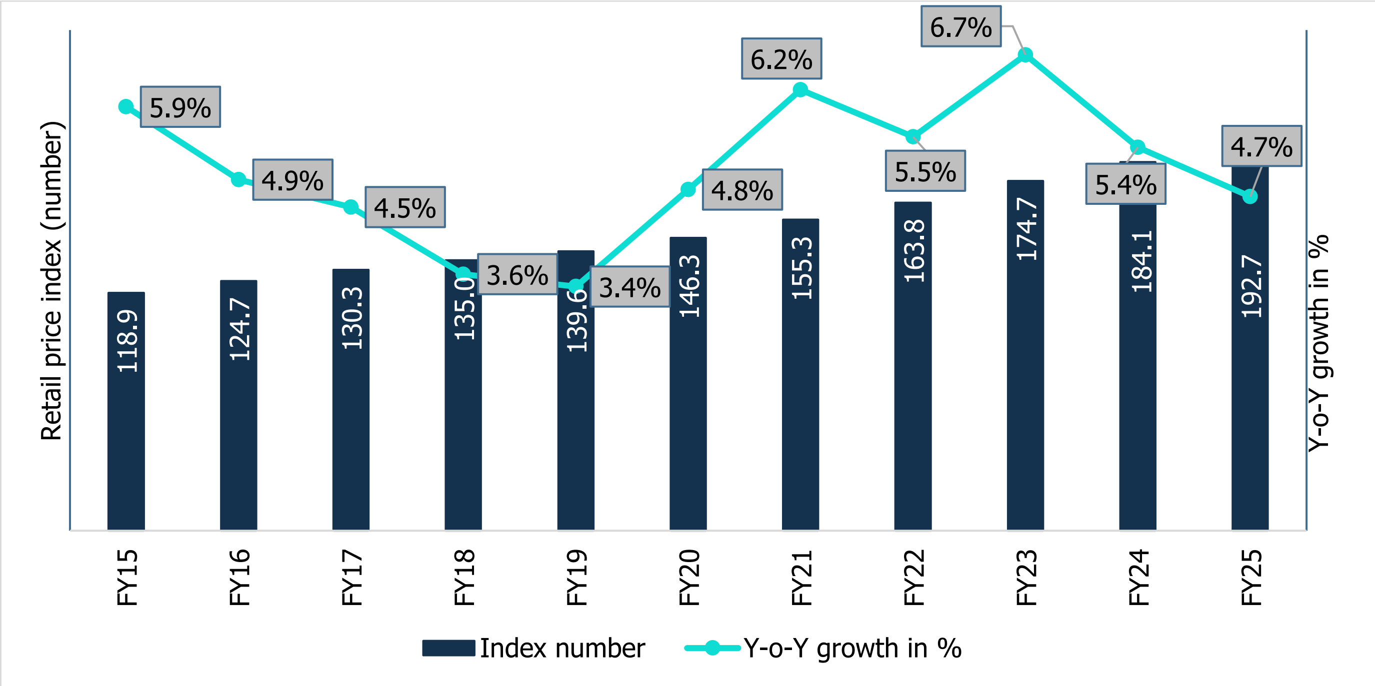


Source: RBI; Note: RE-Revised Estimates, BE-Budget Estimates

1.2.3 Consumer Price Index

The CPI (general) and food inflation in March, 2025 over March,2024 (3.34%, provisional) witnessed lowest Y-o-Y inflation since August 2019. The moderation was driven by decline of price inflation in Vegetables, Egg, Meat & fish, Cereals and Pulses and Milk.

Chart 4: Retail Price Inflation in terms of index and Y-o-Y Growth in % (Base: 2011-12=100)

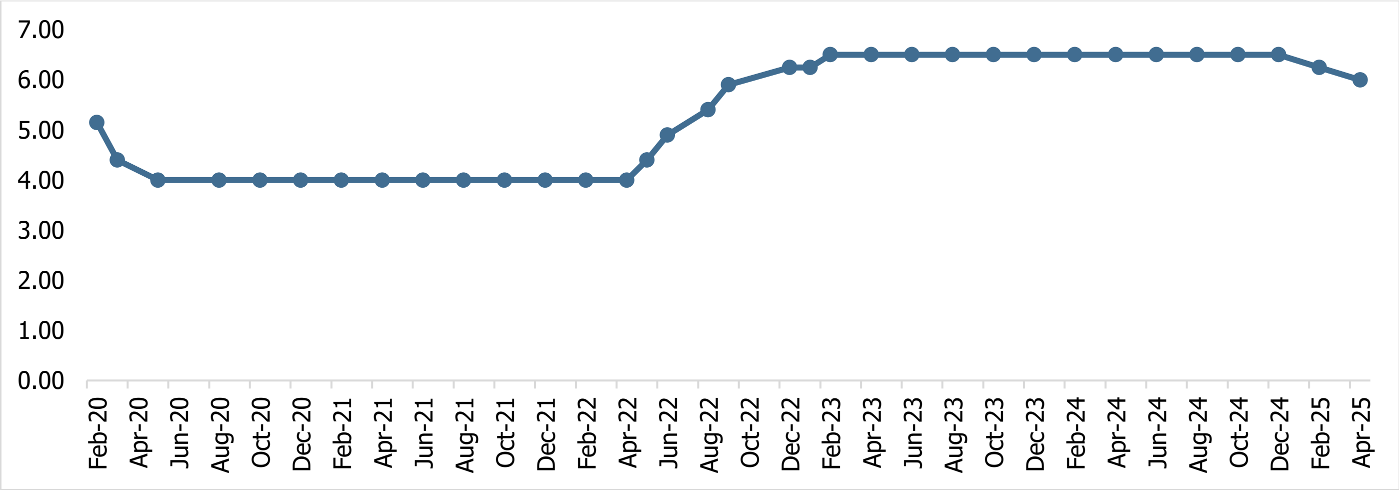


Source: MOSPI

The CPI is primarily factored in by RBI while preparing their bi-monthly monetory policy. At the bi-monthly meeting held in April 2025, RBI projected inflation at 4.0% for FY26 with inflation during Q1FY26 at 3.6%, Q2FY26 at 3.9% and Q3FY26 at 3.8% and Q4FY26 4.4%.

Considering the current inflation situation, RBI has cut the repo rate to 6.00% in the April 2025 meeting of the Monetary Policy Committee.

Chart 5: RBI historical Repo Rate



Source: RBI

Further, the central bank changed its stance to be accommodative. With a decline in food inflation, the headline inflation moderated during January-February 2025.

The economic growth outlook for India is expected to remain resilient, but it will require careful monitoring due to depreciation of the Indian rupee in recent months. Additionally, certain key sectors may face headwinds amid hiked tariffs from the US.

The RBI has adopted for a non-inflationary growth with the foundations of strong demand and supply with a good macroeconomic balance. The domestic growth and inflation curve require the policies to be supportive with the volatile trade conditions.

1.2.4 GVA in the Industrial Sector

India's industrial sector is expected to grow by 10.8% in FY24, reaching Rs. 31.56 trillion, supported by positive business sentiment, falling commodity prices, and government initiatives like production-linked incentives. In 9MFY25, growth is expected to slow down to 5.6% y-o-y, down from 11.3% in 9MFY24. The growth is driven primarily by manufacturing, construction, and utility services. The slow down can be attributed to the construction segment likely to grow at 8.5%, slightly lower than the previous year's 11.1%.

Table 3: Industrial sector growth (Y-o-Y growth) -at Constant Prices

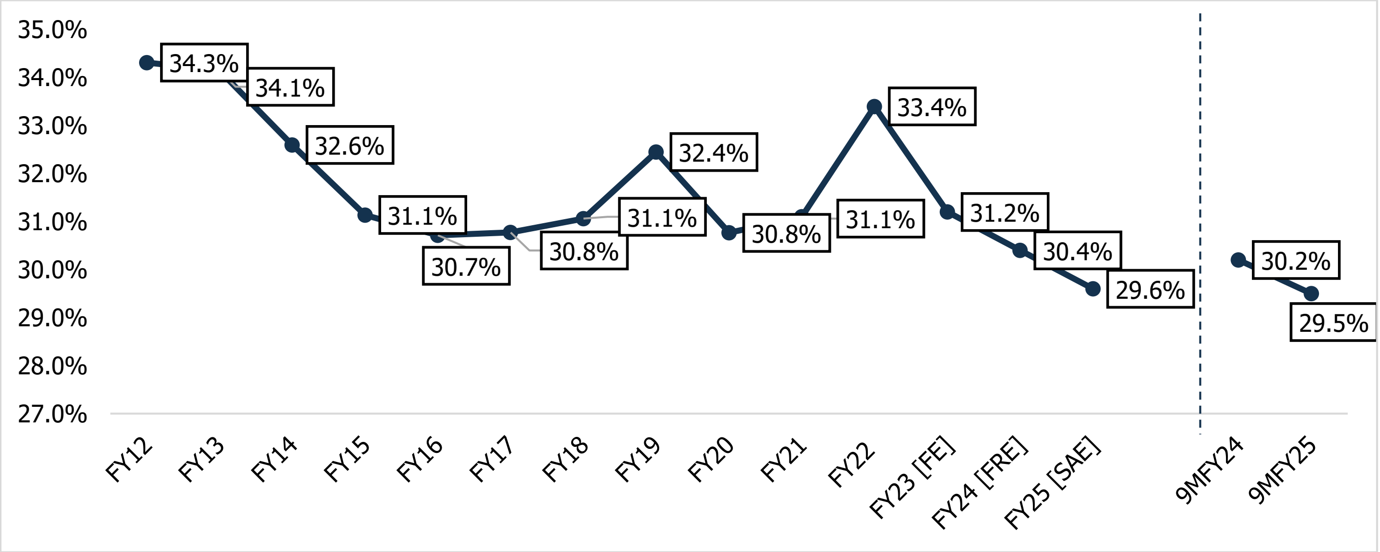
At constant Prices	FY19	FY20	FY21	FY22	FY23 (FE)	FY24 (FRE)	FY25 (SAE)	9MFY24	9MFY25
Industry	5.3	-1.4	-0.9	11.6	2.0	10.8	5.6	11.3	5.6

Source: MOSPI; Note: FRE – First Revised Estimates, FE – Final Estimate, SAE- Second Advance Estimates

1.2.5 Investment Trend in Infrastructure

Gross Fixed Capital Formation (GFCF) is a measure of net increase in physical assets. In FY23, the ratio of investment (GFCF) to GDP remained flat, as compared to FY22 which was at 33.4%. The growth stabilized at 30.54 in FY24. In 9MFY25, GFCF to GDP ratio reached 29.5% as compared to 30.2% in 9MFY24, led by decline in investments amid global economic uncertainties.

Chart 6: Gross Fixed Capital Formation (GFCF) as % of GDP (At constant prices)



Source: MOSPI; Note: FRE- First Revised Estimates, PE – Provisional Estimate, FAE-First Advance Estimate

Overall, the support of public investment in infrastructure is likely to gain traction due to initiatives such as Atmanirbhar Bharat, Make in India, and Production-linked Incentive (PLI) scheme announced across various sectors.

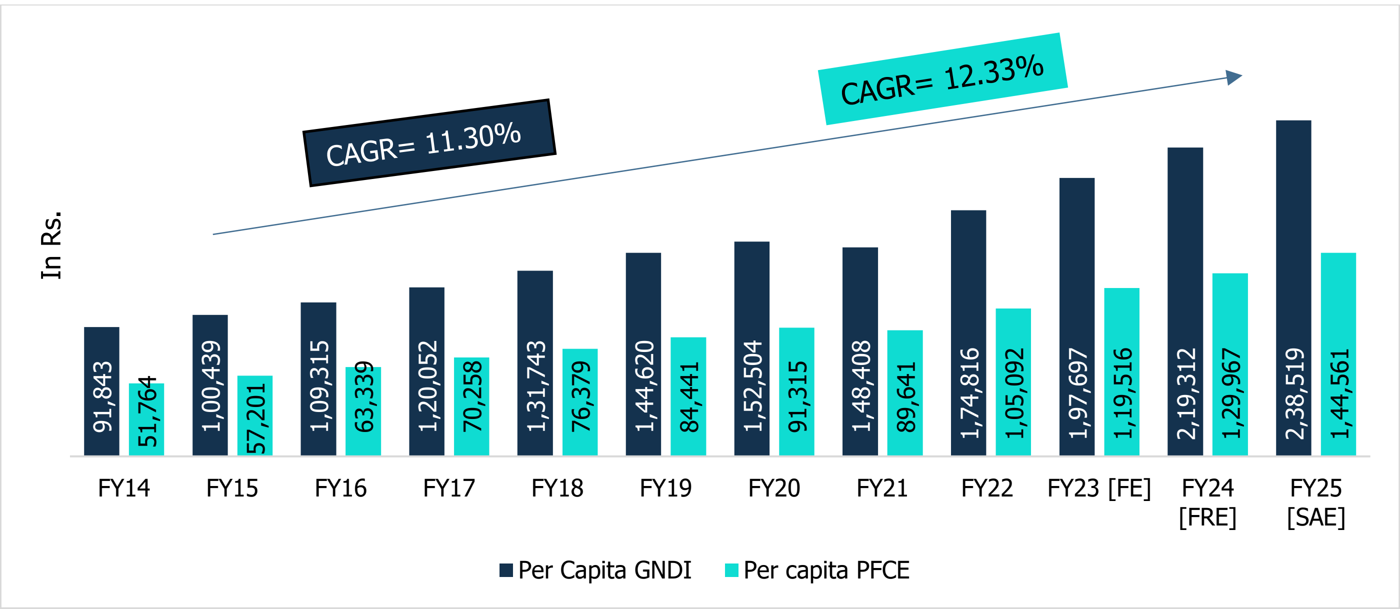
1.2.6 Per capita PFCE and GNDI

- **Increasing Disposable Income and Consumer Spending**

Gross National Disposable Income (GNDI) is a measure of the income available to the nation for final consumption and gross savings. Between the period FY14 to FY25, per capita GNDI at current prices registered a CAGR of 11.30%. More disposable income drives more consumption, thereby driving economic growth.

With increase in disposable income, there has been a gradual change in consumer spending behaviour as well. Per capita Private Final Consumption Expenditure (PFCE) which is measure of consumer spending has also showcased significant growth from FY14 to FY25 at a CAGR of 12.33%.

Chart 7: Trend of Per Capita GNDI and Per Capita PFCE (Current Price)



Source: MOSPI; Note: FRE – First Revised Estimates, FE – Final Estimate, SAE-Second Advance Estimate

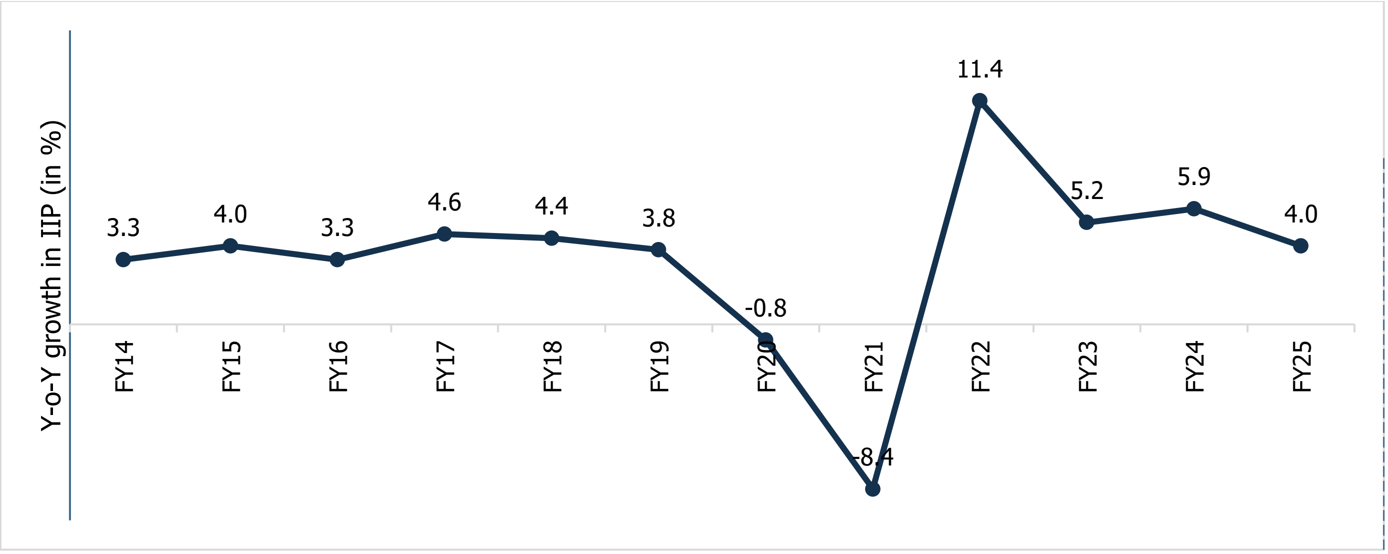
1.2.7 Industrial Growth

The Quick Estimates of the Index of Industrial Production (IIP) for March 2025 show a 3.0% growth, up from 2.9% in February 2025. The y-o-y growth for March 2025 was 4.0% down from 5.9% in March 2024 ,the overall growth in the industry was moderate but subdued primarily due to deceleration in consumer non-durables, infrastructure industries, intermediate goods, capital and primary goods.

In March 2025, the industrial growth saw a rise due to Manufacturing (3.0%), and Electricity (6.3%) while witnessing a decline in the mining sector(0.4%). Among the industry group of basic metals, items of flat products of alloy steel, pipes and tubes of steel and bars and rods of mild steel experienced significant growth. Use-based indices had a slowed growth in Primary Goods, Capital Goods, and Intermediate Goods.

Manufacturing growth was driven by basic metals (6.9%), motor vehicles and semi-trailers (10.3%) and electrical equipment (15.7%). While government spending and private investment support growth, declining consumer non-durables and improving rural demand highlight the need for sustained consumption and investment.

Chart 7: Y-o-Y growth in IIP (in %)



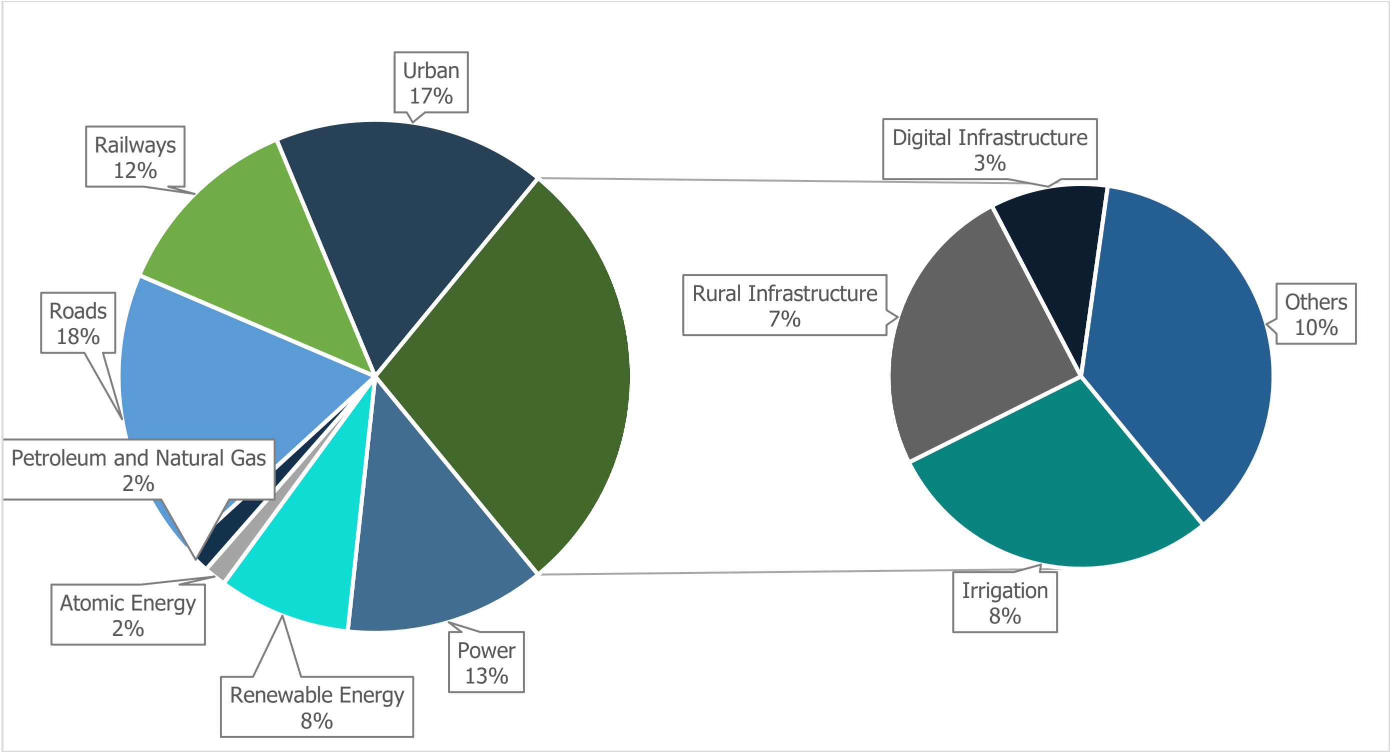
Source: MOSPI

1.2.8 National Infrastructure Pipeline

NIP was launched in December 2019 with a focus on infrastructure development to enable the country to achieve its target of USD 5 trillion economy by FY25 and USD 10 trillion by FY30. Infrastructure to play a major role with 3% contribution to the GDP by FY25 (Rs 11.21 lakh crore) and is expected to remain same or increase its share by FY30 (Rs 25.00 lakh crore).

A taskforce was created to set up the pipeline. In the final report submitted by the task force in April 2020, the pipeline covers multiple sectors, such as urban infrastructure, renewable and conventional energy, roads and railways that constitute nearly 71% of the projected total capex of Rs 11.21 lakh crore. It also includes investments in other sectors such as rural infrastructure, ports, airports among others. The proposed investments will be implemented by both the government and the private sector.

Chart 8: National Infrastructure Pipeline Sectoral Split (%)



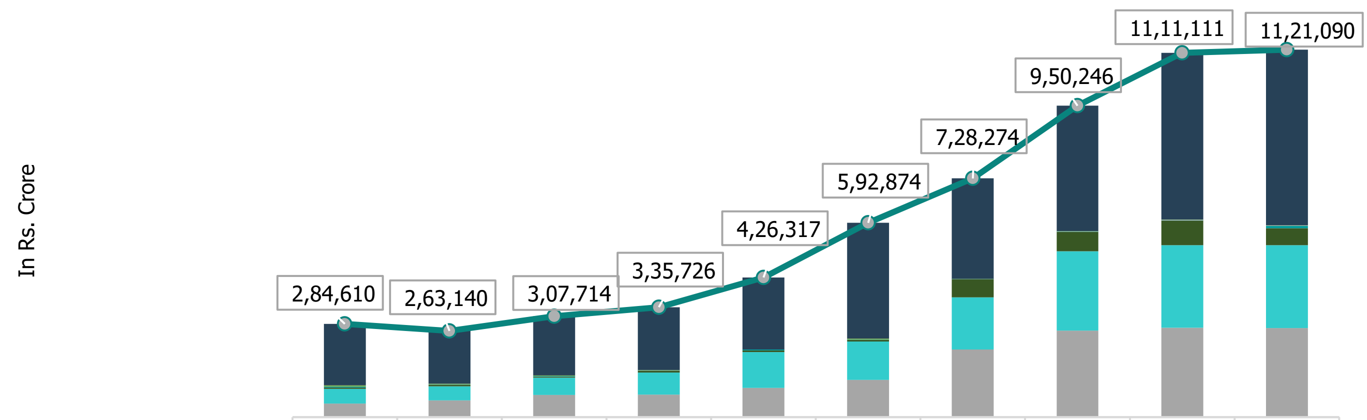
Source: NITI Aayog's report on National Infrastructure Pipeline

During FY20–25, sectors-wise breakup of NIP investment is with energy contributing the highest at Rs 26,900 billion around 24% of the total plan followed by roads Rs. 20,338 billion at 18%, urban Rs. 19,193 billion at 17%, and railways with an investment of Rs. 13,676 billion, which contributes 12% amount to ~71% of the projected infrastructure investments in India.

1.2.9 Budgetary expenditure on Infrastructure

With the growing population, the long-term need for robust infrastructure is necessary for economic development. This generates the need for massive investments in the development and modernization of infrastructure facilities, which will not only cater to the growing demand but will also ensure competitiveness in the global market.

Chart 9: Budgetary outlay towards infrastructure



	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
Others	1,87,757	1,60,747	1,80,199	1,91,405	2,19,693	3,53,251	3,06,085	3,83,061	5,08,625	5,35,817.9
Power	3,816	1,941	2,043	1,615	370	2,827	23	125	1,127	658
Ports	330	182	154	259	169	614	678	1,149	1,342	1,761
Oil & Gas	2,451	1,131	1,908	572	2,313	347	40	41	341	6,626
Telecom	3,832	4,969	2,926	5,660	5,254	5,254	56,205	59,380	74,995	51,785
Railways	45,232	43,418	52,838	67,842	1,09,324	1,17,271	1,59,256	2,42,579	2,52,200	2,52,200
Roads and Highways	41,193	50,752	67,646	68,374	89,195	1,13,312	2,05,986	2,63,912	2,72,481	2,72,241
Total	2,84,610	2,63,140	3,07,714	3,35,726	4,26,317	5,92,874	7,28,274	9,50,246	11,11,111	11,21,090

Source: Union Budget FY26 document

Some of the key government infrastructure schemes include:

- The government has announced plans for the National Monetization Pipeline (NMP) and Development Finance Institution (DFI) to improve the financing of infrastructure projects
- The government has helped the growth of urbanization through a number of schemes and projects, including the **Smart Cities Mission,** the **Atal Mission for Rejuvenation and Urban Transformation (AMRUT),** and the **Pradhan Mantri Awas Yojana (Urban).**

1.3 Concluding Remarks

Global economic growth faces headwinds from geopolitical tensions, volatile commodity prices, high interest rates, inflation, financial market volatility, climate change, and rising public debt. However, India's economy remains relatively strong, with an IMF forecast of 6.5% GDP growth in CY24 (FY25 according to the fiscal year), compared to the global projection of 3.3%. Key drivers include strong domestic demand, government capital expenditure and moderating inflation.

Public investment is expected to exhibit healthy growth as the government has allocated a strong capital expenditure of about Rs. 11.21 lakh crores for FY26. The private sector's intent to invest is also showing improvement as per the data announced on new project investments and resilience shown by the import of capital goods. Additionally, improvement in rural demand owing to healthy sowing, improving reservoir levels, and progress in south-west monsoon along with government's thrust on capex and other policy support will aid the investment cycle in gaining further traction.

The impact of U.S. tariffs on India's export trade is anticipated to be minimal. The engineering goods sector will have a potential U.S. tariff impact, whereas steel industry is affected by the 25% tariffs although the impact is expected to be minimal given the volume of goods exported is less.

On February 13, Prime Minister Narendra Modi and President Donald Trump discussed enhancing the U.S.-India trade relationship, with a target to increase bilateral trade from USD 200 billion to USD 500 billion by 2030. Negotiations for a multi-sector bilateral trade agreement (BTA) are expected to commence later this year, focusing on trade fairness, national security, and job creation.

Thus, while U.S. tariffs may have a limited impact on India’s exports, ongoing trade negotiations and India’s competitive manufacturing advantage position it well for continued growth in global trade.

2 Steel Wire Industry

2.1 Overview of Steel wire Industry

The steel wire industry is essential across various sectors owing to its flexible and robust characteristics. Made of a mix of steel alloys including iron, carbon, manganese, and silicon, steel wire finds wide applications in construction, infrastructure, automotive, aerospace, and mining because it has high tensile strength, flexibility, resistance to wear, shock, and corrosion. The properties make the wire ropes, strands, wire mesh, netting, and reinforcing concrete structures necessary.

The process of manufacturing the wire includes stages like rolling and surface heating so that the wire possesses the desired properties. Steel wires are produced in different forms, such as round, square, and rectangular, to meet the requirements of various industries. The demand for high-quality wire, driven by urbanization and infrastructure development in emerging markets, has increased the steel wire market.

It is made in various forms, such as carbon steel, alloy steel and others, each offering distinct properties suited for specific applications. **Carbon steel wire** is an alloy of iron and carbon, with varying carbon content to adjust its properties. Low carbon steel wire is flexible and ductile, making it ideal for applications like fencing, while high carbon steel wire is strong and hard, used in industrial products like springs and cutting tools. **Alloy steel wire**, which includes additional elements like manganese, chromium, and nickel, offers enhanced strength, durability, and resistance to wear, corrosion, and high temperatures. It's used in demanding applications such as springs, fasteners, and cables, and can be customized for specific needs across industries.

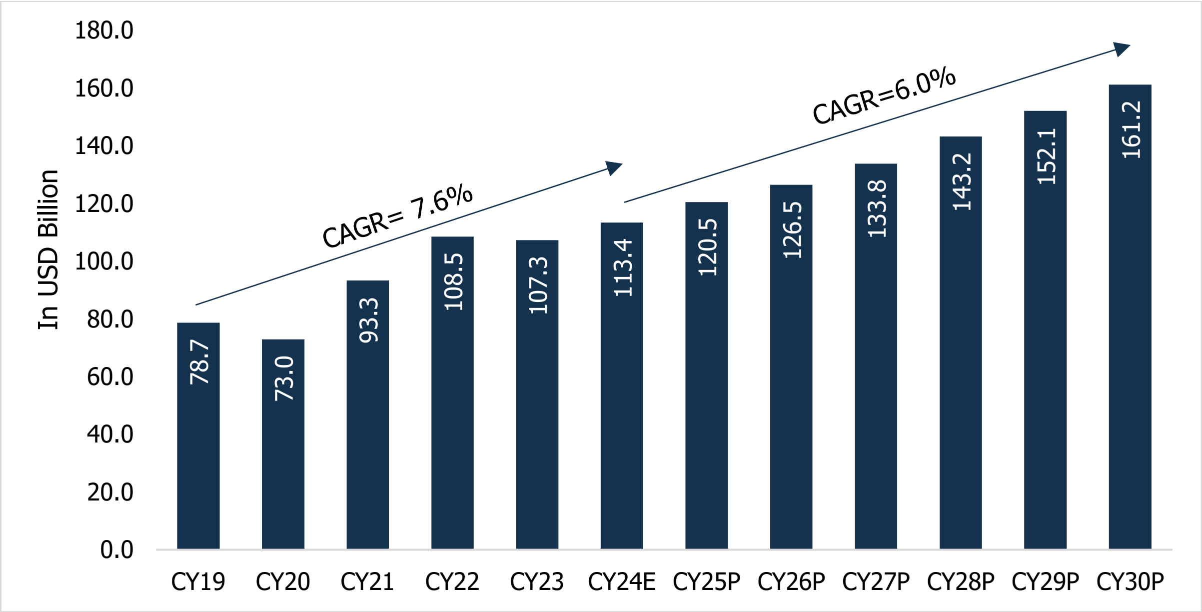
As the global construction industry continues to grow, the need for steel wire is expected to rise. The demand for products such as wire ropes and steel mesh is particularly prominent in construction and mining sectors. Steel wire's versatility and durability ensure its continued relevance across diverse applications, and its role in reinforcing structures and lifting heavy materials underscores its importance in modern industry. With ongoing developments in infrastructure and technology, the steel wire market is poised for significant expansion in the coming years.

2.2 Market Size of Steel wire Industry

The market size of Steel wire Industry grew at a CAGR of 7.6% from CY19 to CY24 reaching an estimated market size of USD 113.4 billion by CY24. It is further projected to grow at a CAGR of 6% from CY24 to CY30 reaching market size of USD 161.2 billion by CY30.

Rising demand in the main industries like construction, automotive, and mining have been fuelling the growth of the st eel wire market. With rapid urbanisation and growing investments in infrastructure, the need for steel wire for construction projects including bridges, roads, and electrical grids has surged. High tensile strength, corrosion resistance, and a key role in strengthening structures with longer durability are essential features that explain the relevance of steel wire in the industry. Additionally, technological advancements are paving the way for innovative alloys and manufacturing processes, further enhancing steel wire’s applications. The automotive industry, particularly the growing adoption of electric vehicles, is also contributing to market growth. As urbanization accelerates in emerging markets and infrastructure spending rises, these factors are expected to continue driving the steel wire market's expansion in the coming years.

Chart 10: Market Size of Steel Wire Industry



Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

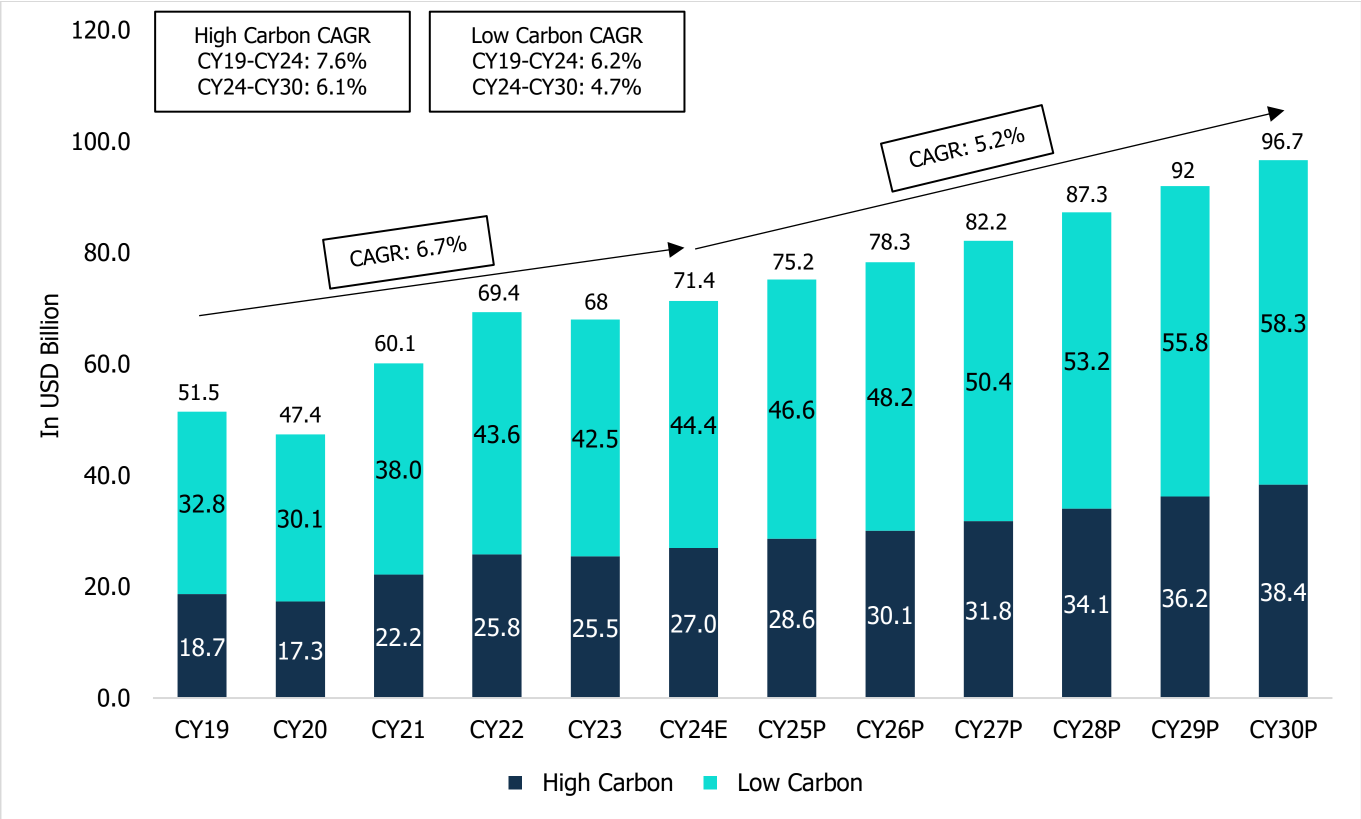
2.2.1 Market Size of Carbon Steel wire

By type, Carbon Steel wire dominates the market in terms of value, holding an estimated market share of 62.9% as of CY24. The market for carbon steel wire has grew by a CAGR of 6.7% from CY19 to CY24, reaching an estimated value of USD 71.4 billion in CY24. Looking ahead, it is projected to grow at a CAGR of 5.2% from CY24 to CY30, reaching a market size of USD 96.7 billion by CY30.

This growth can be attributed to the material's exceptional properties, such as high wear resistance, strength, toughness, and hardness. These features make carbon steel an excellent choice for various applications, including cutting tools, springs, high-strength wires, and dies. Moreover, its recyclability, safety, and durability enhance its appeal across industries like construction, railroads, and manufacturing. The rising demand for strong, cost-effective materials in these sectors continues to drive market expansion. As industries advance and seek more sophisticated materials with superior performance, the carbon steel wire market is anticipated to grow further. Improved recycling technologies and an increasing emphasis on sustainability will also significantly influence the future growth of the carbon steel wire industry.

The carbon steel wire market is categorized into two segments: high carbon steel wire and low carbon steel wire. The market for low carbon steel wire has seen a CAGR of 6.2% from CY19 to CY24, reaching an estimated value of USD 44.4 billion in CY24. It is expected to continue growing at a CAGR of 4.7% from CY24 to CY30, with a projected market size of USD 58.3 billion by CY30. In contrast, the market for high carbon steel wire has grown at a CAGR of 7.6% from CY19 to CY24, reaching an estimated value of USD 27 billion in CY24, and is projected to grow at a CAGR of 6.1% from CY24 to CY30, potentially reaching USD 38.4 billion by CY30.

Chart 11: Market Size of Carbon Steel wire Industry



Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

2.2.2 Galvanized Steel wire

2.2.2.1 Overview of Galvanized Steel wire Industry

The galvanized steel wire industry plays an essential role across various sectors due to its outstanding durability and resistance to corrosion. Galvanized steel wire is made by coating steel with a layer of zinc, which forms a protective barrier, ensuring long-term performance even in harsh environmental conditions. This wire is widely used in industries such as construction, agriculture, automotive, and infrastructure, owing to its strength, flexibility, and resistance to wear and corrosion. Its applications include reinforcing materials, supporting structures, and providing fencing solutions, making it indispensable for outdoor and high-stress environments.

The manufacturing process of galvanized steel wire involves the galvanization process, where steel is dipped in molten zinc, bonding the zinc to the surface. This protective coating extends the wire's lifespan and ensures it can withstand exposure to moisture, chemicals, and extreme weather conditions. The wire comes in various forms, including round, square, and twisted strands, to meet diverse industry needs. As construction and infrastructure projects continue to grow, particularly in emerging economies, the demand for galvanized steel wire is rising rapidly.

The agricultural sector also contributes to the growth of the galvanized steel wire market, where it is extensively used for fencing, crop protection, and vineyard systems. Additionally, galvanized steel wire's role in the automotive industry, particularly in producing lightweight and fuel-efficient vehicles, further supports its market expansion. As urbanization and industrialization continue to accelerate globally, the galvanized steel wire industry is set to experience significant growth, driven by its versatility and vital role in enhancing durability and sustainability across industries.

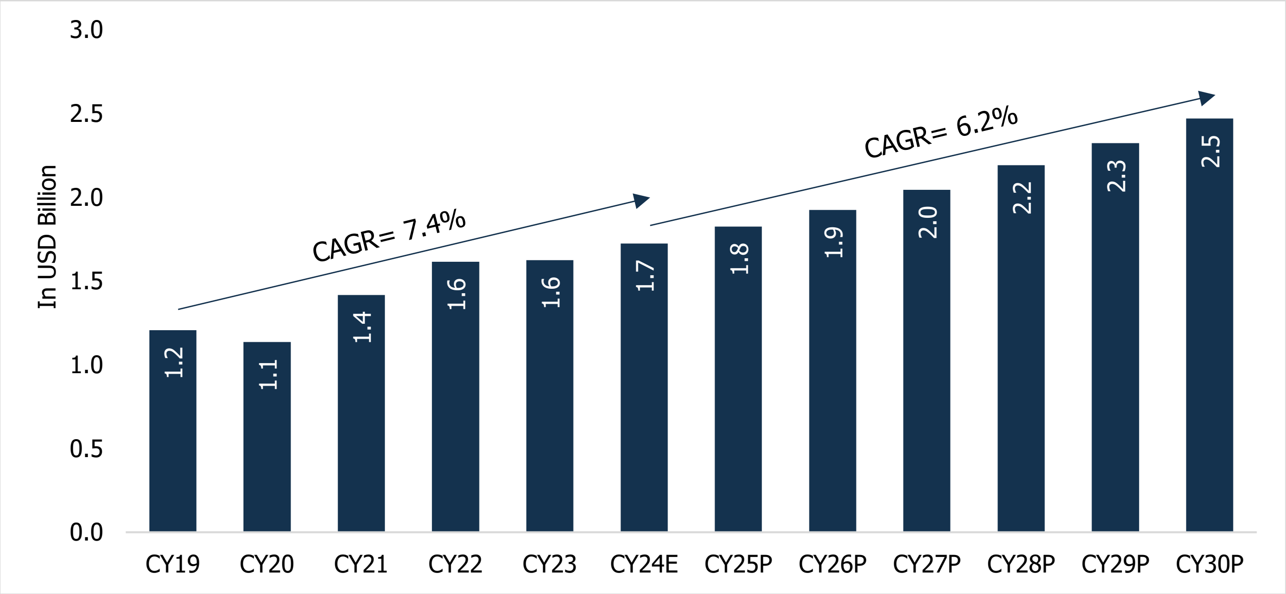
2.2.2.2 Market Size of Galvanized Steel wire Industry

The market size of Galvanized Steel wire Industry grew at a CAGR of 7.4% from CY19 to CY24 reaching an estimated market size of USD 1.7 billion by CY24. It is further projected to grow at a CAGR of 6.2% from CY24 to CY30 reaching market size of USD 2.5 billion by CY30.

The growth of the industry is primarily driven by the increasing demand for durable, corrosion-resistant materials across various sectors. In particular, the construction, automotive, and agricultural industries rely heavily on galvanized steel wire due to its strength and longevity. The rise in infrastructure development, especially in emerging economies, has significantly boosted the market, with galvanized steel wire being essential for projects like bridges, fences, and buildings. Additionally, its widespread use in agricultural fencing and vineyard systems contributes to its expanding role.

Looking ahead, the demand for galvanized steel wire will continue to grow, fuelled by the increasing emphasis on sustainability and durability. The renewable energy sector, particularly wind and solar energy, presents significant opportunities for industry. Moreover, advancements in manufacturing technologies that enhance the quality of galvanized steel wire while reducing production costs are expected to drive market expansion. The growing trend toward eco-friendly practices and the integration of smart technologies in production will further support the industry's growth, aligning with modern demands for high-performance, long-lasting materials.

Chart 12: Market Size of Galvanized Steel wire Industry



Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

2.2.2.3 Market Size of Galvanized Steel wire Industry by Type

Galvanized steel wire is a popular choice for various industrial, commercial, and recreational applications due to its corrosion resistance. There are two main types of galvanizing processes: electro-galvanizing and hot-dip galvanizing. Both methods provide steel with a protective zinc coating but differ in their application and durability.

Electro-Galvanized Steel Wire: Electro-galvanizing involves electrically bonding a thin layer of zinc to steel through an electroplating process. This method results in a smooth, shiny finish, making it ideal for architectural uses. However, it provides minimal corrosion protection and has a shorter service life compared to hot-dip galvanized wire, making it suitable for applications with limited exposure to harsh environments.

Hot-Dip Galvanized Steel Wire: Hot-dip galvanizing involves immersing steel wires into molten zinc, creating a much thicker coating. This process offers superior corrosion resistance, making it ideal for harsh outdoor or caustic environments. The resulting coating is 5 to 10 times thicker than electro-galvanizing, ensuring a longer service life and durability, though the finish is dull and may be streaky.

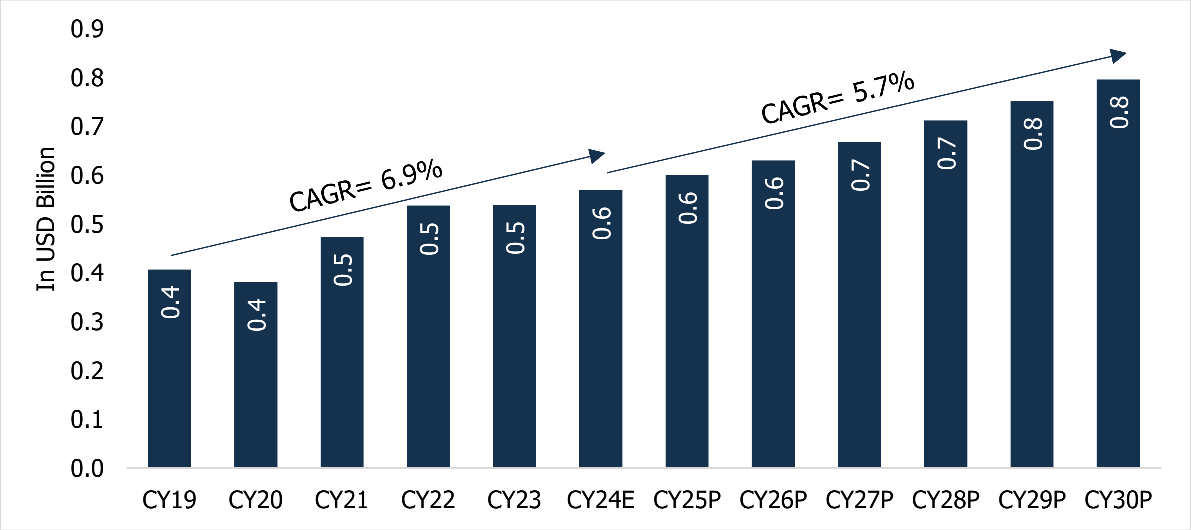
Both types are essential in various industries, from construction to transportation, depending on the environmental exposure and durability requirements.

2.2.2.3.1 Market Size of Electro-Galvanized Steel Wire

The market size for electro-galvanized steel wire has been growing at a CAGR of 6.9% from CY19 to CY24 reaching an estimated value of USD 0.6 billion in CY24. It is further projected to grow at a CAGR of 5.7% from CY24 to CY30 reaching a projected market size of USD 0.8 billion by CY30.

The growing demand for electro-galvanized steel in electrical applications is driving market growth, as it offers enhanced corrosion resistance and improved conductivity. The thin, uniform zinc coating on electro-galvanized steel makes it an ideal material for electrical components like wiring, connectors, and switches. Its smooth surface finish and cost-effectiveness further boost its appeal, particularly in applications such as electrical enclosures and conduit fittings. As industries prioritize durability, sustainability, and cost-efficiency, the demand for electro-galvanized steel is expected to continue rising, with the electrical sector playing a key role in shaping its future market expansion.

Chart 13: Market Size of Electro-Galvanized Steel Wire



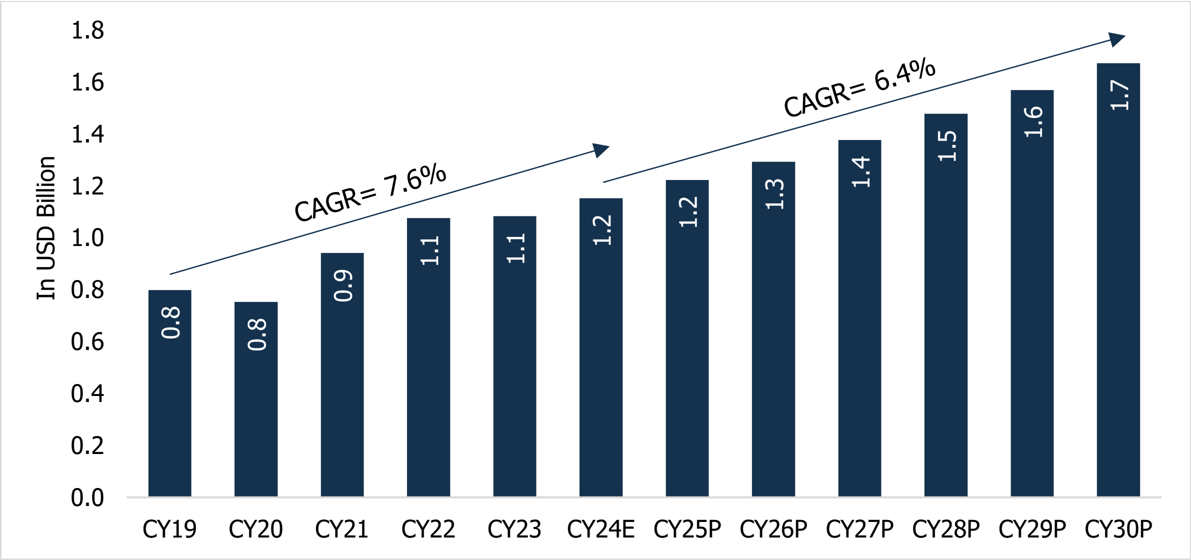
Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

2.2.2.3.2 Market Size of Hot-Dip Galvanized Steel Wire

The market size for hot-dip galvanized steel wire has been growing at a CAGR of 7.6% from CY19 to CY24 reaching an estimated value of USD 1.2 billion in CY24. It is further projected to grow at a CAGR of 6.4% from CY24 to CY30 reaching a projected market size of USD 1.7 billion by CY30.

The hot-dip galvanized steel wire segment is witnessing substantial market growth due to its superior corrosion resistance and durability. Its thicker zinc coating makes it ideal for outdoor and heavy-duty applications, such as in construction and infrastructure projects. As the demand for long-lasting and sustainable building materials increases, hot-dip galvanized steel continues to be a preferred choice. The cost-effectiveness and enhanced aesthetic appeal further drive its popularity, particularly in structural applications. With the expansion of global infrastructure and a focus on durable solutions, the hot-dip galvanized steel wire market is expected to experience robust growth in the coming years.

Chart 14: Market Size of Hot-Dip Galvanized Steel Wire

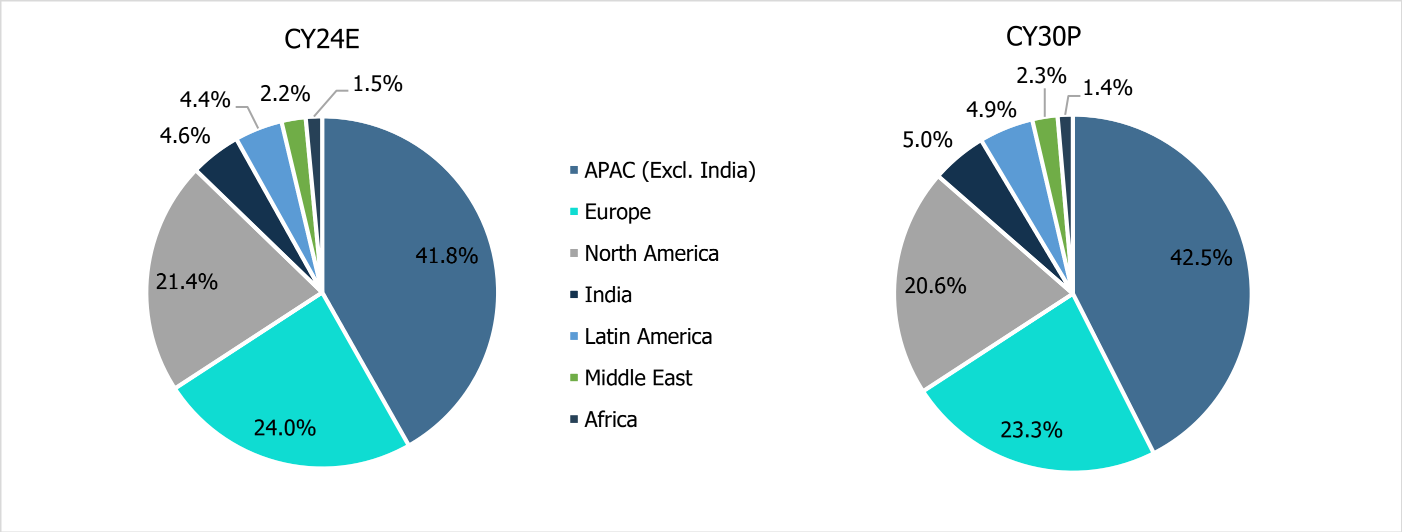


Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

2.2.2.4 Market Size of Galvanized Steel wire Industry by Region

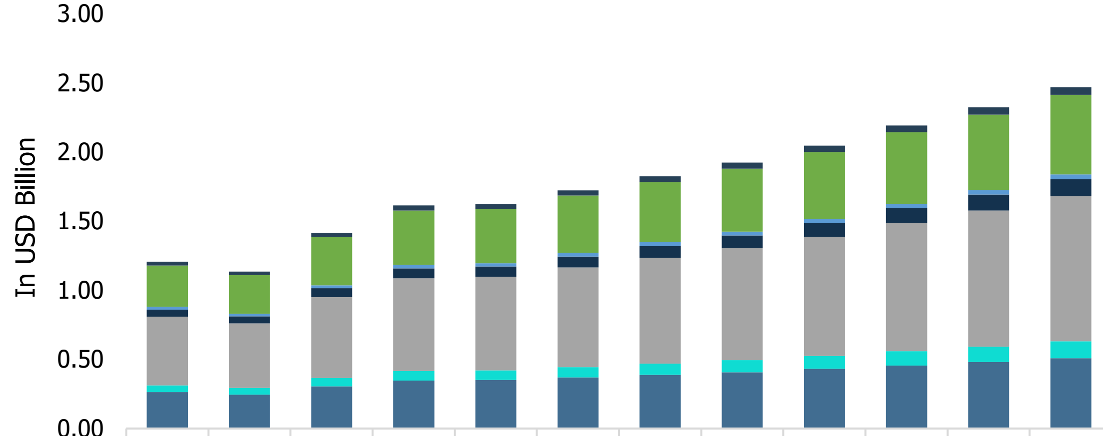
As of CY24, APAC (Excluding India), Europe, and North America hold the top three positions by market share for galvanized steel wire usage in region, each accounting share of 41.8%, 24%, and 21.4% respectively. They are also projected to hold the top three position by CY30 with market shares of 42.5%, 23.3%, and 20.6% respectively.

Chart 15: Market Share of Galvanized Steel wire Industry by Region (CY24 vs CY30)



Source: Maia Research, CareEdge Research

Chart 16: Market Size of Galvanized Steel Wire by Region



	CY19	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
Middle East	0.03	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.06
Europe	0.30	0.28	0.35	0.39	0.39	0.41	0.44	0.46	0.48	0.52	0.54	0.58
Africa	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
India	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.12
APAC (Excl. India)	0.50	0.47	0.59	0.67	0.68	0.72	0.76	0.81	0.86	0.93	0.99	1.05
Latin America	0.05	0.05	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.11	0.12
North America	0.26	0.25	0.31	0.35	0.35	0.37	0.39	0.41	0.43	0.46	0.48	0.51

Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

The market size of galvanized steel wire in **North America** has grown at a CAGR of 6.9% from CY19 to CY24 reaching an estimated market size of USD 0.37 billion by CY24. It is further projected to grow at a CAGR of 5.5% from CY24 to CY30 reaching a market size of USD 0.51 billion by CY30. The growth of the galvanized steel wire market in North America is driven by increasing demand from the automotive and construction industries, which benefit from the material's ideal properties. Strong construction activities, coupled with a focus on renewable energy projects, are further fuelling the demand. Technological advancements, along with investments in research and development, are expected to continue driving market expansion, with key players increasing production capacities to meet growing needs.

The market size of galvanized steel wire in **Latin America** has grown at a CAGR of 9.5% from CY19 to CY24 reaching an estimated market size of USD 0.08 billion by CY24. It is further projected to grow at a CAGR of 8.2% from CY24 to CY30 reaching a market size of USD 0.12 billion by CY30. The galvanized steel wire market in Latin America is driven by rapid urbanization, technological innovation, and the expansion of the construction industry. As Brazil and Mexico lead the way, the increasing demand for durable, corrosion-resistant materials in infrastructure projects fuels growth. Ongoing investments in industrial and infrastructure development, along with the rise of construction activities, are expected to sustain steady market expansion in the region.

The market size of galvanized steel wire in **APAC (Excluding India)** has grown at a CAGR of 7.7% from CY19 to CY24 reaching an estimated market size of USD 0.72 billion by CY24. It is further projected to grow at a CAGR of 6.5% from CY24 to CY30 reaching a market size of USD 1.05 billion by CY30. The galvanized steel wire market in the Asia Pacific region, excluding India, is driven by rapid industrialization and infrastructure development, particularly in countries like China and Japan. Robust growth in steel production, expanding manufacturing sectors, and increasing urbanization are fuelling demand for galvanized steel wire. Ongoing government initiatives to enhance public infrastructure and the rise of smart city projects are expected to further drive market growth in the coming years.

The market size of galvanized steel wire in **India** has grown at a CAGR of 8.8% from CY19 to CY24 reaching an estimated market size of USD 0.08 billion by CY24. It is further projected to grow at a CAGR of 7.5% from CY24 to CY30 reaching a market size of USD 0.12 billion by CY30. India's galvanized steel wire market is experiencing significant growth, driven by large-scale government infrastructure projects, such as highways and smart city developments. The country's growing steel production capacity supports both domestic demand and exports, while private sector investments and technological advancements in galvanization are boosting competitiveness. As India continues to expand its infrastructure and manufacturing sectors, the demand for galvanized steel wire is expected to rise steadily in the coming years.

The market size of galvanized steel wire in **Africa** has grown at a CAGR of 5.8% from CY19 to CY24 reaching an estimated market size of USD 0.026 billion by CY24. It is further projected to grow at a CAGR of 4.6% from CY24 to CY30 reaching a market size of USD 0.034 billion by CY30. The galvanized steel wire market in Africa is driven by increasing investments in infrastructure, mining, and oil & gas development. The growing demand for durable and corrosion-resistant materials in construction, telecommunication, and power networks is boosting market growth. As more industrial projects are initiated across the region, the demand for galvanized steel wire is expected to continue expanding, supported by ongoing infrastructural development and resource extraction activities.

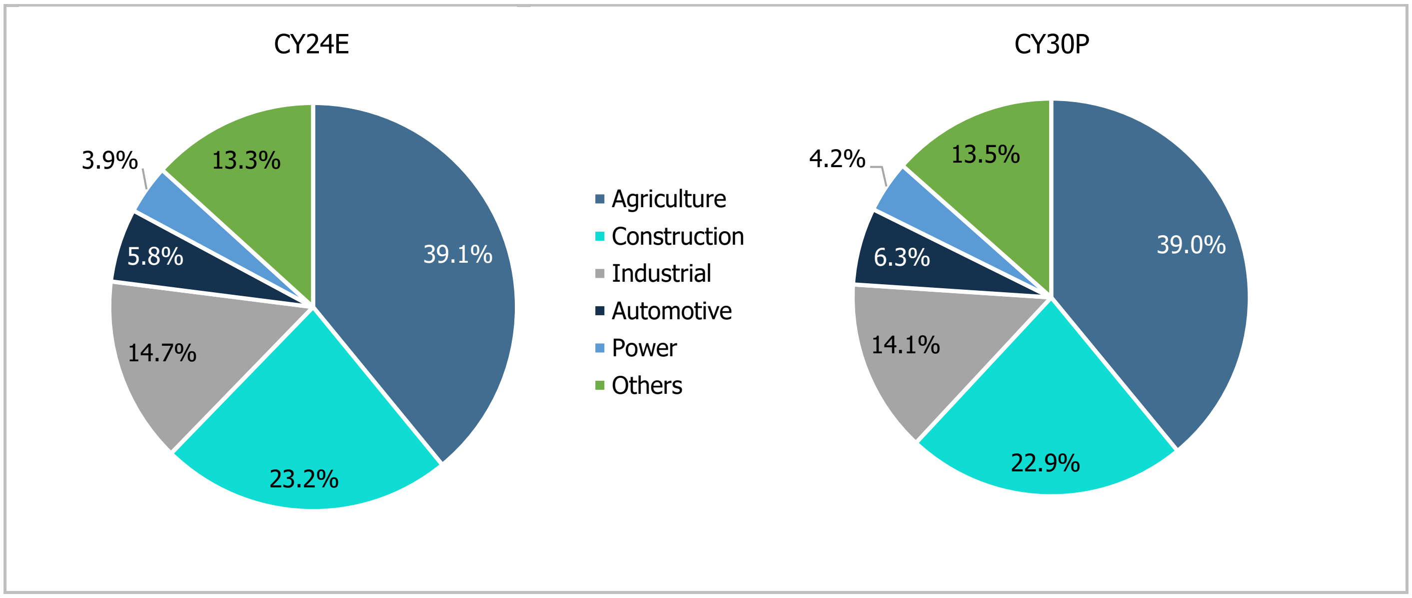
The market size of galvanized steel wire in **Europe** has grown at a CAGR of 6.7% from CY19 to CY24 reaching an estimated market size of USD 0.41 billion by CY24. It is further projected to grow at a CAGR of 5.6% from CY24 to CY30 reaching a market size of USD 0.58 billion by CY30. The growth of the galvanized steel wire market in Europe is primarily driven by the automotive industry’s increasing demand for high-quality, durable materials and advanced manufacturing techniques. Additionally, investments in infrastructure projects, renewable energy, and the modernization of power and telecommunication networks are fuelling market expansion. The region’s focus on sustainable construction practices and innovation in automotive components is expected to further propel demand for galvanized steel wire in the coming years.

The market size of galvanized steel wire in **Middle East** has grown at a CAGR of 7.5% from CY19 to CY24 reaching an estimated market size of USD 0.04 billion by CY24. It is further projected to grow at a CAGR of 6.7% from CY24 to CY30 reaching a market size of USD 0.06 billion by CY30. The galvanized steel wire market in the Middle East is experiencing steady growth, driven by increased investments in infrastructure, oil and gas development, and mining activities. The region’s focus on expanding industrial projects, improving public infrastructure, and enhancing telecommunication and power networks is boosting demand for durable, corrosion-resistant materials. As these sectors continue to grow, the market for galvanized steel wire is expected to see sustained expansion in the coming years.

2.2.2.5 Market Size of Galvanized Steel wire Industry by End User Industry

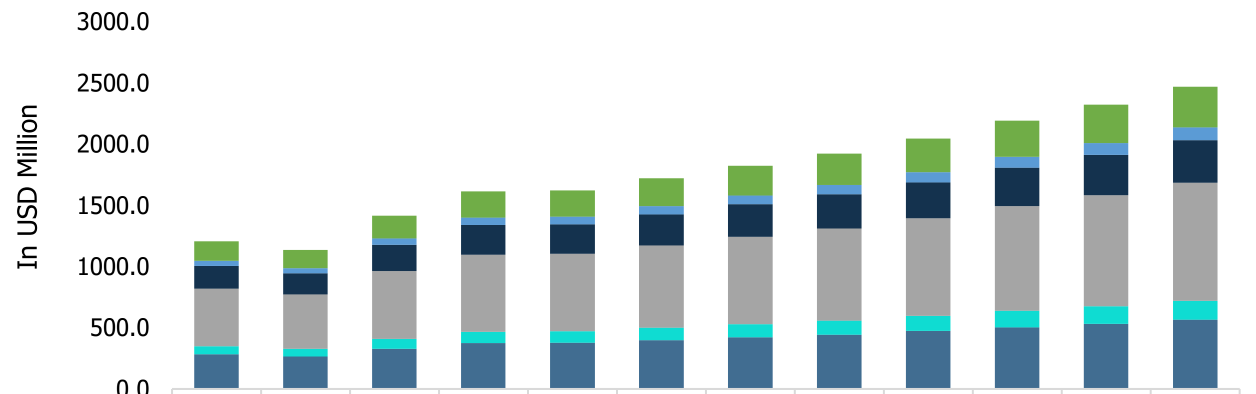
Galvanized steel wires are essential components in a wide range of industries due to their durability, corrosion resistance, and strength. They are used in the construction, automotive, agriculture, industrial, and various other sectors for a variety of applications, enhancing the performance and longevity of products. The demand for these wires continues to rise as industries increasingly seek materials that offer sustainability and efficiency. As of CY24 Agriculture, Construction, and Industrial Industry hold the top three positions by market share for steel wire usage in end user industry, each accounting share of 39.1%, 23.2%, and 14.7%, respectively. They are also projected to hold the top three position by CY30 with market shares of 39%, 22.9%, and 14.1%, respectively.

Chart 17: Market Share of Galvanized Steel wire Industry by End User Industry (CY24 vs CY30)



Source: Maia Research, CareEdge Research

Chart 18: Market Size of Galvanized Steel Wire by End User Industry



	CY19	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
Others	157.7	148.9	186.2	212.7	214.8	228.6	242.6	256.3	273.5	294.0	312.2	332.7
Power Industry	44.2	42.0	53.1	61.5	62.5	67.1	72.0	77.1	82.8	89.7	96.4	104.2
Industrial	184.5	172.3	213.3	241.6	241.1	253.9	266.6	279.5	294.8	313.4	329.5	348.3
Agriculture	469.9	443.6	554.5	630.6	632.3	673.1	713.9	751.1	796.1	855.7	908.5	964.0
Automotive	66.5	63.1	79.6	92.0	93.9	100.5	107.5	115.0	124.0	134.1	143.6	154.9
Construction	283.1	264.9	329.3	375.5	378.8	399.7	421.3	444.3	473.6	504.4	532.1	565.7

Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

In the **construction industry**, galvanized steel wires are widely used for reinforcing concrete, binding materials, and creating durable fencing solutions. The rapid growth of the construction industry, driven by urbanization and infrastructure development, significantly boosts the demand for galvanized steel wires. The focus on sustainable and resilient building materials further fuels this demand. The market size of galvanized steel wire usage by construction industry has grown at a CAGR of 7.1% from CY19 to CY24 reaching an estimated value of USD 399.7 million by CY24. It is projected to grow at a CAGR of 6% from CY24 to CY30 reaching market value of USD 565.7 million by CY30.

In the **automotive industry**, galvanized steel wires are utilized for manufacturing various components that require high strength, malleability, and corrosion resistance. The rising production of vehicles and innovations in automotive technology, including the shift to electric vehicles, are key drivers for the growing use of galvanized steel wires in this industry. The market size of galvanized steel wire usage by automotive industry has grown at a CAGR of 8.6% from CY19 to CY24 reaching an estimated value of USD 100.5 million by CY24. It is projected to grow at a CAGR of 7.5% from CY24 to CY30 reaching market value of USD 154.9 million by CY30.

In **agriculture**, galvanized steel wires are essential for creating strong, weather-resistant fencing, trellising, and other agricultural structures. The demand for durable materials to withstand harsh environmental conditions, along with the focus on improving agricultural productivity, is driving the adoption of galvanized steel wires in this sector. The market size of galvanized steel wire usage by agriculture industry has grown at a CAGR of 7.5% from CY19 to CY24 reaching an estimated value of USD 673.1 million by CY24. It is projected to grow at a CAGR of 6.2% from CY24 to CY30 reaching market value of USD 964 million by CY30.

Galvanized steel wires are used in the **industrial industry** for manufacturing machinery, conveyor belts, and other industrial equipment. The demand for high-quality, corrosion-resistant materials is a key driver, with the continued expansion of industrial activities and the need to modernize infrastructure propelling further use of galvanized steel wires. The market size of galvanized steel wire usage by industrial industry has grown at a CAGR of 6.6% from CY19 to CY24 reaching an estimated value of USD 253.9 million by CY24. It is projected to grow at a CAGR of 5.4% from CY24 to CY30 reaching market value of USD 348.3 million by CY30.

Galvanized steel wires are essential in the **power industry**, serving in power transmission lines, communication cables, and structural support for energy systems. Their corrosion resistance and longevity make them well-suited for challenging conditions. Increasing investments in renewable energy sources like wind and solar, along with ongoing infrastructure development, are boosting the demand for galvanized steel wires. The market is expected to grow further with the expansion of renewable energy and the rising need for reliable energy transmission solutions. The market size of galvanized steel wire usage by power industry has grown at a CAGR of 8.7% from CY19 to CY24 reaching an estimated value of USD 67.1 million by CY24. It is projected to grow at a CAGR of 7.6% from CY24 to CY30 reaching market value of USD 104.2 million by CY30.

Galvanized steel wires also find applications in infrastructure, aerospace, etc. The versatility and durability of galvanized steel wires make them ideal for a wide range of uses, contributing to their growing demand across various industries. Continuous innovation and the development of new applications are expected to sustain market growth. The market size of steel wire usage by **other industries** has grown at a CAGR of 7.7% from CY19 to CY24 reaching an estimated value of USD 228.6 million by CY24. It is projected to grow at a CAGR of 6.5% from CY24 to CY30 reaching market value of USD 332.7 million by CY30.

2.2.2.6 Key Global Players of Galvanized Steel Wire

Table 4: Key Global Players

Name of the Company	Year of Incorporation	Location	About the Company
Henan Hengxing	1995	China	Henan Hengxing Science & Technology Co., Ltd. is a manufacturer in China. Covering an area of 4,00,000 square meter with 2,200 employees, the company produces over 40 products across six categories. Their diverse product range serves industries such as automotive, power cables, high-speed

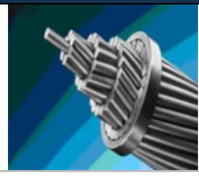
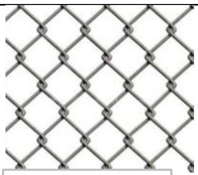
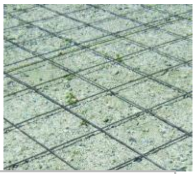
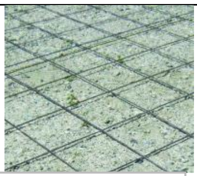
			railways, ports, and photovoltaic solar silicon cutting.
Bekaert	1880	Belgium	Bekaert is a global player in steel wire transformation and coating technologies. With over 24,000 employees worldwide, the company generates nearly 5.3 billion pounds in sales. Bekaert pioneers sustainable solutions across industries, including rubber reinforcement, low-carbon construction, and green energy.
Celsa Global Steel Wire	1967	Barcelona	Celsa Global Steel Wire is a producer of low-emission steel, specializing in recycling ferrous scrap to produce steel using energy-efficient electric arc furnace technology. With a presence across multiple European countries, the company operates 120 sites, including 7 steel mills and 45 recycling plants, employing over 70,000 professionals.
ArcelorMittal	2006	Luxembourg	ArcelorMittal develops clean, strong, and recyclable steels, essential for industries like electric vehicles and renewable energy. Operating in 15 countries and serving customers in 140 countries, ArcelorMittal employs over 126,000 people.
Nippon Steel SG Wire Co. Ltd.	1938	Japan	Nippon steel sg wire co., Ltd. is a global player in special steel wire, specializing in high-grade automotive spring materials. With over 10,000 wire products, the company serves diverse industries, including automotive, household appliances, and medical care.

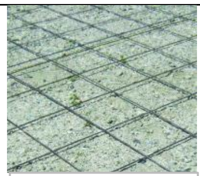
Source: Company Website

2.3 Market Size of Steel wires Industry By End User Industry

Steel wires are indispensable across a wide range of industries due to their remarkable strength, durability, and versatility. As of CY24 Automotive, Construction, and Telecommunication Industry hold the top three positions by market share for steel wire usage in end user industry, each accounting share of 21.1%, 16.1%, and 16%, respectively. They are also projected to hold the top three positions by CY30 with market shares of 22.1%, 16.1%, and 15.7% respectively.

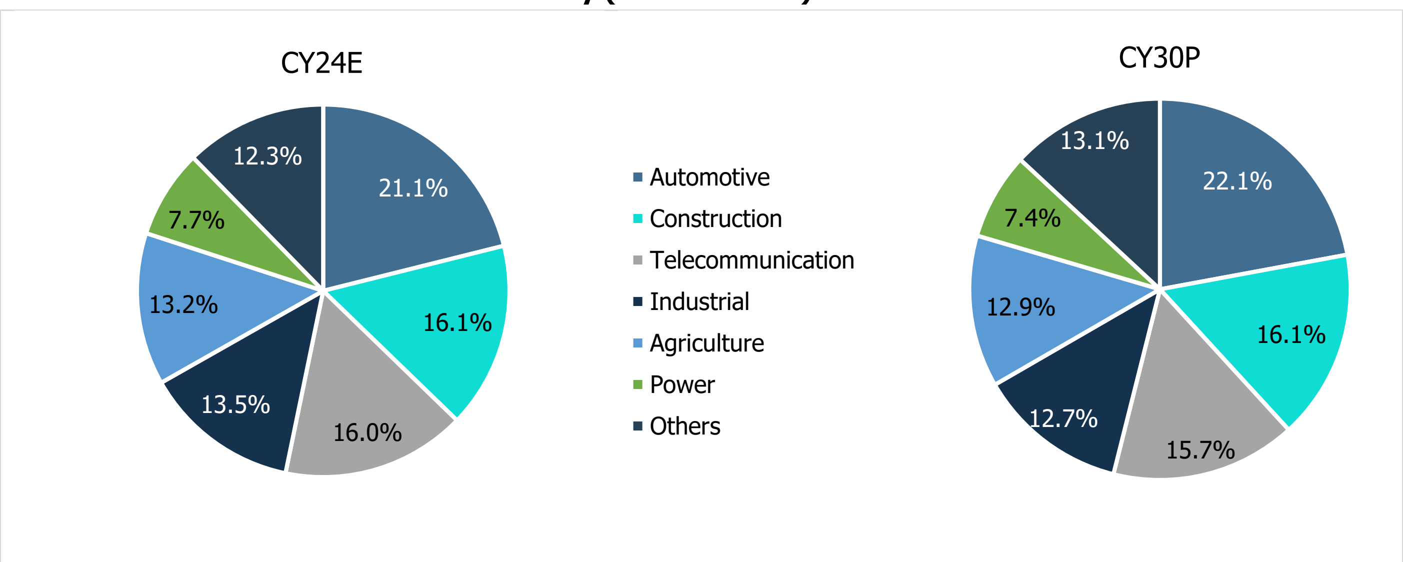
Table 5: Applications of Steel Wires

End-User Industry	Application
Power	 Aluminium Clad Steel (ACS) Wire  Stay Wire  Galvanized Steel Tapes  Galvanized Steel Core Wire for ACSR  Round and Flat Cable Armour Wire
Automotive	 Circlip Wires
Construction	 Spring Steel Wire  Wire for Gabions  Chain Link Fence  Fine Wire for Steel Fibres  Annealed Wire  Prestressed Concrete Wire  Binding Wire  Welded Wire Mesh
Telecommunication	 Stay Wire  Welded Wire Mesh

Industrial	 Welded Wire Mesh
Agriculture	 Hot Dipped Galvanized Wire  Wire for Agriculture and Fencing

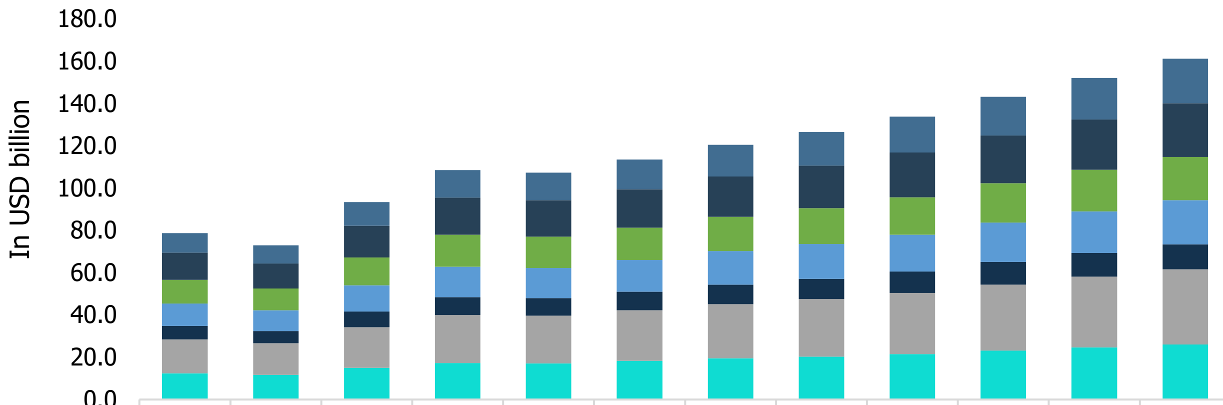
Source: Company Website

Chart 19: Market Share of End User Industry (CY24 vs CY30)



Source: Maia Research, CareEdge Research

Chart 20: Market Size of Steel wires Industry By End User Industry



	CY19	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
Others	9.2	8.6	11.2	13.1	13.1	14.0	15.0	15.9	17.0	18.3	19.7	21.1
Telecommunication	12.9	11.8	15.0	17.5	17.3	18.2	19.1	20.2	21.3	22.6	23.8	25.4
Industrial	11.3	10.3	13.1	15.1	14.7	15.4	16.2	16.8	17.6	18.6	19.6	20.5
Agriculture	10.6	9.8	12.5	14.5	14.3	15.0	15.9	16.6	17.5	18.6	19.7	20.8
Power	6.3	5.8	7.3	8.5	8.3	8.7	9.2	9.6	10.1	10.7	11.3	11.9
Automotive	16.0	15.0	19.3	22.6	22.5	23.9	25.6	27.1	28.9	31.1	33.3	35.6
Construction	12.5	11.7	15.0	17.3	17.2	18.3	19.5	20.3	21.5	23.2	24.7	26.0

Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

In the **automotive industry**, steel wire is widely used for reinforcing tire beads and enhancing the safety and performance of various vehicle components. It also plays a critical role in manufacturing wire rope isolators for military vehicles, providing resistance to vibrations, shocks, and extreme conditions. With the rise of electric vehicles, the demand for steel wire has surged, particularly for wire harnesses, which are essential for EVs and are more heavily utilized than in conventional vehicles. The market size of steel wire usage by automotive industry has grown at a CAGR of 8.3% from CY19 to CY24 reaching an estimated value of USD 23.9 billion by CY24. It is projected to grow at a CAGR of 6.8% from CY24 to CY30 reaching market value of USD 35.6 billion by CY30.

In the **construction industry**, steel wire is crucial for lifting heavy materials and providing structural support in buildings and infrastructure. Its high tensile strength is vital in applications like suspension bridges, where it allows for the creation of large spans capable of bearing substantial loads. The growing need for new infrastructure and industrial development is driving the demand for steel wire in construction projects. The market size of steel wire usage by construction industry has grown at a CAGR of 8% from CY19 to CY24 reaching an estimated value of USD 18.3 billion by CY24. It is projected to grow at a CAGR of 6% from CY24 to CY30 reaching market value of USD 26 billion by CY30.

The **power industry** also relies on steel wires, particularly for transmission lines, power cables, and wind power systems. As global energy demand continues to rise, these wires are integral to the efficient storage and transmission of energy. The market size of steel wire usage by energy industry has grown at a CAGR of 6.8% from CY19 to CY24 reaching an estimated value of USD 8.7 billion by CY24. It is projected to grow at a CAGR of 5.3% from CY24 to CY30 reaching market value of USD 11.9 billion by CY30.

In the **agriculture industry**, steel wires are widely used in fencing to secure livestock and protect crops. They also support plant growth in the form of trellises for climbing plants like tomatoes and grapes. Steel wire is also used for crop protection, such as netting and barriers, to prevent damage from animals or environmental factors. Its strength and durability make it ideal for various agricultural needs. The market size of steel wire usage by agriculture industry has grown at a CAGR of 7.1% from CY19 to CY24 reaching an estimated value of USD 15 billion by CY24. It is projected to grow at a CAGR of 5.6% from CY24 to CY30 reaching market value of USD 20.8 billion by CY30.

In the **industrial industry**, steel wires are used in machinery, hoists, cranes, and lifting equipment, playing a critical role in construction, mining, and manufacturing. Their high tensile strength and durability make them ideal for heavy-duty applications, including springs, fasteners, and wire ropes. They're also crucial in making wire mesh for filtration and reinforcement. The market size of steel wire usage by industrial industry has grown at a CAGR of 6.4% from CY19 to CY24 reaching an estimated value of USD 15.4 billion by CY24. It is projected to grow at a CAGR of 5% from CY24 to CY30 reaching market value of USD 20.5 billion by CY30.

In the **telecommunications industry**, steel wires are integral to the production of cables, providing strength for long-distance transmission. They reinforce power and communication lines, preventing sagging and ensuring stability in both aerial and underground installations. Their role is essential in maintaining the integrity of telecommunication infrastructure. The market size of steel wire usage by telecommunication industry has grown at a CAGR of 7.1% from CY19 to CY24 reaching an estimated value of USD 18.2 billion by CY24. It is projected to grow at a CAGR of 5.7% from CY24 to CY30 reaching market value of USD 25.4 billion by CY30.

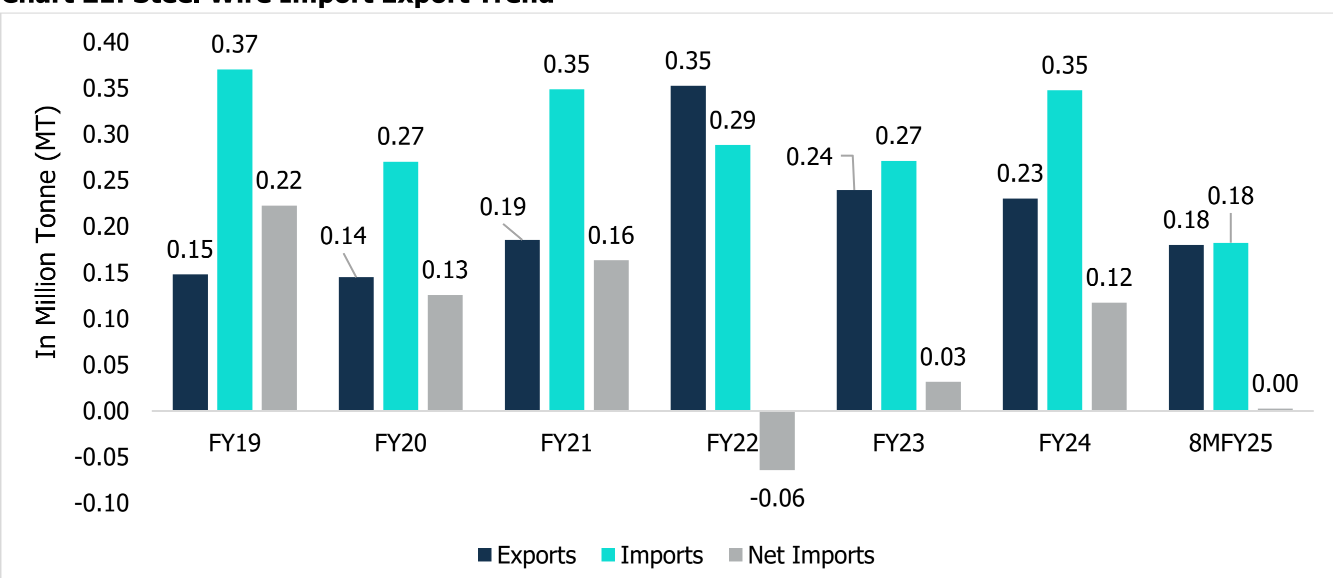
In addition to these industries, steel wires find applications in variety of **other industries**, underscoring their importance as a fundamental material across numerous industries. The continued growth of these industries will further fuel demand for steel wires in the coming years. The market size of steel wire usage by other industries has grown at a CAGR of 8.6% from CY19 to CY24 reaching an estimated value of USD 14 billion by CY24. It is projected to grow at a CAGR of 7.1% from CY24 to CY30 reaching market value of USD 21.1 billion by CY30.

2.4 Steel Wire Import Export Trend

Stainless Steel wire holds the majority share in steel wire exports from India. Steel wire exports grew at a CAGR of 9.3% from FY19 to FY24. As of FY24, the top three major export destinations of India are UAE, United Kingdom, and the United States of America with export shares of 12.6%, 12.1%, and 9.6% respectively. During 8MFY25, steel wire exports stood at 0.18 MT.

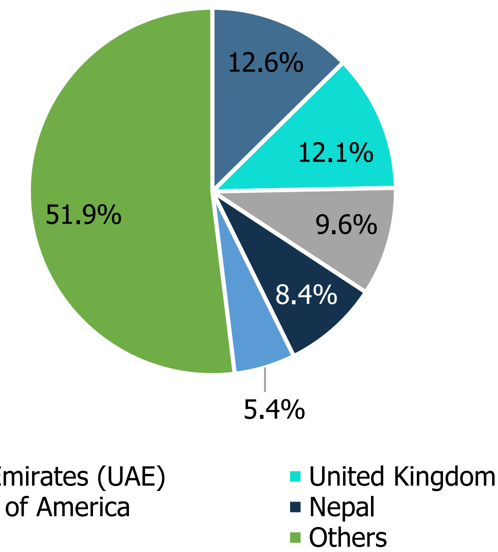
Steel Imports, on the other hand, declined at a CAGR of 1.3%, from FY19 to FY24. During 8MFY25, steel wire imports stood at 0.18 MT.

Chart 21: Steel Wire Import Export Trend



Source: Ministry of Commerce and Industry, CareEdge Research
Note: 8MFY25 refers to April 2024-November 2024
HSN codes considered for calculation of exports and imports are: 72171010, 72171020, 72171030, 72172010, 72172020, 72172030, 72173010, 72173020, 72173030, 85447090, 90011000, 73121020, 73121030, 73130010, 73141910, 73142010, 73143100, 73144190

Chart 22: Country Wise Export Split for FY24



Source: Ministry of Commerce and Industry, CareEdge Research

2.5 Key Demand Drivers of the Industry

- **Rapid Infrastructure Development:** The increase in urbanization among emerging markets triggers the demand for steel wire, with governments investing in infrastructure projects such as bridges and tunnels, electrical grids, and roads. Such massive development enhances steel wire usage by widely engulfing a country through national growth and widening connectivity.

- **Technical Advancements:** Advances in key sectors like automobiles, construction, and mining create new demands for steel wire. Advanced alloys and new materials develop better-able steel wires with the possibility of withstanding the pressures and tensions related to high-performance applications.

- **Automotive Sector:** The electric vehicle (EV) market is a significant growth driver for steel wire. Steel wire is used in the production of tyre beads, wire harnesses, and military vehicle isolators. As the EV market grows, the demand for steel wire, especially for wiring harnesses, accelerates market growth in the cables and wires segment.

  Booming Construction Sector: The construction industry boosts the demand for steel wire. High-rise buildings, bridges, flyovers, and infrastructure structures all use steel wire. One notable application for steel wire is in suspension bridge cables, providing tensile strength and the ability to bear loading. Government spending on large projects further enhances market growth.

- **Growing Demand for Sustainable Vehicles:** There is increased demand for environmental-friendly vehicles and, by proxy, growing electric vehicles (EVs). Wire harnessing, in the making of an EV, requires triple that of internal combustion engine-based vehicles. Consequently, this can be projected as a reason behind the rising need for steel wires in EV manufacture, and there is every potential for its drastic impact on the market.

- **Agricultural and Farming Needs:** The agricultural sector significantly influences the demand for galvanized steel wire, particularly for fencing, trellises, and other structural supports. With the global population on the rise and the demand for food increasing, farmers are investing in stronger, long-lasting materials to protect crops and livestock. Galvanized steel wire's durability against environmental stressors makes it an ideal choice, reducing maintenance costs and ensuring a long product life. As agricultural practices modernize, the demand for this material is expected to grow further.

Sustainability and Eco-Friendly Initiatives: The growing emphasis on sustainability and eco-friendly building practices is another key driver for the galvanized steel wire market. As industries and consumers alike shift toward more environmentally responsible products, galvanized steel wire offers a cost-effective and long-lasting solution that aligns with these values. Its recyclability, corrosion resistance, and energy-efficient production methods make it an attractive material for industries prioritizing sustainable practices, further boosting demand across construction, automotive, and energy sectors.

2.6 Challenges faced by the Industry

- **Substitution by Plastic Ropes**: One of the major challenges facing the steel wire industry is the increasing use of plastic ropes as substitutes. Plastic ropes are becoming more popular, especially in industries like mining and construction, due to their lighter weight, lower cost, and reduced manufacturing waste. These ropes also offer safety advantages, such as lower risk of injury during breaks, which can reduce steel wire's market share in certain applications.
- **Cost-Effectiveness and Sustainability of Plastic Alternatives**: The growing preference for plastic ropes is driven by their cost-effectiveness and sustainability. Compared to steel wire, plastic ropes are cheaper to produce and maintain, making them an attractive option for small businesses and industries looking to reduce costs. The emphasis on environmentally friendly materials also favours the adoption of plastic over steel wire, hindering growth in the steel rope market.
- **Performance of Plastic Ropes in Mining**: Plastic ropes are increasingly being used in the mining industry due to their superior performance in specific applications. They are preferred for their ability to handle heavy lifting without snapping, as well as for their resistance to wear and tear. This trend is challenging the steel wire industry, as mining operations adopt plastic alternatives for cost savings and improved durability.
- **Impact on Machine Stability and Maintenance**: The adoption of plastic ropes in various applications, such as mobile cranes, has raised concerns for the steel wire market. Plastic ropes help improve machine stability and reduce maintenance costs. Their ease of handling and durability in lifting operations make them a strong competitor to steel wire, slowing the growth potential for traditional wire ropes in certain sectors.
- **Shift Towards Hybrid Ropes**: The use of hybrid ropes, which combine steel and synthetic materials, is gaining traction due to their balance of strength and flexibility. These ropes offer improved performance and reduced weight compared to pure steel ropes. As industries explore hybrid solutions, the steel wire market faces competition from these innovative alternatives, limiting overall market expansion.
- **Volatile Raw Material Prices:** The galvanized steel wire market faces significant challenges due to the high volatility in the prices of key raw materials, such as zinc and steel. These fluctuations can directly impact production costs, making it difficult for manufacturers to maintain stable pricing. The unpredictability in raw material costs can also affect profitability and complicate financial planning, leading to potential supply chain disruptions and pricing instability across the industry.
- **Environmental and Regulatory Pressures:** As environmental regulations become stricter globally, galvanized steel wire producers face increasing pressure to reduce their environmental footprint. The zinc coating process used in galvanization can generate emissions and waste, which may be subject to regulatory scrutiny. Compliance with these regulations may require investments in more eco-friendly technologies, increasing production costs and potentially making smaller manufacturers less competitive in the market.

2.7 Key Indian Players of Steel Wire and Galvanized Steel Wire

Table 6: Key Indian Players

Name of the Company	Year of Incorporation	About the Company
Systematic Industries Limited	2000	Systematic Industries Limited is one of the established companies in the manufacture and supplies of range of products, particularly in the fields of Power & Transmission, Infrastructure, Automobile, Agriculture and Telecom. The company has multiple plants at different locations with an annual capacity of 1,00,000 MT across various products, industries and regions. The company also manufactures Optical Ground Wire (OPGW – 6,000 KM Annual Capacity), Optic fibre cables (48,000 KM Annual Capacity), galvanized wire, wires for power industries, high and low carbon steel wires etc. Systematic has been approved by Power Grid and BSNL. Systematic offers customization, surface treatments and coatings to meet future industry demands, with exports to more than 30 countries.
Bansal Wire Industries Limited	1985	Bansal Wire Industries Limited, manufactures stainless steel wire and steel wire. With an annual production capacity of over 2,70,000 MT, the company serves diverse sectors, including automotive, infrastructure, power, and agriculture. It has vast product range of over 3,000 SKUs and operates globally in more than 50 countries.
Tata Wiron (A division of Tata Steel Limited)	2004	Tata Wiron, a division of Tata Steel Ltd, is a global player in steel wire manufacturing with an annual capacity of 6,70,000 MT. With operating facilities in India and Thailand, the company employs over 2,000 people.
Nirmal Wires Private Limited	1981	Nirmal Wires (P) Limited, established in 1981 and based in Kolkata, India, is a manufacturer, exporter, wholesaler, and supplier of industrial products. They specialize in GI Wires, Welding Electrodes, Aluminium Conductors, Steel Wires, and Deformed Steel Bars. The company has a monthly production capacity of 8,000 MT and an export presence in Bangladesh and Sri Lanka.
Kritika Wires Limited	2004	Kritika Wires Limited is a manufacturer of steel and galvanized wires, serving clients like State Electricity Boards and Power Grid Corporation of India. It operates a facility in Sankrail Industrial Park, West Bengal. It has an annual production capacity of 66,200 MT and a workforce of over 400 professionals.

Source: Company Website

3 Optical Ground Wire (OPGW) /ACS Wire sector in India

3.1 Overview

Optical Ground Wire (OPGW) is a special type of cable that combines grounding wire with optical fibres. The OPGW cable is made with stainless steel and aluminium-clad steel tubes, comes in fibre counts of up to 48. It carries high-voltage electricity and transmits data through optical fibres embedded within the cable structure. The outer layer of the cable consists of a metallic conductor, typically aluminium or aluminium alloy, which provides grounding protection for the electrical transmission system. In OPGW cable fittings there are one or more optical fibres, which facilitate the transmission of data signals, such as telecommunications and internet traffic. The grounding part protects power lines from electrical faults, while the optical fibres allow for high-speed data transmission.

OPGW cables are installed between the tops of high-voltage pylons. The conductive part of the cable connects the towers to the ground and protects the high-voltage lines from lightning. The optical fibres inside the cable allow for fast data transmission, which can be used by the utility for monitoring and control, for internal communication, or even leased to third parties for high-speed fibre connections between cities. OPGW can detect temperature changes along power lines, helping to find problems like hotspots or damage before they get worse. The optical fibres allow utilities to monitor the power lines in real-time, helping them spot issues early and respond quickly with maintenance. OPGW supports smart grid technologies by providing a communication link, enabling better data exchange, monitoring, and control for improved efficiency and reliability. Fibre optic technology offers high transmission capacity, allowing data transfer rates up to 3 Gbps. Its main advantage is providing fixed, point-to-point communication with a very high data-carrying capacity.

Optical ground wires (OPGW) are used in high-voltage overhead power lines for power transmission and communication. They are commonly found in electrical grids, where they provide lightning protection and enable high-speed data transmission along the power lines. It serves as both a ground wire and a pathway for transmitting voice, video, or data signals through optical fibres, offering fast and cost-effective installations.

Aluminium clad steel wire (ACS)

Aluminium-Clad Steel (ACS) wires are composite conductors consisting of a high-strength steel core coated with a thick layer of aluminium. This combination provides the strength of steel with the corrosion resistance and conductivity of aluminium. ACS wires are commonly used in overhead power lines, grounding applications, and telecommunication cables due to their durability, lightweight nature, and cost-effectiveness compared to pure copper or aluminium conductors.

ACS wires are manufactured through a cladding process where aluminium is bonded to the steel core. This creates a durable, corrosion-resistant conductor capable of withstanding harsh environmental conditions. The wires are often used in environments where both strength and conductivity are required, such as in coastal areas or regions with high atmospheric pollution.

In high-voltage power lines, ACS wires are installed to provide mechanical support and electrical conductivity. They are particularly effective in minimizing energy losses and improving the efficiency of power transmission over long distances. Additionally, the corrosion-resistant properties of aluminium enhance the lifespan and reliability of the transmission lines, reducing maintenance costs.

3.2 Market Size of Optical Ground Wire Industry by Type

Optical Ground Wire (OPGW) comes in two types based on its design and strength: the loose tube structure and the tight tube structure.

The Loose Tube Structure, optical fibres are encased in small, flexible tubes filled with protective gel. These tubes allow the fibres to move freely within them, reducing the risk of stress and damage due to environmental factors like temperature fluctuations or mechanical forces. The design helps mitigate issues such as ice loading and stretching, making it ideal for installations where the cable may experience significant movement. Additionally, the gel inside the tubes protects the fibres from moisture and contamination, further enhancing the durability and reliability of the cable in various conditions.

The Tight Tube Structure involves optical fibres being placed within a rigid, hermetically sealed tube. This structure offers superior protection against mechanical stress and environmental damage, making it suitable for harsh and demanding conditions. The tight tube design provides better crush resistance and overall robustness compared to lose tube structures. This makes it an ideal choice for installations requiring high mechanical strength and stability, as it effectively shields the fibres from external impacts and ensures reliable performance over time. The sealed tube also provides excellent protection against moisture and other contaminants, enhancing the cable's longevity.

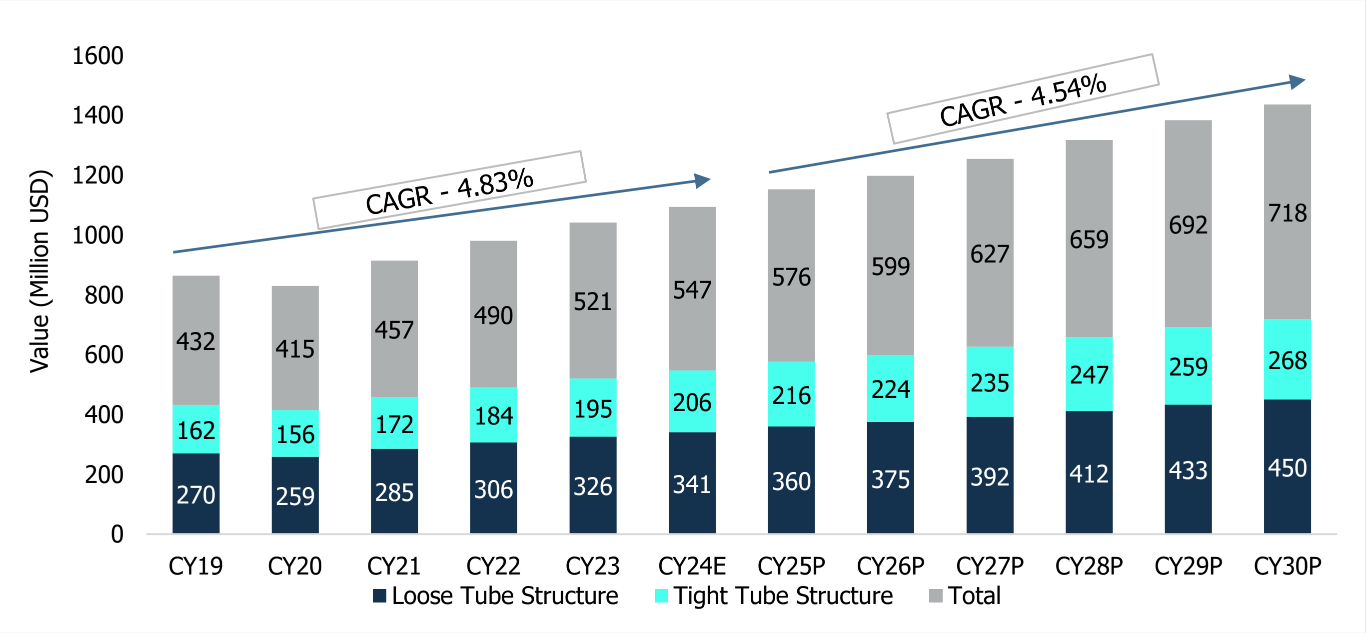
3.2.1 Market Size of Loose Tube Structure

The Loose Tube Structure segment holds a larger share of the market and shows a consistent upward trend. It grew from USD 270 million in CY19 to USD 341million in CY24 and is projected to reach USD 450 million by CY30. This growth is driven by increasing demand for optical ground wires in long-distance transmission applications, particularly in telecommunications and power utility sectors. The growth continues in the projected years, reaching USD 450 million by CY30. This segment consistently contributes a significant portion to the total market value, indicating a steady demand for loose tube structures.

From CY19 to CY24, the CAGR is 4.83%. This indicates a strong growth rate for the market during this period. The total market value increases from USD 864 million in CY19 to USD 1094 million in CY24. Advancements in fibre-optic technology have improved the performance and reliability of Loose Tube Structure OPGW, making it an essential part of power transmission networks. Growing economies, especially in Asia-Pacific and the Middle East, are increasing demand as they develop cities and industries. Additionally, its ability to withstand harsh weather and mechanical stress makes it a popular choice for difficult terrains.

From CY25 to CY30, the CAGR is slightly lower at 4.54%. Despite the slight decrease in the growth rate, the market continues to expand, with the total market value increasing from USD 1190 million in CY25 to USD 1436 million in CY30. This sustained growth suggests a stable and growing market for both loose tube and tight tube structures.

Chart 23: Global Optical Ground Wire Market Size by Type



Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

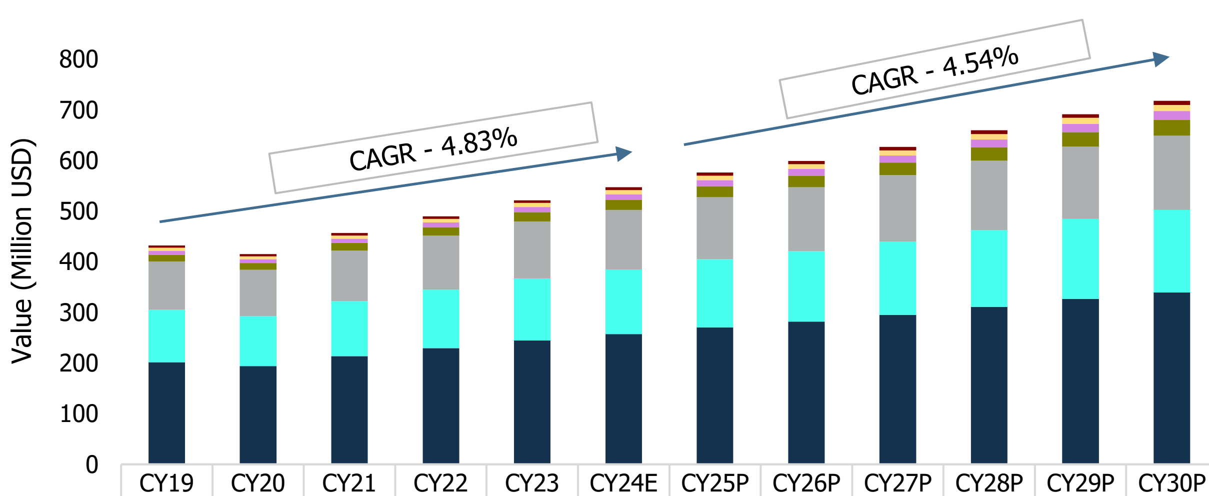
3.2.2 Market Type of Tight Tube Structure

The tight tube structure represents a smaller yet significant share of the market, increasing from USD 162.21 million in CY19 to about USD 205.75 million in CY24. The market size for Tight Tube Optical Ground Wire (OPGW) is expected to grow from USD 216 million in CY25 to USD 268 million in CY30. The growing demand for Tight Tube Optical Ground Wire (OPGW) is driven by urban expansion, increasing the need for compact and durable fibre-optic solutions in dense city environments. Its superior mechanical protection makes it ideal for key industries like power transmission. Additionally, power transmission companies are prioritizing network reliability, with tight tube OPGW offering better resistance to moisture and external damage. The rise of smart grid technology and modern power transmission networks further fuels demand, as these systems require high-performance optical ground wires for efficient data transmission. Advancements in fibre coatings and structural designs have also enhanced durability, making tight tube OPGW a preferred choice for long-term infrastructure project.

3.3 Global Optical Ground Wire Market Size by Region

The **European** market is projected to increase from USD 104 million in CY19 to USD 128 million in CY24, with expectations to reach USD 163 million by the end of CY30. This growth is driven by the shift towards renewable energy, grid modernization, and the rollout of 5G. The EU's focus on reducing carbon emissions has led to increased investments in energy-efficient transmission lines, where OPGW plays a crucial role. Additionally, aging grid infrastructure in Western Europe is being upgraded with modern fibre-optic solutions.

Chart 24: Global Optical Ground Wire Market Size by Region



	CY19	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
Africa	4	4	5	5	5	6	6	6	7	7	7	8
Middle East	6	6	6	7	8	8	9	9	10	11	12	12
India	8	8	9	10	10	11	12	13	14	15	17	18
Latin America	13	13	15	17	18	20	21	23	24	26	29	31
North America	96	91	100	106	113	118	123	126	132	137	143	146
Europe	104	99	109	116	123	128	134	139	145	152	158	163
APAC (Excl. India)	201	194	214	229	244	257	271	282	295	311	327	339

APAC (Excl. India) | Europe | North America | Latin America | India | Middle East | Africa

Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

North America market is forecasted to USD 146 million in CY30, the North American market is driven by the need for improved grid reliability, cybersecurity concerns, and the integration of renewable energy sources. The U.S. and Canada are investing in smart grid technology and fibre-optic-based communication networks for power transmission, further accelerating OPGW adoption.

The market in **Latin America** is projected to expand from USD 21 million in CY25 to USD 31 million in CY30, driven by rising electricity demand and ongoing grid expansion projects. Countries like Brazil and Mexico are focusing on modernizing their energy infrastructure, and OPGW is being adopted to improve efficiency and network monitoring capabilities.

India's market is forecasted to grow from USD 12 million in CY25 to USD 18 million in CY30, fuelled by growing electrification programs, rural connectivity projects, and large-scale renewable energy integration. The Indian government's push for smart grids and high-voltage power transmission networks is a key factor supporting this growth.

The **Middle Eastern** OPGW market is expected to reach USD 12 million in CY30, primarily due to investments in energy infrastructure and expanding urban development projects. Countries like Saudi Arabia and the UAE are strengthening power networks to support industrialization and smart city initiatives, increasing the demand for OPGW.

The **African** market, though relatively small, is expected to hit USD 8 million in CY30. The primary drivers include electrification projects, renewable energy integration, and the expansion of transmission networks in developing nations. Countries in sub-Saharan Africa are working on enhancing their power grid connectivity, which is contributing to gradual OPGW adoption.

3.4 Global Optical Ground Wire Market Size by End User

Optic Ground Wire (OPGW) is essential across various industries due to its superior combination of strength, durability, and versatility. In the **telecommunications** sector, OPGW is widely used for providing reliable communication networks while simultaneously offering protection to power transmission lines. It plays a crucial role in enhancing the security and performance of telecommunication infrastructure.

In the **energy and utilities** sector, OPGW use to improve grid efficiency by combining data transmission with grounding protection in high-voltage power lines. It enables real-time grid monitoring, improving power distribution and load management through smart grid integration.

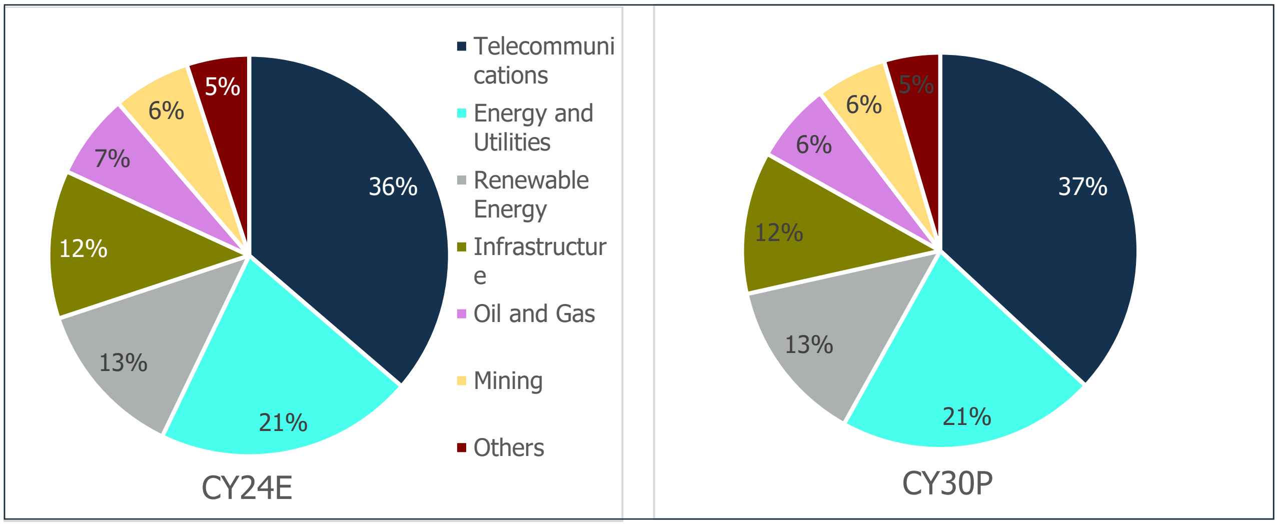
In **renewable energy**, OPGW connects wind and solar farms to the grid, enabling real-time performance monitoring and data transmission. It supports the integration of renewable energy into existing power systems, ensuring reliable communication and operational control.

In **oil and gas**, OPGW uses to secure communication and remote monitoring on offshore platforms and pipelines. It ensures operational control and safety, while grounding power lines to protect equipment in harsh environments.

Mining operations, OPGW connects mining equipment, sensors, and control centres, enabling real-time data transmission in remote locations. It helps monitor equipment health and environmental conditions, enhancing safety and operational efficiency in mining operations.

Infrastructure projects, offering reliability and robustness for critical systems. With the growing demand for enhanced communication networks, power systems, and infrastructure development, especially with the advent of 5G, smart grid technologies, and the expansion of renewable energy, the demand for OPGW has surged, making it a key component in modern infrastructure across multiple industries.

Chart 25: Global Optical Ground Wire Market Size by End User (CY24 vs CY30)

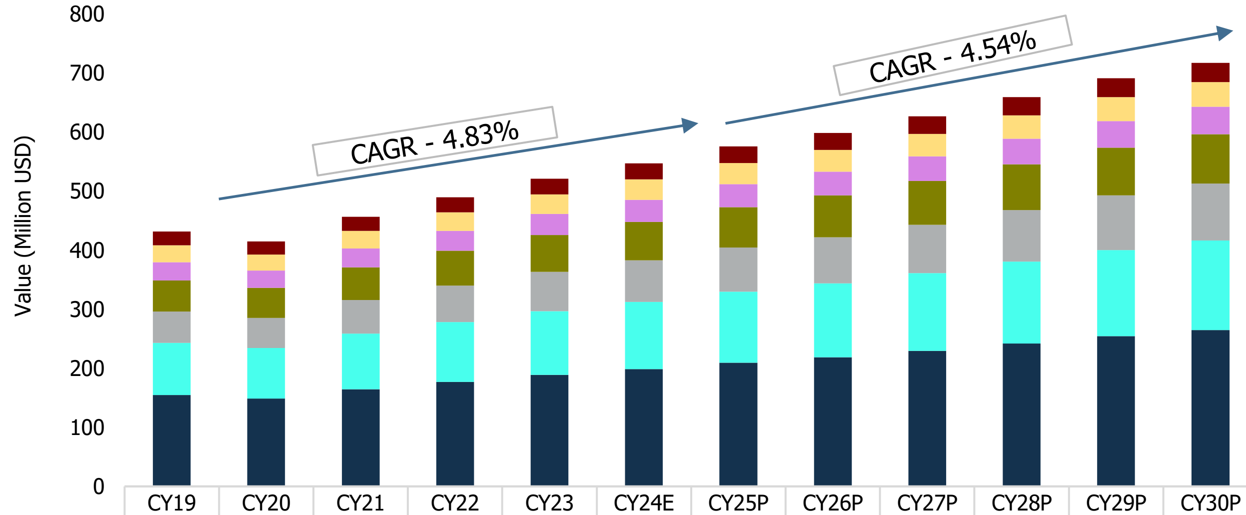


Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

In **CY24**, Telecommunications leads with 36%, driven by high demand for connectivity. Energy and Utilities follow at 21%, reflecting their importance in power and infrastructure. Renewable Energy makes up 13%, showing growing interest in sustainable solutions. Infrastructure represents 12%, while Oil and Gas account for 7%, and Mining makes up 6%. The Others category holds 5%, covering smaller sectors.

In **CY30**, Telecommunications remains dominant at 37%, with continued growth in connectivity demand. Energy and Utilities stay at 21%, and Renewable Energy stays at 13%. Infrastructure holds steady at 12%, while Oil and Gas decreases slightly to 6%, and Mining stays at 6%. The Others category remains at 5%, covering smaller sectors.

Chart 26: Global Optical Ground Wire Market Size by End User



	CY19	CY20	CY21	CY22	CY23	CY24E	CY25P	CY26P	CY27P	CY28P	CY29P	CY30P
Others	23	22	24	25	27	28	29	29	30	31	32	33
Mining	29	27	30	31	33	34	36	37	38	39	41	42
Oil and Gas	31	29	32	34	36	37	39	40	42	44	45	47
Infrastructure	53	51	55	59	63	65	69	71	74	77	81	83
Renewable Energy	53	51	57	62	66	70	75	78	82	87	92	96
Energy and Utilities	89	86	94	102	108	114	120	125	131	139	146	152
Telecommunications	155	149	164	177	189	199	210	219	230	242	254	265

Source: Maia Research, CareEdge Research; Note: E-Estimates, P-Projections, CY refers to Calendar Year

Telecommunications, in the Telecommunications sector, the market value grows from USD 155 million in CY19 to USD 199 million by CY24, driven by the increasing demand for high-speed internet and communication services. This growth is fuelled by the widespread adoption of 5G technology and the expansion of digital infrastructure. The sector's market value continues to rise, reaching USD 266 million by CY30, reflecting ongoing advancements in communication technology and the rising demand for enhanced connectivity.

Energy and Utilities sector experiences steady growth, with market value increasing from USD 83 million in CY19 to 118 million by CY24. This growth is driven by investments in power transmission and distribution networks to support economic development. The sector maintains its growth from CY25 to CY30, with market value rising from USD 120 million to USD 152 million, reflecting continued investment in energy infrastructure and the critical role of reliable power systems.

Renewable Energy sees significant growth, with market value increasing from USD 53 million in CY19 to USD 70 million by CY24, driven by the global shift towards sustainable energy sources and increased investments in renewable energy projects. The sector continues to grow from CY25 to CY30, with market value rising from USD 75 million to USD 93 million, reflecting ongoing focus on green energy initiatives and long-term sustainability goals.

Infrastructure sector shows steady growth, with market value increasing from USD 53 million in CY19 to USD 65 million by CY24, driven by ongoing construction and development projects to improve transportation and urbanization. From CY25 to CY30, the sector maintains its growth, with market value rising from USD 67 million to USD 81 million, indicating continuous investment in building and upgrading infrastructure to support economic activities.

Oil and Gas sector experiences gradual growth, with market value increasing from USD 31 million in CY19 to USD 37 million by CY24. This growth reflects the sector's importance in energy supply and industrial applications. From CY25 to

CY30, the sector continues to grow, with market value rising from USD 39 million to USD 47 million, although at a slower pace due to the global shift towards cleaner energy sources.

Mining shows steady growth, with market value increasing from USD 29 million in CY19 to USD 29 million by CY24, driven by the demand for raw materials and minerals essential for various industrial processes. The sector continues to grow from CY25 to CY30, with market value rising from USD 30 million to USD 35 million, reflecting ongoing demand for minerals and raw materials to support industrial growth.

Others category experiences steady growth, with market value increasing from USD 23 million in CY19 to USD 28 million by CY24. This category includes various smaller sectors contributing to the overall market dynamics. From CY25 to CY30, the category maintains its growth, with market value rising from USD 29 million to USD 33 million, indicating the continued contribution of various smaller sectors to the overall market.

3.5 Key demand drivers of the industry

Expansion of Power Transmission Infrastructure: The growing demand for electricity is driving the expansion of power grids, and with this growth comes the need for reliable communication systems. Optical Ground Wire (OPGW) addresses this by providing both grounding and high-speed communication in a single cable. This dual functionality helps improve grid safety, performance, and real-time monitoring. When upgrading existing transmission lines, incorporating OPGW allows utilities to optimize grid operations without the need for additional infrastructure, reducing costs and simplifying maintenance. OPGW's ability to integrate power and communication systems makes it an efficient solution for modernizing grids.

Transition towards renewable energy: The ongoing transition towards renewable energy sources has created substantial demand for OPGW cables in connecting remote wind and solar farms to the main power grid while providing essential communication links for monitoring and control. The push towards smart grid technologies and grid digitalization has also contributed to market growth, as OPGW cable enable rea-time data transmission for advance grid management and control system.

Rising Demand for High-Speed Communication: Increasing global industrialization and commercialization, the demand for reliable, high-speed internet services over power distribution networks, the preference for fibre optic networks by telecommunication companies to enhance remote connectivity, the presence of multiple service providers and advancements in data transmission technologies, and material advancements in OPGW cables that ensure uninterrupted data transmission and enhance broadband network resilience.

3.6 Challenges faced by the industry

Market Competition and Alternative Solutions: OPGW faces competition from alternative communication technologies, such as standalone fibre optic networks or wireless communication systems. In areas with less dense power line infrastructure or where transmission lines are difficult to access, these alternatives may be seen as more cost-effective options. This competition can limit the adoption of OPGW, particularly in regions where the infrastructure for traditional fibre optics or wireless systems is already well-established. Additionally, standalone systems may offer greater flexibility in some cases, further challenging OPGW’s market position.

Supply Chain and Manufacturing Constraints: OPGW production is highly dependent on specialized raw materials, such as high-strength steel for metal components and high-quality fibre-optic cables. Fluctuations in the availability or cost of these materials, often influenced by global supply chain issues or geopolitical factors, can lead to production delays. Additionally, the manufacturing process for OPGW is complex and requires high precision to meet performance standards. As a result, not all manufacturers can produce OPGW at the required quality levels, potentially leading to inconsistent product performance and reliability.

Regulatory and Safety Issues: The installation of OPGW is governed by various regulations related to safety, the environment, and operational standards, which differ by region and country. Following these rules can cause delays and increase costs for projects. Utilities must carefully ensure they meet all required standards. While optical fibres in OPGW are not affected by electromagnetic interference, the metal parts can create interference, which may impact nearby communication systems. Proper shielding and grounding are needed to reduce this risk, making OPGW installations more complex.

3.7 Key Global and Indian Players

Global Players

Table 7: Global Optic ground Wire Manufacturing Companies

Name of the Company	Origin Country	Year of Incorporation	About the company
Hengtong Group Co., Ltd.	China	1993	It is a manufacturer of Optical Fibre Communication Products, Power Transmission Products, IoT and Big Data Solutions in China. The company has 12 manufacturing facilities and a strong presence in over 150 countries. The company exports to Europe, North America, South America, Africa, South Asia, and Southeast Asia, with sales offices in more than 40 countries and regions.
Southwire Company	USA	1950	Southwire Company is a manufacturer of Power cables for electrical distribution and transmission, industrial cables, and Cables for data centres and communication networks. Its headquarters is in Carrollton, Georgia, USA. The company has presence in North America, with additional office locations in Arlington, Atlanta, Bremen, Brookhaven, and Carrollton in the United States. Southwire also serves international markets, including China.
ZTT Group	China	1992	ZTT Group manufactures Optical Fibre Communication Products and Power Transmission Product. ZTT Group operates in 160 countries. The company has five overseas plants located in India, Brazil, Indonesia, Morocco, and Turkey.
Fujikura Ltd	Japan	1885	Fujikura Ltd. manufactures power cables, communication cables, coated aluminium wires, optical fibres, optical cables, optical ground wires (OPGW), optical components, and network equipment. The company operates in 19 countries and regions. Its geographical footprint includes Asia (China, Vietnam, Singapore, Malaysia, Thailand, Indonesia, and India), the Americas (United States, Brazil, and Mexico), Europe (United Kingdom, Germany, and France), and Africa (South Africa). Fujikura exports its products to various countries, including Vietnam, Thailand, India, and the United States.
Prysmian Group	Italy	1879	Prysmian S.p.A. manufactures energy and telecommunication cables and systems, including underground and submarine cables, medium and low voltage cables, optical fibres, copper cables, and

Name of the Company	Origin Country	Year of Incorporation	About the company
			connectivity solutions for power, infrastructure, and telecom applications. Prysmian Group has a global presence, operating in 50 countries with 112 production facilities and 26 research and development centres. Its geographical footprint covers Europe, Asia, Africa, North America, and South America.

Source: Company Website

Indian Players

Table 8: Indian Optic Ground Wire Manufacturing Companies

Name of the Company	Year of Incorporation	About the company
Systematic Industries Limited	2000	Systematic Industries Limited is one of the established companies in the manufacture and supplies of range of products, particularly in the fields of Power & Transmission, Infrastructure, Automobile, Agriculture and Telecom. The company has multiple plants at different locations with an annual capacity of 1,00,000 MT across various products, industries and regions. The company also manufactures Optical Ground Wire (OPGW – 6,000 KM Annual Capacity), Optic fibre cables (48,000 KM Annual Capacity), galvanized wire, wires for power industries, high and low carbon steel wires etc. Systematic has been approved by Power Grid and BSNL. Systematic offers customization, surface treatments and coatings to meet future industry demands, with exports to more than 30 countries.
Sterlite Power Transmissions Ltd.	2010	Sterlite Power is a developer of power transmission infrastructure and solutions. The company designs, constructs, owns, and operates power transmission assets across multiple geographies, including significant operations in India and Brazil. In addition to its infrastructure projects, Sterlite Power manufactures a range of products such as power cables, conductors, and optical ground wire (OPGW), supplying to major Indian states, private utilities, and exporting to over 60 countries.
Apar Industries Ltd.	1958	Apar Industries Limited is a diversified company headquartered in Mumbai, India, specializing in electrical and metallurgical engineering. One of its key products is Optical Ground Wire (OPGW). They have supplied over 6,000 km of OPGW, ranging from 33kV to 765kV, including 800kV in India and abroad. The company has a presence in over 140 countries.

Advait Energy Transitions Limited	2009	Advait Energy Transitions Limited manufactures stringing tools, ACS wires, and insulators, along with offering OPGW operations, emergency restoration systems (ERS), and turnkey telecom projects. The company also provides live line installations, power transmission, and substation services. Additionally, it is involved in green energy solutions, including Alkaline and PEM Electrolyser Systems, Fuel Cell Systems, Hydrogen Refuelling Stations (HRS), Hydrogen Blending Systems, and Hydrogen Storage Units. Advait Energy Transitions Limited further engages in the production of conductors and transmission line towers.

Source: Company Website

4 Optic Fibre Sector in India

4.1 Overview

The Indian optic fibre sector is a critical part of India's telecommunication and data transmission infrastructure. With the increasing digitization across industries and the proliferation of high-speed internet, there is a growing demand for reliable and high-capacity fibre optic cables in the country. The optic fibre ensures seamless data transfer and supports advanced communication networks.

Fibre is a fast-growing infrastructure asset class. Fibre demand in India is increasing at a rapid pace. Deployment of a large amount of high-frequency 4G and 5G spectrum needs a fibre backhaul. Whereas government initiatives such as BharatNet's and Digital India's focus on telecom infrastructure, especially fibre, is also contributing to increased fibre deployment.

Additionally, telcos' ambition of increasing FTTH/B penetration for residences, buildings, and enterprise customers is expected to boost the demand for fibre layouts. Tower companies are well-positioned to address the fibre opportunity, with their existing experience of managing distributed infrastructure assets. Certain use cases that have tower at the central piece of network architecture, are already gaining traction. On the forefront is site fiberization, as it enhances backhaul and increases the valuation of the core tower assets, giving tower companies increased control.

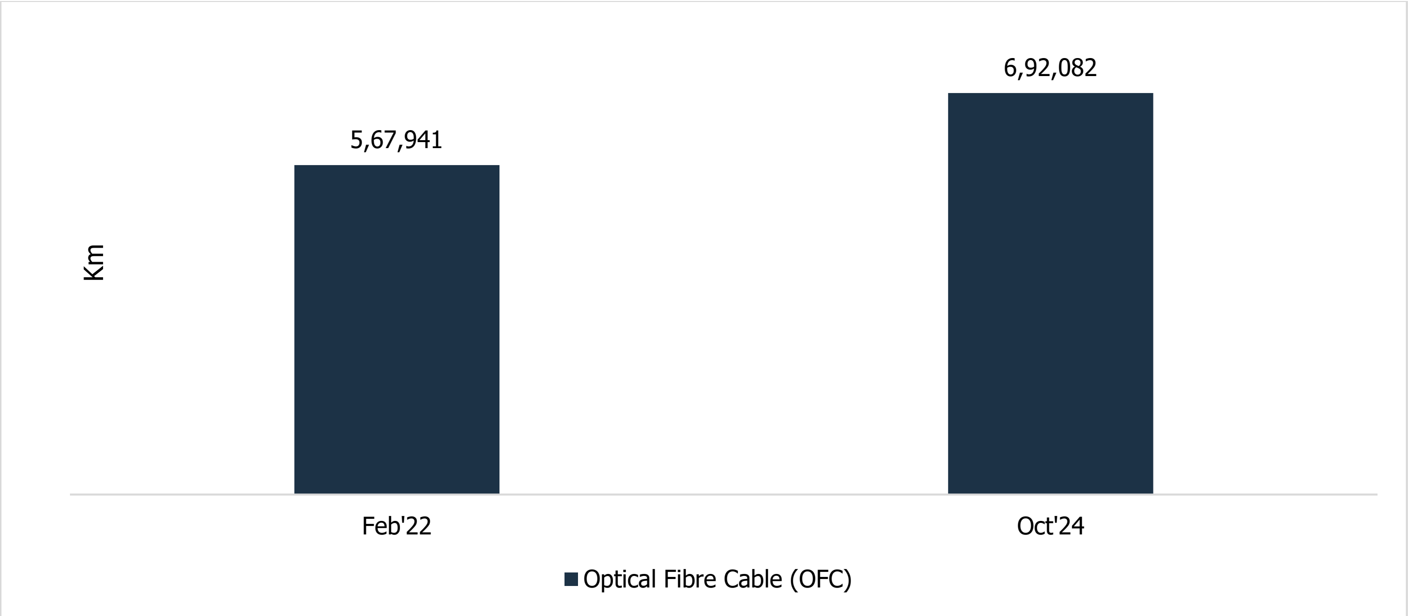
As per the report by GSMA and ABI, while optical fibre will play an important role, microwave backhaul will account for the majority of global backhaul links from 2021 to 2027, with around 65% market share.

4.2 Historical Growth and Current Scenario

BharatNet, one of the biggest rural telecom projects in the world, implemented in a phased manner to all Gram Panchayats (approximately 2.5 lakh) in the country for providing non-discriminatory access to broadband connectivity to all the telecom service providers with an objective to enable access providers like mobile operators, Internet Service Providers (ISPs), Cable TV operators, content providers to launch various services such as applications like e-health, e-education and e-governance in rural and remote India. The project has been approved by Union Cabinet on 25.10.2011. A Special Purpose Vehicle (SPV) is executing the project namely Bharat Broadband Network Limited (BBNL), which has been incorporated on 25 February 2012 under Indian Companies Act 1956. On 30 April 2016, the Telecom Commission approved to implement the project in three phases

As of October 2024 2,14,679 Gram Panchayats are connected through the BharatNet project and 6,92,082 Km of OFC has been laid. Additionally, 11,69,571 Fibre-To-The-Home (FTTH) connections are commissioned, and 1,04,574 Wi-Fi hotspots are installed to ensure last-mile connectivity.

Chart 27: Optical Fibre Network Connectivity



Source: Ministry of Communications

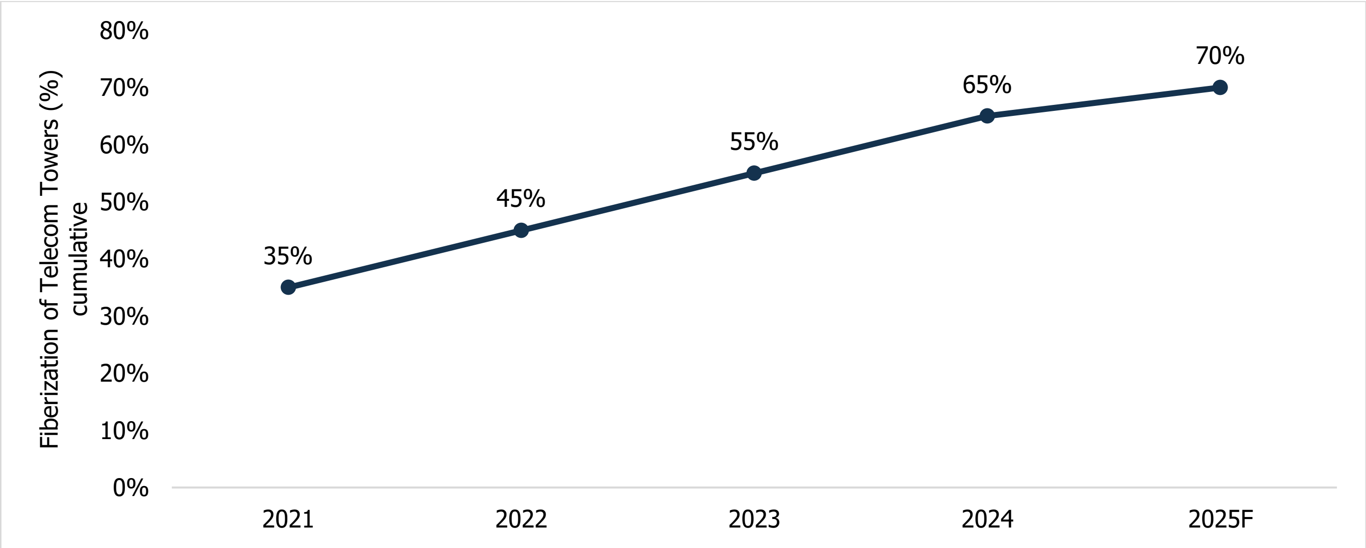
4.3 Expected Growth in India's OFC Network

Optical fibre has evolved as the most practical wired solution for backhaul, considering its extraordinary capacity. Owing to its almost limitless capacity and scalability, it is the right choice for high-capacity routes where logistics are manageable, the capacity need is high, and the potential revenue gain offsets the expense. In the coming years, its share in the mobile backhaul network is likely to go up owing to the expected growth in the data traffic and the increasing requirement of backhaul for new technologies such as LTE, LTE Advanced, IMT-2020, etc.

The National Broadband Mission released by DoT in December 2019, envisaged to increase by around two and half times the number of fiberized telecom towers in the country.

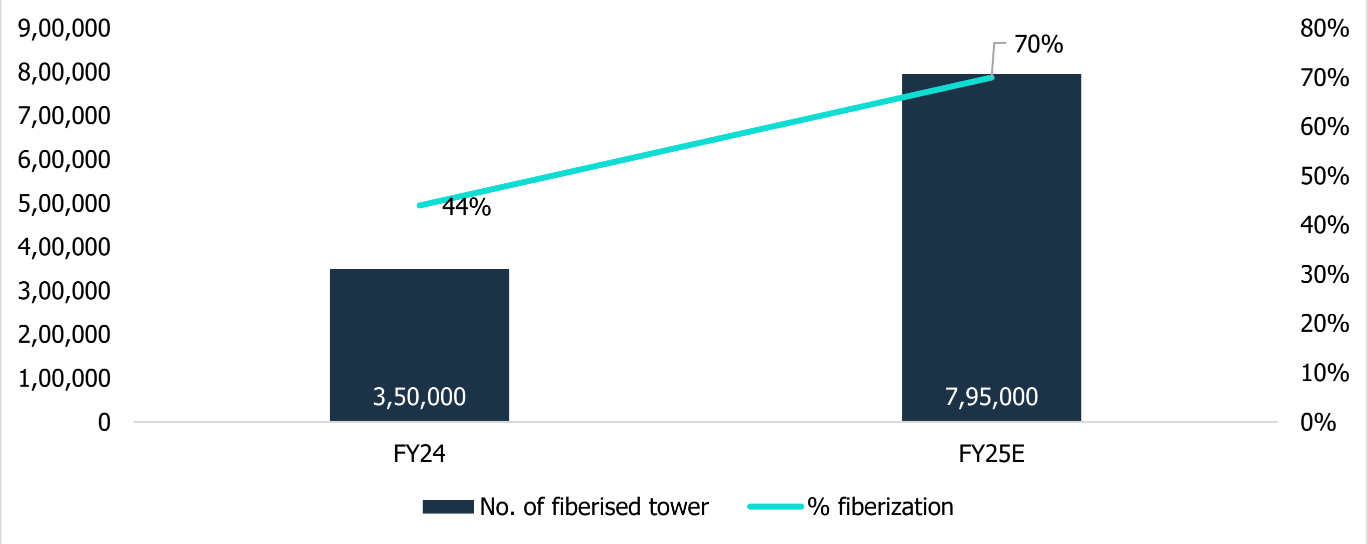
The National Broadband Mission, 2019 has set the 5-year target as below:

Chart 28: Fibreization of Telecom Towers



Source: Consultant Report, TRAI

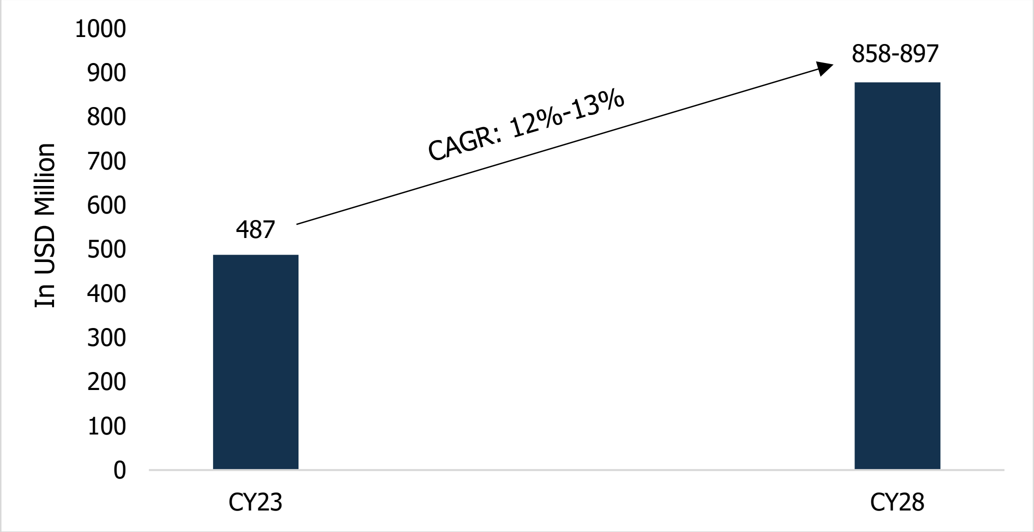
Chart 29: Number of Fiberized towers in India



Source: CareEdge Research

About 3,50,000 towers have been fiberized i.e. 44% of the total tower installed and an estimated 7,95,000 at the end of FY25 i.e. 70% of the total tower installed.

Chart 30: Market Size of Optic Fibre



Source: Industry Sources

India's Optical Fibre Cable (OFC) and accessories market is poised for substantial growth, driven by strategic government initiatives and rising demand for advanced broadband connectivity.

4.4 End-Users in Fibre Optic Network

Telecommunications:

Telecommunications is one of the primary end-user sectors for optical fibre. Telecom companies use optical fibre networks to transmit vast amounts of data over long distances with high speed and low latency. Optical fibre forms the backbone of modern telecommunications infrastructure, facilitating services such as internet connectivity, voice communication, and video streaming. The telecommunication sector is expected to grow at a CAGR of 8% to 9% in the next three years.

Key uses of optical fibre in the telecommunications industry:

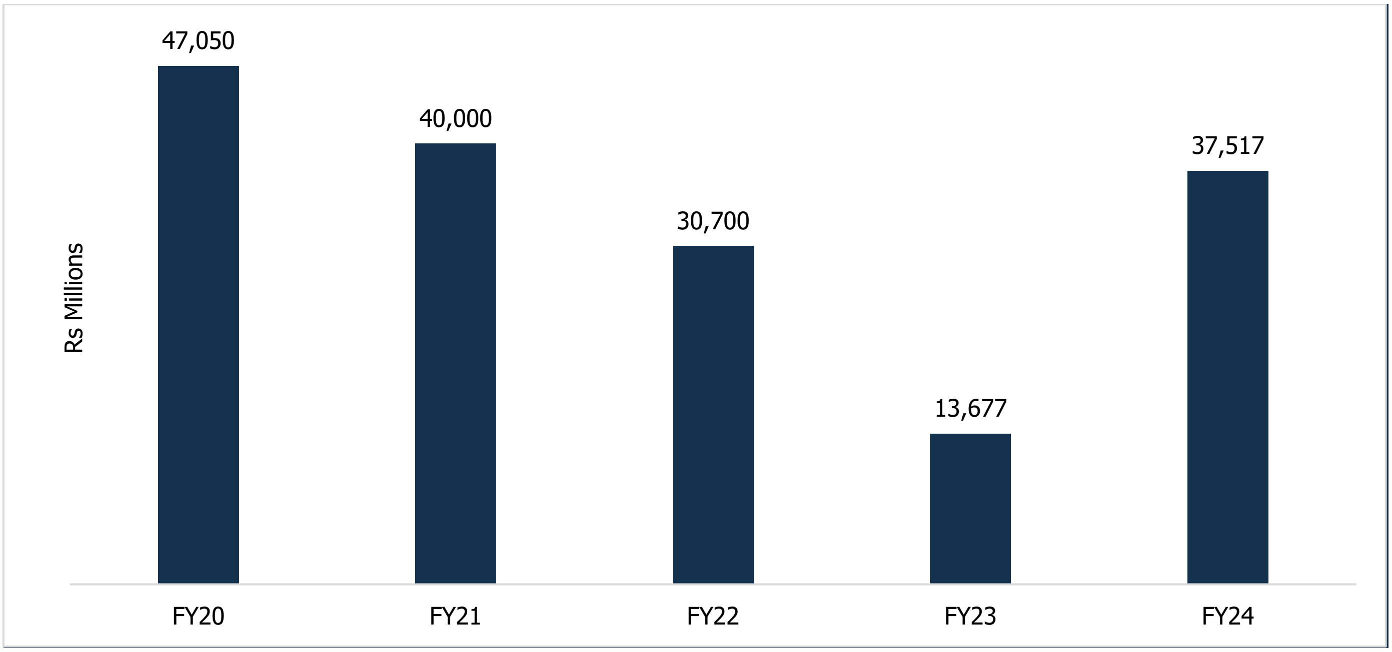
- Long-Distance Communication: Optical fibere is primarily used for long-distance communication due to its low signal attenuation and high bandwidth capabilities. It enables telecommunications providers to transmit voice, data, and video signals over vast distances with minimal signal loss.
- Backbone Networks: Optical fiber forms the backbone of telecommunications networks, including national and international communication networks. It serves as the infrastructure for high-capacity data transmission between central offices, data centres, and network aggregation points.
- High-Speed Internet: Optical fiber is the preferred medium for delivering high-speed internet services to residential, commercial, and industrial customers. Fiber-to-the-Home (FTTH) and Fiber-to-the-Premises (FTTP) deployments enable telecom operators to offer ultra-fast broadband connections with symmetric upload and download speeds.
- Mobile Backhaul: Optical fiber is used for mobile backhaul, connecting cell towers and base stations to the core network. Fiber optic links provide the high bandwidth and low latency required to support the increasing data traffic generated by mobile devices and smartphones.
- Data Center Interconnectivity: Optical fiber connects data centres and facilitates the interconnection of servers, storage systems, and networking equipment. High-speed fiber links enable data replication, backup, and disaster recovery, ensuring seamless operations and data availability.
- Cloud Computing: Optical fiber supports cloud computing services by providing fast and reliable connectivity between cloud data centres and end-users. Fiber-optic links enable the transfer of large volumes of data to and from cloud-based applications, platforms, and services.
- Video Conferencing and Streaming: Optical fiber enables high-quality video conferencing and streaming services by delivering real-time video and audio signals with low latency and high fidelity. Fiber-optic networks support the transmission of high-definition (HD) and ultra-high-definition (UHD) video content for telecommunication applications.
- Voice over IP (VoIP): Optical fiber supports Voice over IP (VoIP) services, allowing telecom operators to deliver voice communications over IP networks. Fiber-optic links provide the reliability and quality of service required for VoIP calls, including voice clarity, call stability, and low latency.
- Network Resilience and Reliability: Optical fiber enhances network resilience and reliability by offering robust performance in challenging environments, including harsh weather conditions and electromagnetic interference. Fiber-optic links are less susceptible to signal degradation and outages compared to traditional copper-based connections.

Government and Defence:

Governments and defence organizations utilize optical fibre for secure & reliable communication networks. Fibre-optic cables are deployed in military installations, government agencies, and critical infrastructure to transmit sensitive data, surveillance feeds, and command signals securely. Optical fibre provides a secure communication infrastructure for government agencies and defence organizations, enabling the transmission of sensitive data, classified information, and mission-critical communications. Additionally, fibre-optic networks offer high levels of security, immunity to electromagnetic interference (EMI), and resistance to eavesdropping. They are deployed for surveillance and intelligence gathering purposes, enabling the transmission of video feeds, sensor data, and reconnaissance information from unmanned aerial vehicles (UAVs), satellites, surveillance cameras, and other monitoring devices to command centres and intelligence agencies.

The capital allocation for modernization and infrastructure development of Defence Services has been increased to Rs 1,62,600 Crore, a growth of about 6% in FY24 as compared to FY23.

Chart 31: Optical Fibre Cable-Based Network for Defence Services



Source: Union Budget

Industrial Automation and Manufacturing:

Industrial sectors leverage optical fibre for automation, control, and monitoring applications in manufacturing plants and industrial facilities. Fibre-optic communication enables real-time data exchange between sensors, machinery, and control systems, enhancing efficiency, productivity, and safety in industrial operations.

Further, optical fibre serves as a high-speed communication medium for transmitting data between industrial equipment, sensors, controllers, and supervisory control and data acquisition (SCADA) systems. Fibre-optic networks provide reliable and high-bandwidth connectivity for real-time monitoring, control, and management of manufacturing processes. They form the backbone of industrial Ethernet networks, connecting devices such as programmable logic controllers (PLCs), human-machine interfaces (HMIs), robots, and sensors. Fibre-optic links enable fast and deterministic communication, supporting critical automation tasks and production workflows.

Transportation and Smart Infrastructure:
Transportation systems and smart city initiatives deploy optical fibre networks for traffic management, public safety, and infrastructure monitoring. Fibre-optic cables support intelligent transportation systems (ITS), surveillance cameras, traffic sensors, and smart grid solutions, enabling efficient and sustainable urban development.

Energy and Utilities:
Energy companies and utilities employ optical fibre for monitoring and managing power grids, pipelines, and utility networks. Fibre-optic communication enables remote monitoring of infrastructure, fault detection, and grid optimization, contributing to reliable and resilient energy distribution.

The following uses optic fibre as its main component -

Smart Grid
As per the National Smart Grid Mission (NSGM), Ministry of Power, a smart grid is an electrical grid with automation, communication, and IT systems that can monitor power flows from points of generation to points of consumption (down to appliances level) and control the power flow or curtail the load to match generation in real-time or near real-time. NSGM was established by the Government of India in 2015 to plan and monitor the implementation of policies and programmes related to smart grid activities in India. In addition, the NSGM envisages capacity-building initiatives for distribution sector personnel in the field of smart grids.

Smart grids can be achieved by implementing efficient transmission & distribution systems, system operations, consumer integration, and renewable integration. They help to monitor, measure, and control power flows in real-time, which can contribute to the identification of losses, and thereby, appropriate technical and managerial actions can be taken to arrest the losses.

Furthermore, smart grid solutions can contribute to the reduction of transmission & distribution losses, peak load management, improved quality of service, increased reliability, better asset management, renewable integration, better accessibility to electricity, etc., and enable self-healing grids.

Moreover, the primary aim of the smart grids is to improve the reliability of the electricity networks and make the grid amenable to renewable energy inputs through distributed generation. Further, increased efficiencies with smart grids and smart meters empower consumers to manage their electricity consumption in a better manner and help them reduce their bills.

Smart Meters
Smart meters are digital meters like conventional meters. They record data on energy consumption. Also, they can transmit the energy consumption data to utilities at specific intervals, which permits more frequent monitoring of consumption alongside assisting in reducing T&D losses.

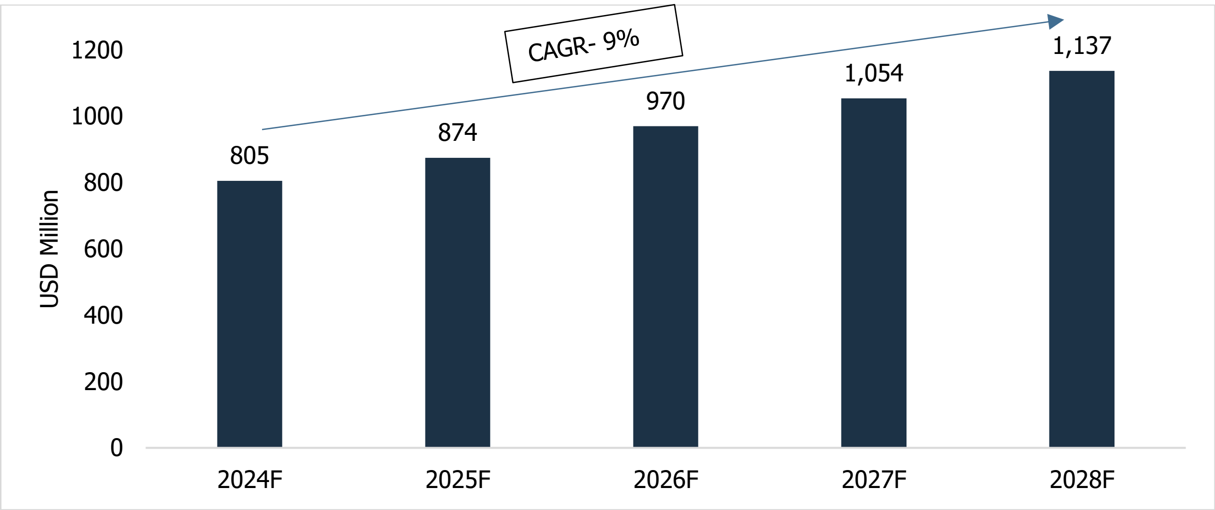
Further, smart meters are being installed under various government schemes including NSGM and Integrated Power Development Scheme (IPDS) wherein the government is providing funding to the states for implementing smart metering projects launched by DISCOMs.

For instance, Energy Efficiency Services Limited (EESL) is implementing projects launched by various DISCOMs in Uttar Pradesh, Haryana, Bihar, Rajasthan, Andaman & Nicobar Islands, Delhi, etc., wherein EESL is infusing the initial capital expenditure and DISCOMs are paying back to EESL on monthly rental basis.

High-Voltage Transmission Lines

Fibre optics are deployed along high-voltage transmission lines to provide communication capabilities for remote monitoring and diagnostics. Fibre-optic cables are installed on transmission towers or bundled with overhead conductors, allowing utilities to monitor line conditions, detect faults, and perform predictive maintenance activities. The High Voltage Transmission Line market size is expected to grow at a CAGR of 9% from the year 2024 to 2028.

Chart 32: Market Size of High Voltage Transmission Lines in India



Source: Maia Research, CareEdge Research

4.5 Key Demand Drivers of the Industry

Over the past few years, OFC has emerged as a core component for supporting India's fledgling digital ecosystem. OFC rollouts are increasing in India having an OFC footprint of around 6,92,082 Kms as of October 2024. These rollouts have been driven largely by the government's push to increase internet penetration across the country through its projects like Digital India, BharatNet, Smart Cities Mission, National Broadband Mission as well as through telcos growing focus on site fiberisation and fiberizing the last mile. Some of the key growth factors for telecom OFC are:

BharatNet Phase III

BharatNet project is being implemented by BBNL (Bharat Broadband Network) for connecting approximately 2.6 lakh Gram Panchayats of the country for providing broadband access to rural India. Under BharatNet, the connectivity is being provided, primarily by laying of Optical Fibre Cable (OFC), in the middle mile between Block and the Gram Panchayats.

BharatNet Phase III is a critical extension of the BharatNet project, which aims to provide high-speed broadband connectivity to rural and remote areas across India. The primary goal is to enhance digital access, foster economic growth, and bridge the digital divide.

NHAI Demand for Optical Fibre Cables

NHAI is working towards development of around 10,000 km of Optic Fibre Cables (OFC) infrastructure across the country by FY24-25. National Highways Logistics Management Limited (NHLML), a fully owned SPV of NHAI, will implement the network of Digital Highways by developing integrated utility corridors along the National Highways to develop OFC infrastructure. Around 1,367 km on Delhi - Mumbai Expressway and 512 km on Hyderabad - Bangalore Corridor have been identified as pilot routes for the Digital Highway development.

Providing internet connectivity to remote locations across the country, the OFC network will help to expedite the roll out of new age telecom technologies like 5G & 6G. Recently inaugurated, 246 km long Delhi – Dausa – Lalsot section of the Delhi - Mumbai Expressway features a three-meter-wide dedicated utility corridor used to lay Optical Fibre Cables, which will serve as the backbone for the roll out of the 5G network in the region. OFC laying work along the National Highways has started and is targeted for completion in about a year.

Increasing Demand for High-Speed Internet

The increasing use of smartphones, OTT platforms, digital services, and cloud computing has caused a surge in data consumption, driving the need for faster, more reliable internet connectivity

The growth of 5G technology in India is significantly boosting the optic fibre market. As 5G networks expand, they require extensive fibre optic infrastructure to support the high-speed, high-capacity, and low-latency demands of 5G applications. Currently, only a few number telecom towers in India are connected with fibre, which needs to increase for full 5G capabilities. The deployment of 5G and fibre optics is also expected to improve connectivity in rural areas, providing essential services and boosting economic development. The synergy between 5G technology and the optic fibre market in India is creating a robust foundation for future technological advancements. This growth is driven by the need for high-speed internet and advanced applications like autonomous vehicles and remote healthcare. Overall, 5G is a key driver for the optic fibre market's expansion.

The rise of smart cities and the Internet of Things (IoT) technologies also fuel the demand for faster, stable, and high-capacity data transmission networks, which can be efficiently provided by optical fibre infrastructure

Private Sector Investment and Competition

Leading telecom companies in India, including Reliance Jio, Bharti Airtel, and Vodafone Idea, are heavily investing in optical fibre networks to meet the growing demand for high-speed data and stay competitive in the market. However Telecom companies often collaborate on sharing optical fibre infrastructure, which reduces capital expenditure and accelerates the rollout of fibre networks across the country.

Furthermore, these operators are replacing outdated copper networks with optical fibre networks to improve speed, reliability, and service delivery. This modernization aligns with the global trend toward fibre-first approaches for broadband infrastructure.

4.6 Challenges faced by the Industry

High Installation and Maintenance Costs

One of the primary challenges faced by the optic fibre industry is the significant cost associated with installation and ongoing maintenance. Laying fibre optic cables often requires digging trenches, navigating dense urban infrastructure, or building over long distances in remote or rural areas, which can be both time-consuming and expensive. The need for specialized equipment and labour further adds to the cost, making it difficult for some regions or smaller companies to afford widespread deployment. Even once the infrastructure is in place, ongoing maintenance to ensure optimal performance—particularly in areas with harsh weather or challenging geography—adds a continuing financial burden to service providers.

Competition from Alternative Technologies

The fibre optic industry also faces increasing competition from emerging technologies, such as 5G wireless networks. While fibre optics offer high-speed, reliable connections, the rollout of 5G has the potential to reduce the demand for fibre in some areas by providing fast wireless broadband alternatives. As 5G technology improves, some businesses and consumers may opt for wireless solutions, which may be more cost-effective or convenient in the short term. This competitive landscape pressures the optic fibre industry to innovate continuously and justify its investment in fibre infrastructure.

Technical Challenges in Harsh Environments

Another significant challenge is ensuring the reliability and durability of fibre optic cables when deployed in difficult or extreme environments. Fibre optics are highly sensitive to physical damage, so in areas with high levels of environmental stress—such as areas prone to extreme weather, earthquakes, or flooding—additional measures must be taken to protect the cables. This may involve using specialized materials or protective casing, which increases costs and complicates installation. The cables also need to be able to withstand temperature fluctuations, humidity, and potential interference, requiring continuous monitoring and frequent repairs in these conditions.

Constant Need for Research and Development

The optic fibre industry is heavily dependent on research and development (R&D) to remain competitive. As technology evolves rapidly, service providers must keep pace with new advancements in fibre optic technologies such as improved data transmission speeds, increased bandwidth capacity, and more efficient materials. Failure to invest in R&D can lead to obsolescence as newer, better technologies emerge. This requires significant financial resources, particularly for companies aiming to stay at the forefront of innovation. Smaller players may struggle to keep up with the pace of change, making it difficult for them to remain competitive in the marketplace.

Regulatory Hurdles and Standardization Issues

The optic fibre industry is often subject to complex regulatory frameworks that vary by country, region, or municipality. This patchwork of regulations can slow down the deployment of fibre networks, as companies must navigate different permitting processes, construction codes, and environmental assessments. Additionally, the lack of standardization across different regions or countries can make it more challenging for global companies to scale their operations effectively. Variations in regulations, such as differing requirements for digging and installation procedures, create logistical difficulties, potentially causing delays and added costs for companies trying to expand their networks internationally

4.7 Key Players Indian and Global

Global Players

Table 9: Global Optic Fibre Cable Manufacturing Companies

Name of the Company	Origin Country	Year of Incorporation	About the company
Sumitomo Electric Industries, Ltd.	Japan	1897	Sumitomo Electric Industries, Ltd. is a manufacturer and seller of electric wire and cable and other electronics-related products. The company's major business segments include the automotive, information and communication, electronics, environment and energy, and industrial material business
Prysmian Group	Italy	1879	Prysmian S.p.A. manufactures energy and telecommunication cables and systems, including underground and submarine cables, medium and low voltage cables, optical fibres, copper cables, and connectivity solutions for power, infrastructure, and telecom applications.
Furakuwa Electric Co. Ltd	Japan	1884	Furukawa Electric Co., Ltd. is a manufacturer of products and services for the automotive, industrial, and telecommunications industries. Its offerings include communication cables, optical devices, network equipment, CATV systems, optical fibres,

Name of the Company	Origin Country	Year of Incorporation	About the company
			power products, copper and aluminium wires, wiring harnesses, magnet wires, and aluminium plates.
Fujikura Ltd	Japan	1885	Fujikura Ltd. manufactures and sells goods for power and telecommunication systems, electronics, automotive, and real estate industries. Its power and telecommunication division offer power cables, communication cables, coated aluminium wires, optical fibres, optical cables, optical components, and network equipment.
Belden Inc.	US	1902	Belden Inc. is a global provider of signal transmission solutions for critical applications across industries such as industrial automation, energy, telecommunications, and enterprise networks. Its offerings include high-performance cables, connectors, networking equipment, and industrial automation solutions.

Source: Company Website

Indian Players

Table 10: Indian Optic Fibre Cable Manufacturing Companies

Name of the Company	Year of Incorporation	About the company
Systematics Industries Limited	2000	Systematic Industries Limited is one of the established companies in the manufacture and supplies of range of products, particularly in the fields of Power & Transmission, Infrastructure, Automobile, Agriculture and Telecom. The company has multiple plants at different locations with an annual capacity of 1,00,000 MT across various products, industries and regions. The company also manufactures Optical Ground Wire (OPGW – 6,000 KM Annual Capacity), Optic fibre cables (48,000 KM Annual Capacity), galvanized wire, wires for power industries, high and low carbon steel wires etc. Systematic has been approved by Power Grid and BSNL. Systematic offers customization, surface treatments and coatings to meet future industry demands, with exports to more than 30 countries.
Sterlite Technologies Limited	2000	Sterlite Technologies is a provider of telecom and broadband products and services. The company offers optical fibre cables, optical fibre, and other related technologies, catering to global markets. They are a player in the manufacturing of optical fibre cables in India and have expanded their reach to international markets.
Himachal Futuristic Communications Limited	1987	The company designs, manufactures, and delivers products for the telecommunications industry. HFCL caters to both domestic and international markets.
Apar Industries Ltd.	1958	Apar Industries Limited is a diversified company headquartered in Mumbai, India, specializing in electrical and metallurgical engineering. One of its key products is Optical Ground Wire (OPGW). They have supplied over 6,000 km of OPGW, ranging from 33kV to 765kV, including 800kV in India and abroad. The company has a presence in over 140 countries.

Finolex Cables Ltd	1958	Finolex Cables specializes in producing a wide range of products, primarily catering to the power, telecom, and infrastructure sectors. Finolex manufactures optical fibre cables, which are used for high-speed data transmission in telecommunications, internet services.
Vindhya Telelinks Ltd	1983	Vindhya Telelinks Limited is an Indian manufacturer and supplier of telecommunication cables, specializing in a diverse range of optical fibre cables (OFC) for trunk, access, and FTTH networks. Its portfolio includes unarmoured cables for duct applications, armoured cables for added protection, and aerial cables for overhead installations. The company has exported its telecommunication cables, including OFC, to countries like France, Denmark, the United Arab Emirates, and Italy.

Source: Company Website

5 Key Risks and Threats as per latest SEBI Guidelines

Regulatory Compliance and Governance Risks

Corporate governance and regulatory compliance for publicly listed companies. For OPGW, Optic Fibre, Galvanized wire and Steel wire manufacturing companies, this means adhering to safety, environmental, and industry-specific regulations. Non-compliance could result in penalties, litigation, or loss of market access. Regular disclosures and financial transparency are also critical to mitigate risks related to corporate governance and regulatory non-compliance.

Market Volatility, Financial Risk, Supply Chain Disruptions and Operational Risks

Fluctuating raw material costs, such as those for steel and optical fibres, pose a significant risk for OPGW, Optic Fibre, Galvanized wire and Steel wire manufacturers. Adverse market conditions, including changes in commodity prices or currency fluctuations, could lead to increased operational costs or reduced profitability for OPGW manufacturers. It is necessary for companies to disclose risks related to supply chains and operational continuity. In this sector, disruptions such as natural disasters, geopolitical tensions, or trade restrictions can delay production or increase costs. These risks must be identified, and companies must have contingency plans in place to minimize the impact on their financials and operations.

Technological Risks and Product Innovation

The OPGW, Optic Fibre, Galvanized wire and Steel wire manufacturing industry faces the challenge of keeping up with technological advancements and avoiding product obsolescence. As telecom and power sectors evolve, companies must innovate to meet the growing demand for more efficient and reliable solutions. Failure to adapt to new technologies, such as advancements in fibre optics or smart grids, could harm competitiveness. Importance of disclosing these technological risks, including the potential for obsolescence and the need to invest in continuous innovation to stay relevant in a rapidly changing market.

Financial Reporting & Transparency Risks, Environmental and Sustainability Risks

OPGW, Optic Fibre, Galvanized wire and Steel wire manufacturers must ensure accurate reporting on their financial status, operational performance, and potential risks. Failure to comply with disclosure standards could lead to penalties, regulatory scrutiny, and loss of investor confidence. Additionally, with growing emphasis on sustainability, companies must disclose their environmental and social risks. For OPGW, Optic Fibre, Galvanized wire and Steel wire manufacturers, this includes managing their environmental footprint, such as energy usage and waste disposal. Non-compliance with environmental regulations could result in legal repercussions.

Cybersecurity and Data Protection Risks

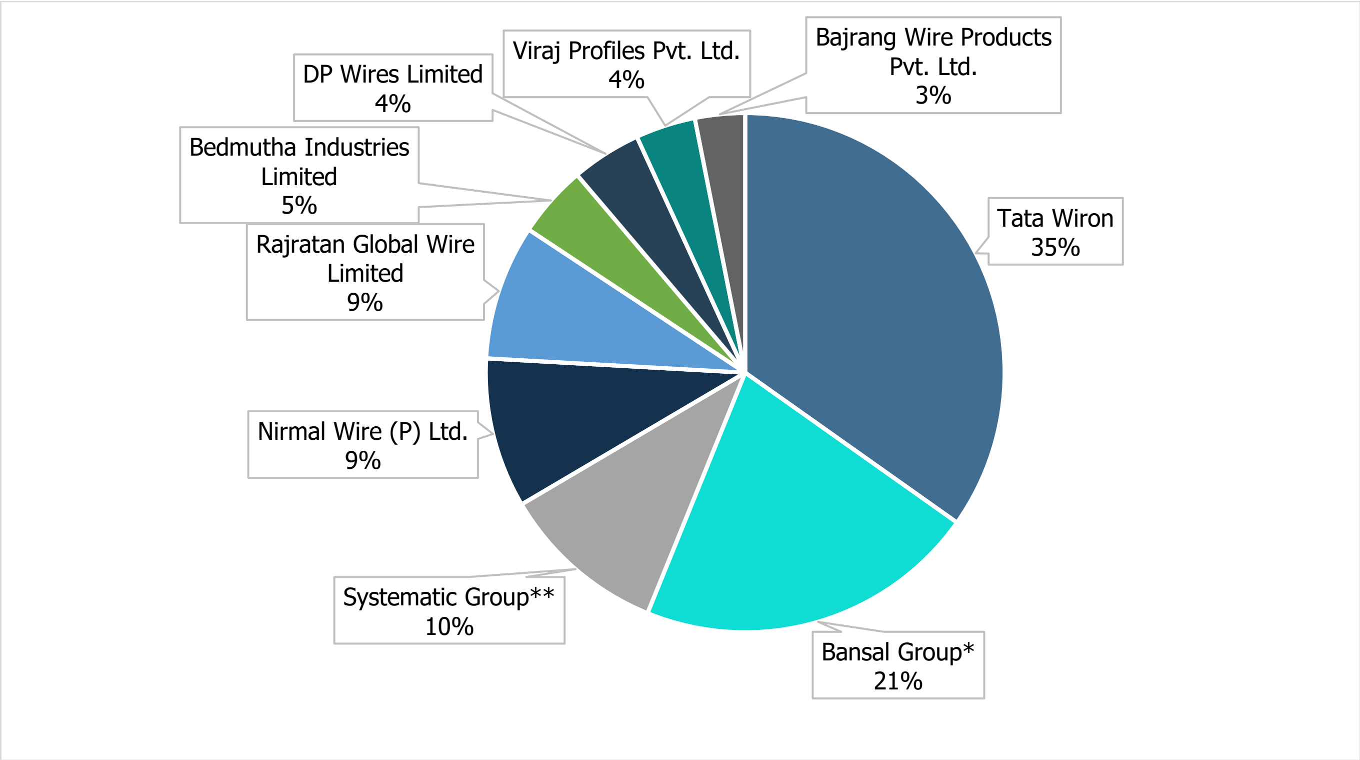
As OPGW, Optic Fibre, Galvanized wire and Steel wire are integrated into communication networks and smart grids, cybersecurity risks become more prominent. Any cyber-attack or data breach could not only disrupt operations but also lead to reputational damage, financial losses, and legal implications. Companies in the OPGW, Optic Fibre, Galvanized wire and Steel wire manufacturing industry must ensure robust cybersecurity measures to meet SEBI’s expectations on data security and operational risk management.

6 Competitive Landscape

6.1 Overview of Steel Wire Players in India

The market size of Steel Wire Industry in India, by installed capacity, is in the range of 95-100 lakh MTPA. The top players in the industry include Tata Wires, Bansal Group, Systematic Group, and others. Among the below companies considered as our peer set, Systematic Group holds the 3rd position in terms of installed capacity.

Chart 33: Installed Capacity wise share of Major Players in Steel Wire Industry



Source: Company Website and Annual Reports, CareEdge Research
Note: *Bansal Group includes Bansal Wire Industries Limited, Bansal Steel and Power Limited, Balaji Wires, and Bansal High Carbon
**Systematic Group includes the following - Veritas (75,000 MTPA), Systematic (1,00,000 MTPA), and Wire Brigade (25,000 MTPA)

Table 11: Company-Select Products Mapping

	Steel wire	Galvanized Steel Wire	Optical Fibre Cable	Optical Ground Wire	Cable Armour	Bead Wire	LRPC
Tata Wiron	✓	✓			✓		✓
Bansal Group	✓	✓			✓		
Systematic Group	✓	✓	✓	✓	✓		
Nirmal Wire (P) Ltd.	✓	✓					
Rajratan Global Wire Limited	✓					✓	
Bedmutha Industries Limited	✓	✓					
DP Wires Limited	✓						✓
Viraj Profiles Pvt. Ltd.	✓						
Bajrang Wire Products Pvt. Ltd.	✓	✓			✓		✓

Source: Company Website

6.2 Peer Benchmarking

The following companies have been selected for competitive landscape as they are comparable on the basis of their scale of operations, product mix, etc.

6.2.1 Systematic Industries Limited

Description: Systematic Industries Limited is one of the established companies in the manufacture and supplies of range of products, particularly in the fields of Power & Transmission, Infrastructure, Automobile, Agriculture and Telecom. The company has multiple plants at different locations with an annual capacity of 1,00,000 MT across various products, industries and regions. The company also manufactures Optical Ground Wire (OPGW – 6,000 KM Annual Capacity), Optic fibre cables (48,000 KM Annual Capacity), galvanized wire, wires for power industries, high and low carbon steel wires etc. Systematic has been approved by Power Grid and BSNL. Systematic offers customization, surface treatments and coatings to meet future industry demands, with exports to more than 30 countries. Additionally, the company aims to establish its presence in the OPGW segment.

- **Year of Incorporation:** 2000
- **Headquarters:** Mumbai India
- **Installed Capacity**: Annual capacity of 1 Lakh MT, Optical Ground Wire (6,000 KM Annual Capacity), Optic fibre cables (48,000 KM Annual Capacity)
- **Key Products Manufactured:** Galvanized Wire, Wires for Power Industry, High Carbon and Low Carbon Steel Wires, Wire and Wire Products. Further, new products introduced include Optic Fibre Cables, Optical Ground Wire, and Aluminium Clad Steel Wire in 2025.
- **Plan Ahead:** In the near future, Systematic will mainly focus on cable and conductor manufacturers as large demand is expected from the Indian power sector.

6.2.2 Bansal Wire Industries Limited

Description: Bansal Wire Industries Limited is the stainless steel wire manufacturing company in India. Company's portfolio caters to sectors such as automotive, general engineering, infrastructure, hardware, consumer durables, power and transmission, agriculture and auto replacement. It manufactures over 3,000 stock keeping units ("SKUs"), with sizes ranging from 0.04 mm to 15.65 mm.

- **Year of Incorporation:** 1985
- **Headquarters:** Delhi, India
- **Installed Capacity:** 2.62 Lakh MTPA
- **Key Products Manufactured:** High Carbon and Low Carbon Wires, Galvanized wires, Stainless Steel Wires and Bars, Aluminium Alloy Wires, Copper Coated Wires, Welding Wires.
- **Plan Ahead:** Company plans to expand its current production capacity from 262,000 MTPA to 600,000 MTPA by the end of 2025.

6.2.3 Nirmal Wires Private Limited

Description: Nirmal Wires Private Limited incorporated in year 1981, one of names in the industry which is fulfilling the requirements of high-quality industrial products. The Company is primarily engaged in manufacture and sale of various Engineering products e.g. Galvanized Wires, Black Wires, Barbed Wires, Aluminium Wires, Conductors and Cables, etc. The Company is also engaged in Trading of Ferrous and Non-Ferrous Metals.

- **Year of Incorporation:** 1981
- **Headquarters:** Kolkata, West Bengal, India
- **Installed Capacity:** 0.96 Lakh MTPA
- **Key Products Manufactured:** GI Wires, Aluminium Conductors, Deformed Steel Bars, Galvanized Stranded Wires, Barbed Wires, Galvanized Steel Wires, High Carbon Steel Wire, ACSR Core Wires, Mig Wire, Umbrella Rib Wires, etc.
- **Plan Ahead:** Nirmal's future product range will include zinc wires, zinc-aluminium wires, low relaxation prestressed concrete wires, and patented steel wires.

6.2.4 Advait Energy Transition Limited

Description: Advait Energy Transitions Limited incorporated in year 2009, delivering products and solutions tailored for power transmission, substation, and telecommunication infrastructure. They are engaged in the business of providing products and solutions for power transmission, power substation, and telecommunication infrastructure fields. Also, it operates with various verticals such as Turnkey Telecommunication Projects, Installation of the Power Transmission, Sub Station and Telecom Products, etc.

- **Year of Incorporation:** 2009
- **Headquarters:** Ahmedabad, India
- **Installed Capacity:** NA
- **Key Products Manufactured:** Stringing Tools, OPGW, OFC cables, ACS, ERS, and OPGW joint boxes, etc.
- **Plan Ahead:** Company plans to expand its electrolyzer manufacturing capacity to 200 MW per year by 2025.

6.3 Competitive Benchmarking across Key Financial Parameters

Table 12: Revenue Performance (In Rs. Million)

Companies	FY22	FY23	FY24	CAGR (FY22-FY24, in %)
Advait Energy Transitions Limited	786.6	1,041.9	2,088.5	62.9%
Nirmal Wires Private Limited	8,736.8	12,696.9	15,287.4	32.3%
Systematic Industries Limited	2,340.8	3,204.8	3,703.1	25.8%
Bansal Wire Industries Limited	21,983.6	24,130.1	24,660.3	5.9%

Source: Company's disclosures

Table 13: EBITDA and EBITDA Margin

Companies	EBITDA (In Rs. Million)			EBITDA Margin (in %)		
	FY22	FY23	FY24	FY22	FY23	FY24
Advait Energy Transitions Limited	93.3	155.2	335.0	11.9%	14.9%	16.0%
Systematic Industries Limited	85.7	129.6	241.0	3.7%	4.0%	6.5%
Bansal Wire Industries Limited	1,046.0	1,030.8	1,416.9	4.8%	4.3%	5.7%
Nirmal Wires Private Limited	377.1	288.9	502.3	4.3%	2.3%	3.3%

Source: Company's disclosures

Table 14: PAT and PAT Margin

Companies	PAT (In Rs. Million)			PAT Margin		
	FY22	FY23	FY24	FY22	FY23	FY24
Advait Energy Transitions Limited	53.3	84.4	218.8	6.8%	8.0%	10.3%
Systematic Industries Limited	39.0	63.1	124.0	1.7%	2.0%	3.3%
Bansal Wire Industries Limited	582.5	599.8	752.4	2.6%	2.5%	3.0%
Nirmal Wires Private Limited	197.6	135.9	363.3	2.2%	1.1%	2.3%

Source: Company's disclosures

Table 15: Debt to Equity

Companies	FY22	FY23	FY24
Bansal Wire Industries Limited	1.8	1.5	1.6
Systematic Industries Limited	0.8	1.2	1.3
Nirmal Wires Private Limited	1.6	1.9	1.3
Advait Energy Transitions Limited	0.2	0.3	0.8

Source: Company's disclosures

Table 16: Return on Equity (in %)

Companies	FY22	FY23	FY24
Advait Energy Transitions Limited	14.5%	18.4%	29.8%
Nirmal Wires Private Limited	17.9%	11.0%	22.7%
Systematic Industries Limited	8.9%	12.9%	19.7%
Bansal Wire Industries Limited	25.7%	21.0%	17.8%

Source: Company's disclosures

Table 17: Return on Assets (in %)

Companies	FY22	FY23	FY24
Advait Energy Transitions Limited	6.5%	7.3%	11.0%
Nirmal Wires Private Limited	6.3%	3.5%	9.0%
Systematic Industries Limited	4.4%	5.1%	7.8%
Bansal Wire Industries Limited	8.3%	8.0%	6.0%

Source: Company's disclosures

Table 18: Return on Capital Employed (in %)

Companies	FY22	FY23	FY24
Advait Energy Transitions Limited	17.5%	22.6%	36.3%
Nirmal Wires Private Limited	22.6%	17.4%	32.5%
Systematic Industries Limited	17.1%	18.6%	27.9%
Bansal Wire Industries Limited	28.7%	21.9%	17.0%

Source: Company's disclosures

Table 19: Net Debt (In Rs. Million)

Companies	FY22	FY23	FY24
Bansal Wire Industries Limited	4,127	4,215	6,767
Nirmal Wires Private Limited	1,620	2,224	1,998
Systematic Industries Limited	355	617	780
Advait Energy Transitions Limited	-11	-28	123

Source: Company's disclosures

Table 20: Formula Sheet

Parameter	Formula
Revenue	Revenue from Operations
EBITDA	Depreciation + Interest expenses + Profit (Loss) before exceptional item and tax- Other Income
EBIT	Profit before tax + Interest expenses
EBITDA Margin	EBITDA/ Revenue from operations
EBIT Margin	EBIT/ Revenue from operations
PAT Margin	Profit after Tax/ Revenue from operations
Debt	Long term Borrowings + Short term Borrowings
Debt to Equity	Debt/ Total Equity
Non Core Assets	Long term+ Short term other financial assets
Return on Equity (ROE)	PAT/ Total Equity
Return on Assets (ROA)	PAT/ Total Assets
Return on Capital Employed (ROCE)	EBIT/ (Total Assets- Total Current Liabilities)

Source: CareEdge

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