Government of India
Ministry of Steel

सत्यमेव जयते

Steel Scrap Market in India

Ministry of Steel

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Research & Technical Associate Crisil Intelligence

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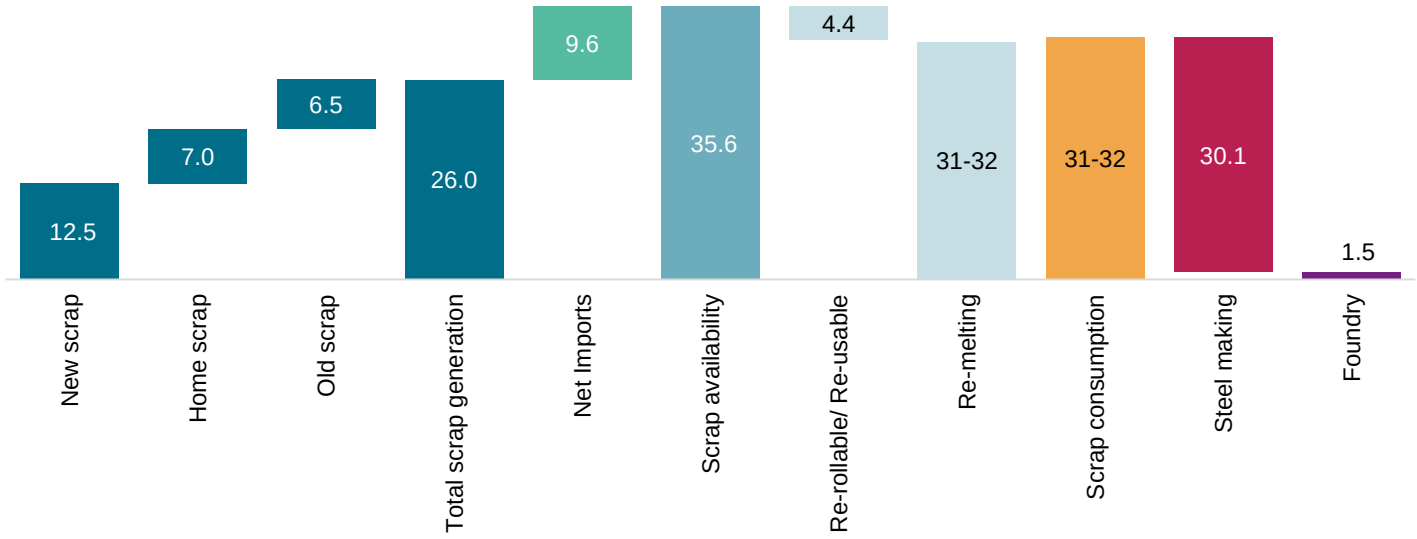
Executive summary

The Indian government has set an ambitious target of achieving 300 million tonnes per annum (MTPA) of domestic crude steel production capacity by fiscal 2030, representing a 50% increase from 200.33 million tonnes in fiscal 2025. As the steel industry expands to meet growing demand from manufacturing, construction, and vehicle ownership, concerns about raw material availability have come to the forefront. The increasing demand for steel is driven by various factors, including infrastructure development, urbanization, and a growing middle-class population.

In this context, Steel scrap is a vital raw material for the production of steel, and its utilization can significantly reduce the industry's dependence on primary raw materials, such as iron ore and coking coal. Moreover, the use of scrap steel can lead to significant energy savings, reduced greenhouse gas emissions, and lower production costs.

However, the domestic scrap steel market faces significant challenges, including inadequate collection systems, uneven processing capacity, and fragmented channels, resulting in a continued reliance on imports. The current market structure hinders the efficient collection, processing, and utilization of scrap steel, leading to a missed opportunity for the industry to capitalize on the benefits of scrap steel.

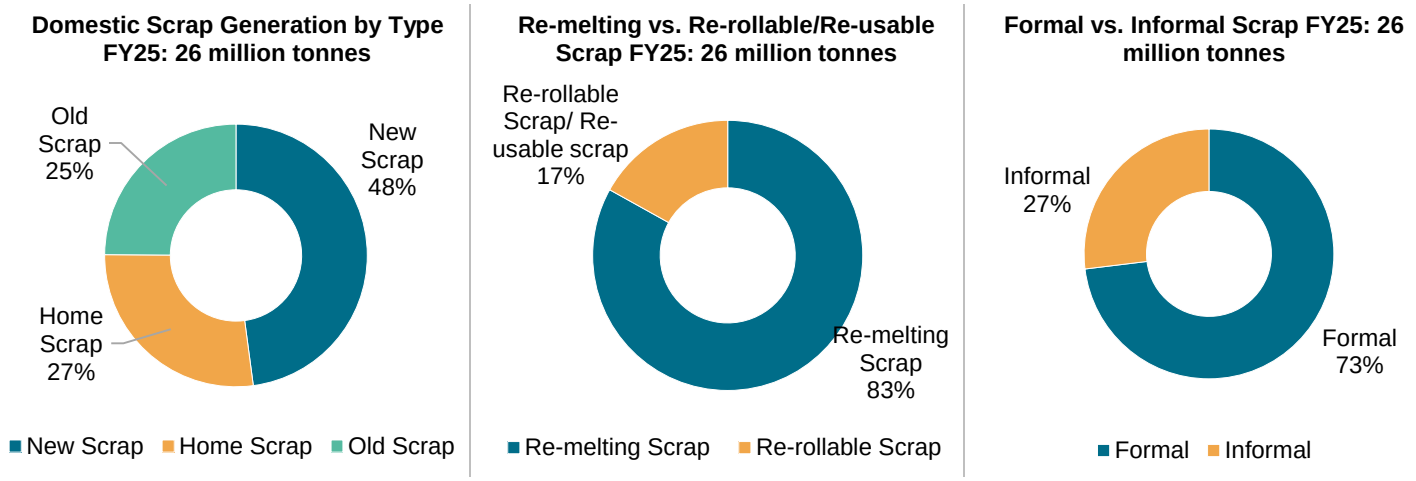
Figure 1 : Fiscal 2025: Generation, Imports and Consumption summary (Volumes in million tonnes)



Source: Crisil Intelligence

In FY25, India generated 26 MnT of steel scrap, comprising new scrap (48%), home scrap (27%), and old scrap (25%), while imports added 9.6 MnT, taking total scrap availability to 35.6 MnT. Of this, 31-32 MnT was available for steel melting, with steelmaking accounting for 97% of total scrap consumption. India produced 152.2 MnT of crude steel in FY25 through BOF (41%), IF (38%), and EAF (21%) routes. Scrap consumption was heavily concentrated in the IF route (71%), followed by EAF (18%) and BOF (11%), highlighting the importance of induction furnaces in shaping scrap demand. As India targets 300 MnT of steelmaking capacity by FY30, strengthening domestic scrap collection, processing, and supply chains will be critical to ensuring adequate scrap availability and supporting sustainable growth.

Figure 2 : Domestic scrap generation- re-melting vs. re-rollable/re-usable scrap, formal vs Informal scrap



Source: Crisil Intelligence

In FY25, new scrap was the largest source of domestic steel scrap generation, contributing 48% of the 26 MnT total, followed by home scrap (27%) and old scrap (25%), reflecting India's ongoing steel stock build-up phase. Re-melting scrap dominated consumption at 83% (21.6 MnT), while re-rollable/reusable scrap accounted for the remaining 17% (4.4 MnT). By collection channel, ~73% (19 MnT) of scrap originated from formal sources and 27% (7 MnT) from informal channels. Formalization is highest in ship breaking, railways, construction, and home scrap, while automobiles, consumer durables, and some industrial sectors continue to rely significantly on fragmented informal collection networks.

Domestic scrap generation increased from 14.7 MnT in FY15 to 26.0 MnT in FY25 and is projected at 90-94 MnT by FY47. The composition changes over time. New scrap remains the largest stream because of manufacturing and fabrication activity, while old scrap becomes progressively more important as India's installed stock of vehicles, buildings, machinery and durable goods reaches end of life. Old scrap is projected to rise from 6.5 MnT in FY25 to 34-36 MnT by FY47, increasing its share from 25% to 37-39%.

Table 1 : Scrap generation Segment-wise outlook

Scrap category (MnT)	FY25	FY30P	FY35P	FY47P
Old Scrap	6.5	9–10	16–17	34–36
Home Scrap	7.1	9–10	12–13	20–21
New Scrap	12.5	17–18	22–23	36–37
Total Scrap Generated	26	37–38	50–53	90–94

Old scrap is expected to emerge as the key driver of future domestic scrap growth, with its contribution increasing as India's stock of vehicles, buildings, infrastructure, machinery, and consumer durables reaches end-of-life. In FY25, automobiles accounted for 57% of old scrap generation, followed by construction and demolition (18%), ship recycling (13%), and railways (7%). Over the long term, the share of construction and demolition scrap is projected to increase significantly to 30-31% by FY47, reflecting the maturation of India's built environment and broadening the scrap opportunity beyond a primarily vehicle-led market.

At the same time, the majority of domestic scrap continues to be consumed through re-melting routes, which accounted for 83% (21.6 MnT) of scrap utilisation in FY25, while the remaining 17% (4.4 MnT) was re-rolled, reused, or re-profiled. Old scrap contributed nearly three-fourths of the re-rollable and reusable pool, particularly from sources such as ship plates,

railway rails, and select automobile components. Given the varying end-use pathways of scrap, distinguishing between generation, collection, re-melting, re-rolling, and direct reuse will be critical for accurate market assessment, policy formulation, and tracking of material flows across the value chain.

Consumption and demand outlook

Steel scrap demand is expected to grow at a 6-7% CAGR between fiscal 2025 and 2035, with consumption rising from 31.5 million tonnes in fiscal 2025 to 56-59 million tonnes by fiscal 2035. As steelmaking accounts for roughly 97-98% of total scrap demand, the growth of the scrap market is closely tied to the pace of steelmaking capacity expansion and producers' raw-material choices.

India's ferrous scrap demand is expected to witness strong long-term growth, increasing from 31.6 MnT in FY25 to 93-96 MnT by FY47, driven primarily by the expansion of the domestic steel industry and rising adoption of scrap-based metallics. Steelmaking will continue to account for the overwhelming majority of demand, representing 95% of scrap consumption in FY25 and 96-97% through FY47, while foundries will remain a relatively small but stable consumer at 3-4% of total demand. As India progresses towards its long-term steel capacity expansion targets, incremental scrap demand will be overwhelmingly linked to steel production rather than non-steel applications.

Table 2 : Scrap demand in steelmaking and foundry

End-use	FY25	FY30P	FY35P	FY47P
Steelmaking share	95%	96-97%	96-97%	96-97%
Foundry share	5%	3-4%	3-4%	3-4%
Total scrap demand (MnT)	31.6	46-49	57-60	93-96

Table 3 : Scrap demand in steelmaking and foundry growth rates

CAGR (%)	FY20-FY25	FY25-FY30P	FY30P-FY35P	FY35P-FY47P
Steelmaking	7.8%	8.5-9.0%	4.0-5.0%	3.5-4.5%
Foundry	4.8%	4.5-5.5%	4.5-5.5%	4.0-4.5%

Steelmaking scrap demand is projected to grow at a robust 8.5-9.0% CAGR between FY25 and FY30, supported by ongoing steel capacity additions and higher scrap utilisation across steelmaking routes. Growth is expected to moderate thereafter as capacity additions stabilize; however, scrap demand will continue to expand steadily through FY47.

In contrast, foundry demand is expected to grow at a relatively modest 4.5-5.5% CAGR, reflecting its niche position within the broader scrap ecosystem. Foundries remain highly quality-sensitive consumers, relying predominantly on clean purchased scrap from automotive stamping and fabrication industries, supplemented by internally generated return scrap from casting operations.

A key structural trend underpinning this growth is the increasing role of scrap within the metallics mix of Indian steelmaking. Alongside hot metal and DRI, scrap is one of the three primary metallic inputs used by steel producers and is expected to register the fastest growth in consumption over the long term. Rising scrap utilisation is being driven by increasing resource

efficiency, evolving furnace charge practices, and the need to enhance circularity within the steel value chain. Consequently, India's total metallics demand is projected to expand sharply over the coming decades, with scrap accounting for a growing proportion of overall raw material requirements.

The growth in scrap consumption will be observed across all steelmaking routes, albeit at varying rates. Induction Furnaces (IFs) are currently the largest consumers of steel scrap and are expected to remain a key demand centre owing to their inherently scrap-intensive nature. However, the most significant structural shift is expected in the BOF and EAF routes, where scrap usage within the charge mix is projected to increase substantially. BOF scrap utilisation is expected to rise from 8% in FY25 to 13-15% by FY47, while EAF scrap usage could increase from 10% to 16-18% over the same period. Meanwhile, IF scrap intensity is projected to recover from 35% in FY25 to 43-45% by FY47, reinforcing its position as the largest scrap-consuming route.

Table 4: Route-wise scrap share in charge mix (%)

Steelmaking Route	FY25	FY30P	FY35P	FY47P
BOF	8%	10–12%	11–13%	13-15%
EAF	10%	12–14%	13–15%	16-18%
IF	35%	41–43%	42–44%	43-45%

Overall, the sharp increase in steel scrap demand reflects a structural transition towards higher recycling intensity within India's steel sector. With demand expected to nearly triple by FY47, ensuring adequate scrap availability will require sustained improvements in domestic collection efficiency, processing infrastructure, formalisation of supply chains, and quality enhancement of recyclable material.

The projected growth in scrap consumption underscores the strategic importance of developing a robust domestic scrap ecosystem to support India's long-term steel production ambitions while reducing dependence on imported metallics.

Import dependency and collection gaps

In fiscal 2025, India’s import dependency for steel scrap stood at around 30%, equivalent to approximately 9.2 million tonnes. While this marks an improvement from 34% in fiscal 2020, reliance on imports remains material. The gap is largely attributable to suboptimal domestic scrap collection efficiency, particularly in the old scrap segment, where collection efficiency was estimated at about 75% during the year.

The shortfall was primarily concentrated in the automobile, construction and demolition (C&D), and consumer durables segments. Among these, the automobile sector was the largest contributor, accounting for 57% of total old scrap generated, equivalent to around 3.7 million tonnes.

The demand-supply balance is expected to remain tight in the near term. Scrap import dependency is projected to rise to 37-38% by FY30 because new steelmaking capacity will create demand faster than domestic obsolete steel can return to the recycling stream.

Beyond FY30, we estimate the trend to reverse as steel-in-use matures and collection infrastructure improves, reducing dependency to 32-34% by FY35 and 22-24% by FY47.

As India’s steel scrap demand accelerates, improving the recovery of old (obsolete) scrap will be one of the most important levers for increasing domestic scrap availability and reducing dependence on imports. While total old scrap generation is expected to increase significantly over the coming decades, a meaningful portion currently remains outside the formal recycling ecosystem due to collection inefficiencies, fragmented value chains, and limited processing infrastructure. In FY25,

India's old scrap collection efficiency stood at approximately 75%, implying that nearly one-fourth of potentially recoverable scrap did not enter organised recycling channels. The collection gap is primarily concentrated in the automobile, consumer durables, and construction & demolition (C&D) segments, which together account for the majority of obsolete scrap generation.

Encouragingly, collection efficiency is expected to improve steadily over the long term, supported by stronger policy interventions, increasing formalisation of scrap flows, greater traceability, and expansion of organised collection and processing infrastructure. Overall old scrap collection efficiency is projected to increase from 75% in FY25 to 80% by FY30, 86% by FY35, and nearly 89% by FY47, significantly improving the domestic availability of scrap for steelmaking.

Table 5: Segment wise collection %

Segment	FY25	FY30P	FY35P	FY40P
Automobile	70%	75%	80%	85%
C&D	70%	73%	75%	80%
Consumer Durables	65%	70%	75%	80%

The automobile sector, which accounts for the largest share of old scrap generation, continues to exhibit collection inefficiencies due to low penetration of Registered Vehicle Scrapping Facilities (RVSFs), limited awareness of formal scrappage mechanisms, and incomplete visibility of end-of-life vehicles (ELVs), particularly those lying in police stations, RTO yards, and court premises. Collection efficiency is expected to improve from approximately 70% in FY25 to 85% by FY40, supported by expansion of organised scrappage infrastructure, increasing adoption of certificate-based scrappage mechanisms, and stronger implementation of vehicle retirement policies.

Similarly, the consumer durables segment continues to experience significant leakages owing to the dominant role of informal collectors and the diversion of products into secondary-use markets. Collection efficiency, currently estimated at around 65%, is expected to increase gradually as Extended Producer Responsibility (EPR) mechanisms mature, formal take-back channels expand, and higher replacement rates increase the flow of end-of-life products into recycling streams.

The construction and demolition (C&D) segment also represents a substantial untapped source of obsolete steel scrap. Collection inefficiencies stem from inadequate C&D processing infrastructure, limited segregation at source, and insufficient formal recovery systems. As additional C&D waste processing facilities are established and municipal waste-management systems improve, collection efficiency is expected to rise from approximately 70% in FY25 to around 80% by FY40.

Table 6: Key challenges in scrap collection

Source	Key challenge restricting recovery
Impounded & accident vehicles	Legal retention and delayed disposal processes
Stalled real estate projects	Steel remains locked within incomplete structures
Insolvency-affected industrial assets	Delayed liquidation and ownership disputes
Idle mining & quarry equipment	Remote locations and fragmented ownership
Infrastructure renewal projects	Limited visibility and recovery tracking mechanisms

Beyond conventional collection gaps, a significant volume of steel remains locked in assets that are technically recoverable but do not enter formal scrap channels in a timely manner. These unaccounted scrap reservoirs include impounded and accident vehicles, stalled construction projects, insolvency-affected industrial assets, idle mining and quarry equipment, and infrastructure renewal projects. While these assets contain substantial quantities of recoverable steel, various structural barriers such as legal disputes, ownership complexities, delayed liquidation processes, remote locations, and lack of visibility often delay recovery.

Unlocking these currently unaccounted scrap pools represents a significant opportunity to supplement domestic scrap availability without waiting for incremental scrap generation. Improving asset identification, streamlining disposal processes, digitising asset inventories, and enabling greater participation of organised recyclers can bring these materials into formal recycling channels. As India moves towards substantially higher scrap consumption levels, recovery of such stranded assets is expected to become an increasingly important contributor to the country's circular steel economy.

Global advancement

Advanced economies have developed highly efficient scrap recycling ecosystems by combining financial incentives, producer responsibility, transaction traceability, and strong enforcement mechanisms. While the specific approach varies across countries, the common objective is to make formal recycling economically attractive while increasing the cost and risk of non-compliance. Compared with these mature systems, India has established the foundational regulatory framework but continues to face challenges related to informal scrap flows, weaker enforcement, limited producer responsibility coverage, and comparatively lower traceability across the value chain.

Table 7 : Key systems used globally in scrap collection

Mechanism	Japan	European Union	United States	South Korea	India
ELV recycling funding	Upfront recycling fee	Manufacturer-funded EPR	Limited state-level mechanisms	Producer-funded EPR	No dedicated mechanism
Traceability	Digital lifecycle tracking	Authorised treatment facilities	Permit-based compliance tracking	Integrated digital systems	Emerging, fragmented
Scrap payments	Traceable transactions	Bank-transfer based	State-specific requirements	Traceable payments	Cash transactions prevalent
Enforcement	Strong financial and criminal penalties	Corporate fines and imprisonment	Heavy daily environmental penalties	Financial surcharges and criminal sanctions	Moderate penalties
Producer responsibility	Vehicles, appliances, construction waste	Vehicles, WEEE and multiple products	Limited coverage	Vehicles and appliances	Limited coverage for steel-containing products
Tax support	Recycling incentives	VAT benefits and circular economy incentives	Tax credits	EPR subsidies	Formal sector subject to GST burden

One of the most consistent findings across global recycling systems is the importance of creating an assured funding mechanism for end-of-life processing. Countries such as Japan and South Korea operate pre-funded or producer-funded recycling models whereby recycling costs are covered before the asset reaches end-of-life. In Japan, vehicle owners pay a recycling fee during the ownership period, ensuring that sufficient funds are available when the vehicle enters the recycling chain. Similarly, South Korea uses producer-funded EPR mechanisms that cover a significant portion of recycling costs. The European Union adopts a comparable principle through free take-back systems, where manufacturers assume responsibility for collection and recycling.

These mechanisms help formal recyclers remain commercially viable by reducing reliance on scrap resale value alone. In contrast, Indian recyclers often compete with informal operators that are able to offer higher cash payouts due to lower compliance costs. Global experience therefore suggests that stronger producer funding, take-back obligations, and recycling-linked incentives can significantly improve collection efficiency and formal participation.

Another defining feature of advanced recycling systems is the emphasis placed on traceability. Japan, South Korea, Australia, and several EU member states have developed highly transparent frameworks that require registration of operators, digital tracking of material flows, verification of seller identities, and documented transactions across the recycling value chain.

In many jurisdictions, cash transactions for scrap are restricted or prohibited, with payments routed through formal banking channels. These measures reduce theft-related scrap trading, improve accountability, and generate reliable data on material flows. For India, strengthening traceability through KYC-based procurement, digital payment mechanisms, dealer registration, and transaction reporting could significantly improve formalisation while reducing leakages into informal channels.

A notable lesson from advanced economies is that successful recycling systems rely not only on incentives, but also on credible enforcement. The United States, European Union, Japan, South Korea, and China all impose substantial financial and legal consequences for environmental violations, illegal waste handling, and non-compliance with recycling regulations.

The United States relies heavily on large daily environmental penalties and corrective-action mandates, making non-compliance economically unattractive. The European Union combines corporate fines, imprisonment provisions, licensing controls, and environmental levies to ensure adherence to recycling obligations. China adopts one of the strictest approaches globally through uncapped daily accumulating penalties, regulatory inspections, and individual accountability for management. Likewise, Japan and South Korea reinforce compliance through licence suspensions, criminal sanctions, and mandatory reporting systems.

The common principle across these systems is straightforward: the cost of non-compliance exceeds the cost of compliance. This creates a powerful incentive for operators to remain within the formal ecosystem and invest in environmentally compliant recycling practices.

Beyond waste management, several countries have successfully positioned recycling as a broader industrial and resource-security strategy. China has linked scrap utilisation to resource efficiency, industrial upgrading, and lower-emission steel production. The European Union supports scrap-based steelmaking through carbon pricing mechanisms and circular-economy policies that favour recycled materials. Japan and South Korea integrate recycling objectives with industrial competitiveness and supply-chain resilience.

These examples demonstrate that strengthening steel scrap recycling should not be viewed solely as an environmental initiative. Instead, it can serve as a strategic lever to improve raw material security, reduce import dependence, enhance circularity, and support more sustainable steel production.

The road ahead

As India’s steel scrap demand accelerates, a dual-track strategy will be required to ensure long-term raw material security. In the near term, efforts should focus on securing adequate scrap availability through efficient import channels, streamlined port infrastructure, and faster customs clearance.

Simultaneously, the country must strengthen its domestic old-scrap ecosystem by expanding collection networks, improving processing infrastructure, and increasing recovery from end-of-life vehicles, buildings, machinery, and consumer durables. Equally important is the need to monitor not only the volume of scrap generated but also its furnace-ready quality, as a significant portion of technically generated scrap may not be immediately available or suitable for steelmaking without adequate collection, segregation, and processing. This will be critical to bridging the future demand-supply gap and reducing India's dependence on imported scrap.

Scaling up collection efficiency of old scrap across sectors, particularly automobiles, will increase domestic scrap availability. This requires standardised collection norms, streamlined processing, and expanded formal collection channels.

A bottom-up implementation model with clear accountability is needed, along with faster establishment of registered vehicle scrapping facilities (RVSFs) and C&D waste processing facilities. Stricter data reporting and extending collection systems to smaller cities, including formal integration of informal networks, will improve scrap quality and support the raw material base for the projected demand trajectory.

Table 8 : Industry recommendations

Control Gap	Focus	Priority Actions	CRISIL'S Response
Limited incentives for formal scrap procurement	Incentivize procurement from formal recyclers	Encourage steelmakers to procure formal and compliant recyclers through transparent price incentives / premiums for properly sized, segregated, contamination-controlled and traceable scrap.	Promote quality-linked procurement frameworks to reward traceable and compliant scrap, improving material quality, supply-chain transparency and formal sector participation.
Limited recognition of processing equipment as recycling infrastructure	Recognize processing equipment as core recycling infrastructure	Recognize hydraulic shears, rail cutters, magnets, grabs, balers, shredders and material handlers, with suitable adoption support / incentives to accelerate mechanization and equipment adoption.	Recognize scrap-processing equipment as critical recycling infrastructure to accelerate mechanization, improve operational efficiency and enhance scrap quality.
Limited traceability and formalization in scrap procurement	Promote traceable procurement	Expand KYC-based scrap procurement and digital payment mechanisms to improve traceability, formalization and transparency.	Strengthening traceability and formalization across the scrap value chain through greater adoption of KYC-based procurement and digital payment mechanisms.
Limited mechanized processing in public-sector scrap disposal	Enable mechanized processing in public-sector scrap disposal	Allow on-site mechanized processing in public-sector auctions and contracts involving railway, infrastructure, vehicle and industrial scrap, while encouraging formal recyclers to participate.	Facilitate on-site mechanized processing in public-sector scrap disposal to improve material recovery, operational efficiency and participation of organized recyclers.
Gaps in scrap-import facilitation and port readiness	Improve PSIC facilitation and port readiness	Effectively implement the PSIC exemption for imports from notified safe countries and install radiation-detection scanners at the remaining eight designated ports to enable smoother and faster scrap clearance.	Strengthen scrap-import facilitation through effective implementation of PSIC-related measures and enhanced port infrastructure to enable faster and more efficient clearance processes.

Source: Industry, Crisil Intelligence

Industry consultations highlighted four key priorities for strengthening India's scrap ecosystem: formalisation, mechanisation, traceability, and regulatory simplification. Recommended interventions include incentivising procurement from compliant recyclers, expanding mechanised processing capacity, enhancing traceability through KYC-based sourcing and digital transaction trails, and streamlining scrap import processes. Stakeholders also advocated a risk-based regulatory framework that differentiates compliant recyclers from non-compliant operators, supporting greater formalisation, operational efficiency, and domestic recycling capacity.

Chapter 1

Classification and generation



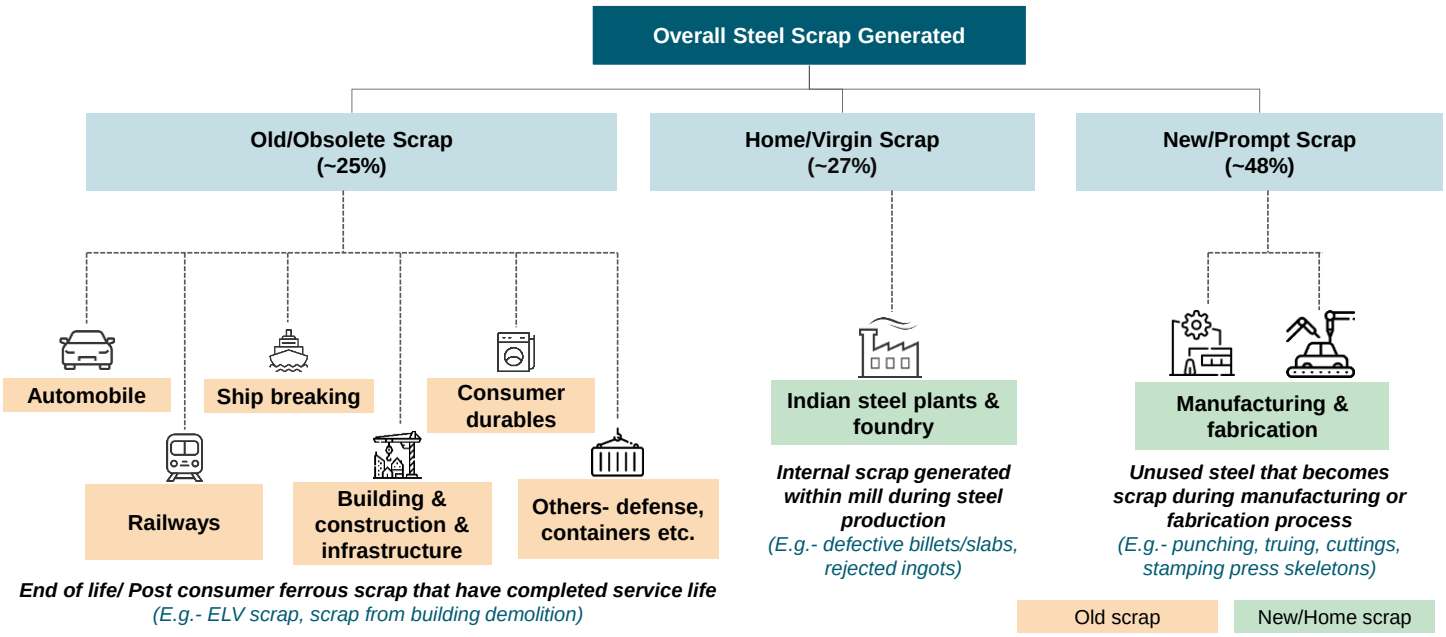
Steel scrap: Definition and classification by origin

Steel scrap comprises discarded steel recovered from end-of-life products (such as vehicles, buildings, machinery and appliances) and manufacturing offcuts that are processed for reuse as metallic feedstock in steelmaking. As a key circular-economy input, scrap enables lower energy consumption and carbon emissions than primary steelmaking routes and serves as the principal charge material for electric arc furnace (EAF) and induction furnace (IF) production.

Steel scrap is generally classified based on its origin and its physical form, as both characteristics influence scrap quality, processing requirements, furnace suitability and commercial value.

Ferrous scrap classification by origin

Figure 3 : The overall steel scrap generated in India falls into three broad categories



Source: Crisil Intelligence

- India's steel scrap generation is dominated by new/prompt scrap (48%), followed by home scrap (27%) and old/obsolete scrap (25%). New and home scrap are largely industrial, high-quality, and easily traceable, while old scrap from end-of-life products such as vehicles, buildings, ships, railways, and consumer durables is more fragmented and processing-intensive. The scrap ecosystem remains heavily reliant on industrial scrap (75-80%), highlighting strong manufacturing linkages, while organized collection of obsolete scrap remains a key growth opportunity to improve circularity.

  By physical form, ferrous scrap is classified into:

- Light Melting Scrap (LMS, ≤3.2 mm): Thin sheets, cans, and light fabrication scrap, mainly consumed by induction furnaces, re-rollers, and foundries.
- Heavy Melting Scrap (HMS, >3.2 mm): Structural sections, plates, pipes, and heavy industrial scrap, offering higher metallic recovery and lower slag generation.

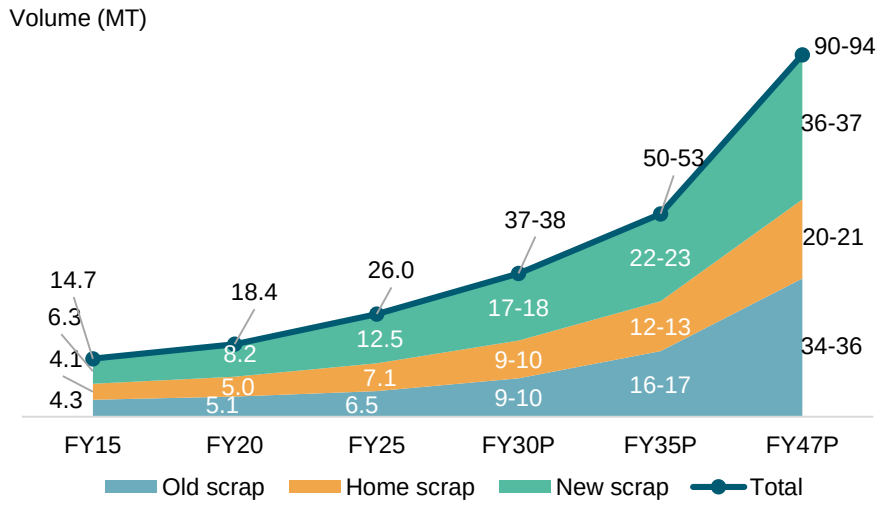
Total generation trajectory

India's total domestic scrap generation has grown steadily over the past decade, and the pace is expected to pick up further as the country's steel stock matures and manufacturing activity expands.

India's total domestic scrap generation stood at 26.0 MT in fiscal 2025, having grown from 14.7 MT in fiscal 2015. Domestic scrap generation is projected to increase to 90-94 MT in fiscal 2047.

Table 9 : Scrap generation Growth rates for different types of scrap

Figure 4 : Scrap generation overview (fiscals 2015-2047P)



CAGR period	Growth rate
FY20–FY25	7.2%
FY25–FY30P	6.5–7.5%
FY30P–FY35P	7.0–8.0%
FY35P–FY47P	5.0–6.0%

Scrap type share (%) over time			
Fiscal	New scrap	Home scrap	Old scrap
FY15	43%	28%	29%
FY25	48%	27%	25%
FY47P	39–41%	21–23%	37–39%

Source: Crisil Intelligence

Table 10 : Scrap type share (%) over time

Fiscal	New scrap	Home scrap	Old scrap
FY15	43%	28%	29%
FY20	45%	27%	28%
FY25	48%	27%	25%
FY30P	46–48%	26–28%	25–27%
FY35P	42–44%	25–27%	30–32%
FY47P	39–41%	21–23%	37–39%

Source: Crisil Intelligence

At the same time, the share of old scrap is set to increase from 25% in fiscal 2025 to 37-39% by fiscal 2047, reflecting a maturing steel economy with more end-of-life buildings, vehicles, machinery and consumer durables entering the scrap stream.

New/prompt scrap contributed 48% of the total scrap in fiscal 2025, up from 43% in fiscal 2015, driven by expansion in steel-intensive manufacturing. Its share is expected to remain the largest, ranging between 39%-41% in fiscal 2047, pointing to sustained growth in secondary steel feedstock from domestic manufacturing activity. At the same time, the share of old scrap is set to increase from 25% in fiscal 2025 to 37-39% by fiscal 2047, reflecting a maturing steel economy with more end-of-life buildings, vehicles, machinery and consumer durables entering the scrap stream.

New scrap

New scrap refers to steel that becomes waste during the manufacturing and fabrication process, prior to the finished product reaching the end user. This type of scrap is generated by activities such as stamping automotive body panels, cutting structural beams and punching sheet metal for consumer goods.

New scrap increased from 8.2 MT in fiscal 2020 to 12.5 MT in fiscal 2025 at a CAGR of 8.7% and is projected to reach 36-37 MT by fiscal 2047.

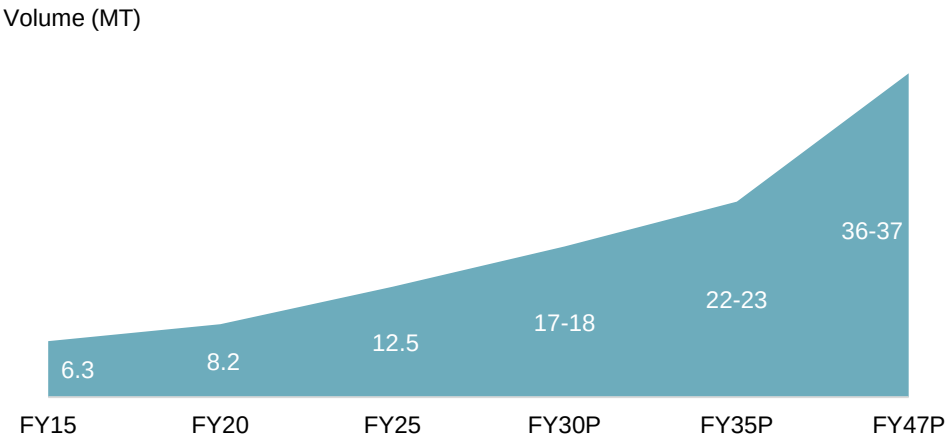
Table 11 : New scrap generation norm calculation

End-use industry	Share of business	New scrap generated (%)
Automobiles	10%	19%
Building and construction	65%	5%
General engineering, consumer durables and others	25%	10%
Weighted average		**7.8%**

In fiscal 2025, 90% of new scraps were re-melting grade. This high purity and low-contaminant scrap offered one of the most efficient furnace feedstocks available. Among industries, automobiles (19%) and general engineering/consumer durables (10%) are the largest contributors of scrap by percentage, resulting in a weighted new scrap generation factor of 7.8%.

Table 12 : New scrap generation growth rate

Figure 5 : New scrap generation trend



CAGR period	Growth rate
FY20–FY25	8.7%
FY25–FY30P	6.0-7.0%
FY30P–FY35P	5.0-6.0%
FY35P–FY47P	4.0-5.0%

Source: Crisil Intelligence

Table 13 : New scrap generation norm calculation

End-use industry	Share of business	New scrap generated (%)
Automobiles	10%	19%
Building and construction	65%	5%
General engineering, consumer durables and others	25%	10%
Weighted average		**7.8%**

Source: Crisil Intelligence

This steady rise is driven by sustained growth in fabrication-heavy sectors such as automobiles, construction steel, and engineering goods, indicating a strong link between India's manufacturing activity and prompt scrap availability.

Looking ahead, the new scrap norm and end-use industry-wise share in business are projected to evolve as follows: the automobile share stays ~10% through fiscal 2047, while the building and construction share rises from 65% in fiscal 2025 to 68-70% in fiscals 2035-2047.

The general engineering, consumer durables and others segment decrease from 25% to 20-22%. The overall weighted new scrap generation factor decreases slightly from 7.8% in fiscal 2025 to 7.6% in fiscal 2030P and beyond, reflecting marginal improvements in manufacturing efficiency.

Home scrap

Home scrap is generated inside steel mills as a by-product of the production process, and its volume is directly tied to how much steel India produces and through which route (BOF, EAF or IF).

Table 14 : Home scrap generation norm calculation

Route	Home scrap generated (%)	Finished steel production FY25 (MT)	FY30P (MT)	FY35P (MT)	FY47P (MT)
BOF	3%	66	108	160	201
EAF	5%	33	53	86	205
IF	6%	55	58	55	55
Weighted average		4.5%	4.3%	4.1%	4.2%

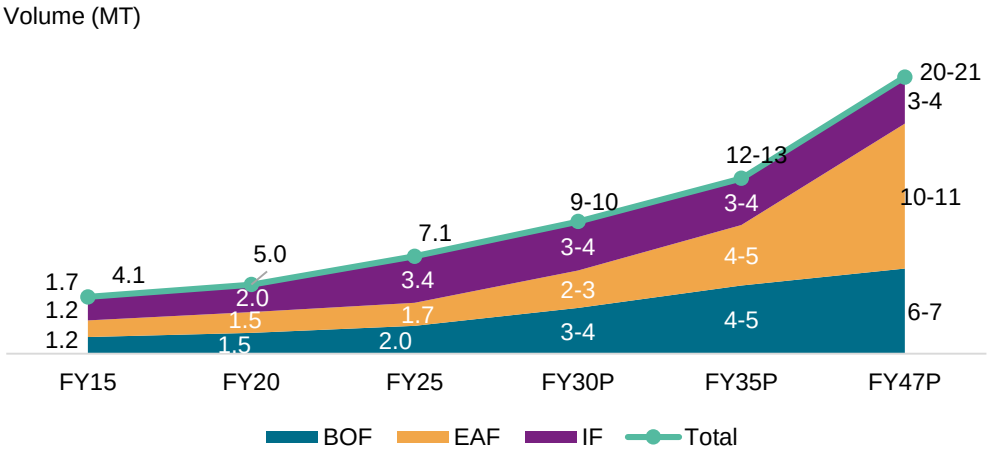
Source: Crisil Intelligence

This factor is expected to decrease to 4.2% over time as the share of BOF and EAF increases in the steel-making route and the share of home scrap from the EAF route is expected to increase from 1.7 in fiscal 2025 to 10-11 MT by fiscal 2047 as per planned capacity expansions.

Home scrap grew from 4.1 MT in fiscal 2015 to 7.1 MT in fiscal 2025 and is projected to reach 20 to 21 MT by fiscal 2047. Since home scrap is generated internally within steel plants, its growth directly mirrors expansion in domestic capacity.

Table 15 : Home scrap generation growth rates

Figure 6 : Home scrap generation trend



CAGR period	Growth rate
FY20–FY25	7.0%
FY25–FY30P	6.0-7.0%
FY30P–FY35P	5.5-6.5%
FY35P–FY47P	4.0-4.5%

Source: JPC, Industry, Crisil Intelligence

Home scrap is generated at ~3% in the BOF route, 5% in the EAF route, and 6% in the IF route. The weighted average home scrap generation factor stays ~4.5% in fiscal 2025.

Table 16 : Home scrap generation norm calculation

Route	Home scrap generated (%)	Finished steel production FY25 (MT)	FY30P (MT)	FY35P (MT)	FY47P (MT)
BOF	3%	66	108	160	201
EAF	5%	33	53	86	205
IF	6%	55	58	55	55
Weighted average		4.5%	4.3%	4.1%	4.2%

Source: Crisil Intelligence

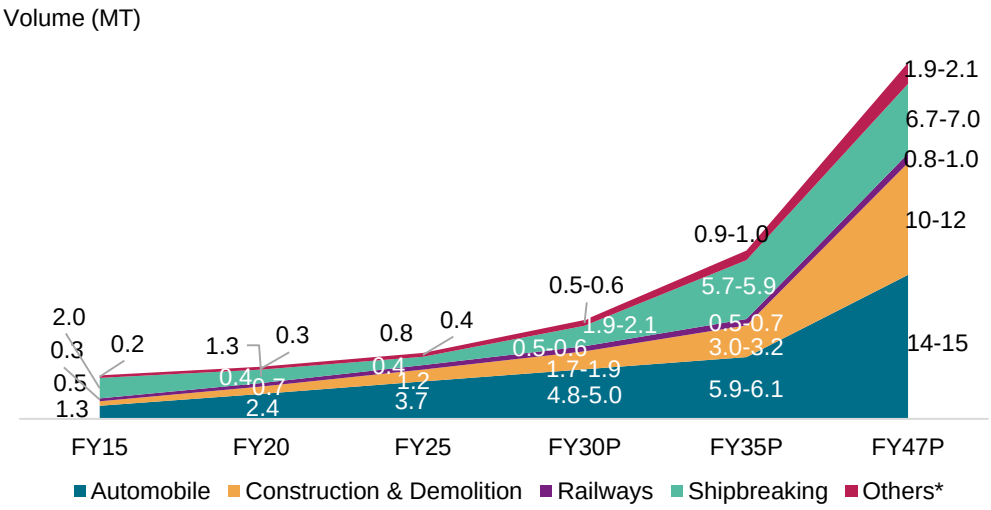
This factor is expected to decrease to 4.2% over time as the share of BOF and EAF increases in the steel-making route and the share of home scrap from the EAF route is expected to increase from 1.7 in fiscal 2025 to 10-11 MT by fiscal 2047 as per planned capacity expansions. Home scrap generated goes 100% into remelting.

Old scrap

Old scrap is the growth engine of India's future scrap supply. While it accounted for only 6.5 MT in fiscal 2025 (25% of total), it is projected to grow at the fastest rate among all categories, reaching 34 to 36 MT (37 to 39% of total) by fiscal 2047.

Table 17 : Old scrap segment wise growth rates

Figure 7 : Segment-wise old scrap generation (fiscals 2015-2047P)



CAGR period	Growth rate
FY20–FY25	4.8%
FY25–FY30P	8.0-9.0%
FY30P–FY35P	11.0-12.0%
FY35P–FY47P	6.0-7.0%

*Note: *Others include consumer durables, cans, packaging, defence and containers*
Source: Crisil Intelligence

Table 18: Old scrap segment-wise share (%)

Segment	FY15	FY20	FY25	FY30P	FY35P	FY47P
Automobile	30%	48%	57%	49-51%	36-39%	39-40%
Construction and demolition	11%	14%	18%	17-19%	18-20%	30-31%
Railways	7%	7%	7%	5-6%	3-4%	3-4%
Ship recycling	47%	26%	13%	20-22%	34-36%	19-21%
Others	~5-6%	~5-6%	~5-6%	~5-6%	~5-6%	~5-6%

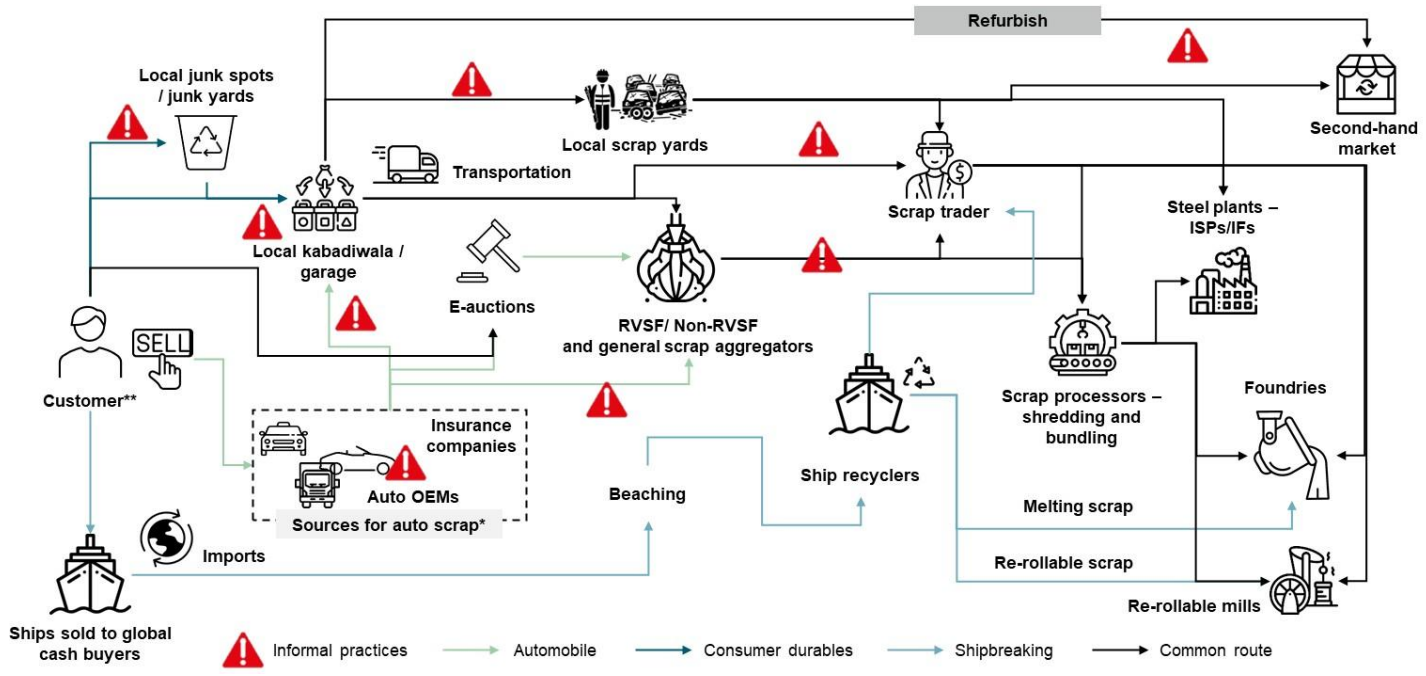
Source: Crisil Intelligence

Two major structural shifts are underway. Automobile end-of-life vehicles (ELVs) contribute 57% of old scrap in fiscal 2025, up from 30% in fiscal 2015. This is driven by expanding vehicle ownership, scrappage policy adoption, and shorter replacement cycles.

Ship recycling scrap falls from 47% in fiscal 2015 to 13% in fiscal 2025, stabilising at 19-21% by fiscal 2047. Building and construction steadily rise to 30 to 31% by fiscal 2047, reflecting India's growing stock of aging infrastructure.

Old scrap value chain

Figure 8 : Value chain



Source: Crisil Intelligence

[A flow diagram showing the convergence of automobile (red arrows), consumer durables (dark blue arrows), shipbreaking (light blue arrows) and common routes (black arrows), with nodes for local junk spots, local kabadiwala, e-auctions, RVSFs, ship recyclers, scrap processors, scrap traders, steel plants, foundries, re-rollable mills, and the second-hand market. Informal practices are flagged with warning triangles.]

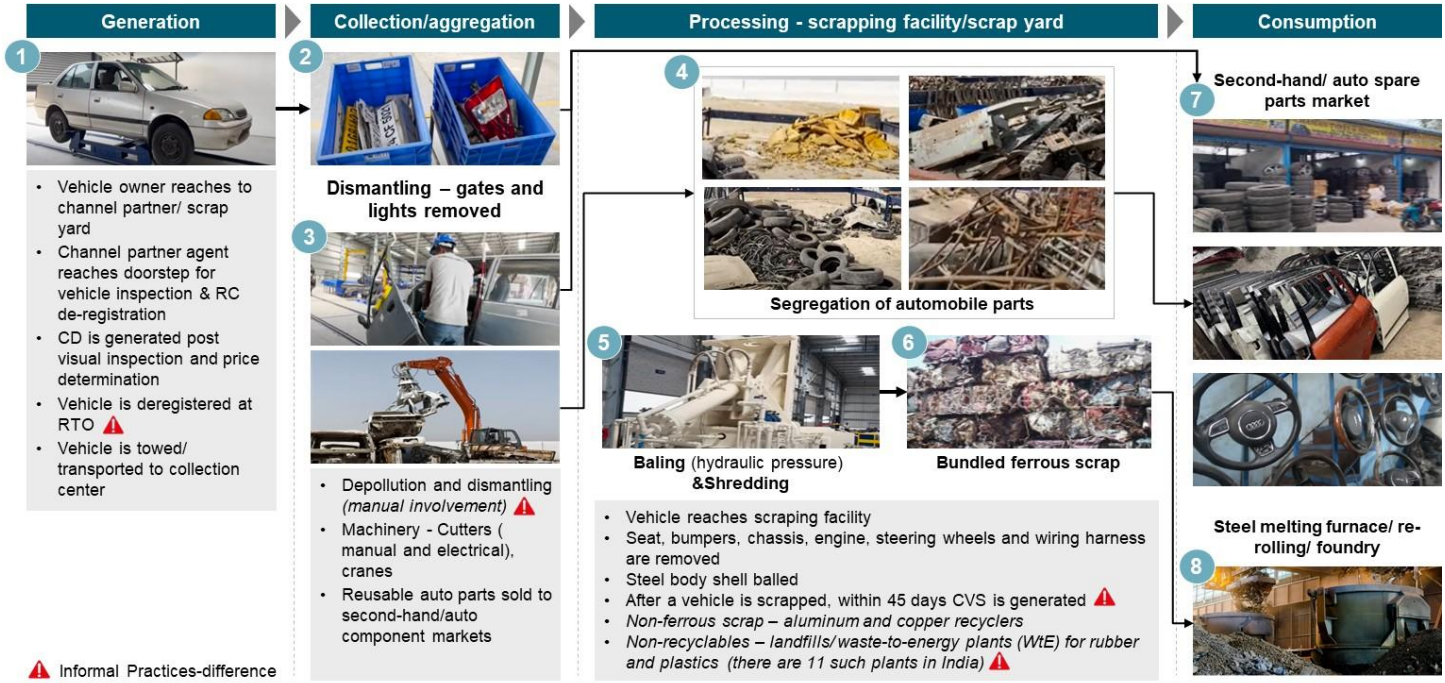
*****Auto Sources include – individual car owners, taxi fleet operators, trucking companies, insurance companies, govt departments, automobile dealers & OEMs*

*****Customers can be enterprises, households, ship owners etc.*

India’s steel scrap value chain is a multi-layered ecosystem where material flows through both formal and informal channels, shaped by the source of scrap, degree of aggregation, processing sophistication, and end-use requirements. The complexity of this network is driven by the diversity of scrap sources and the varying levels of organization across segments.

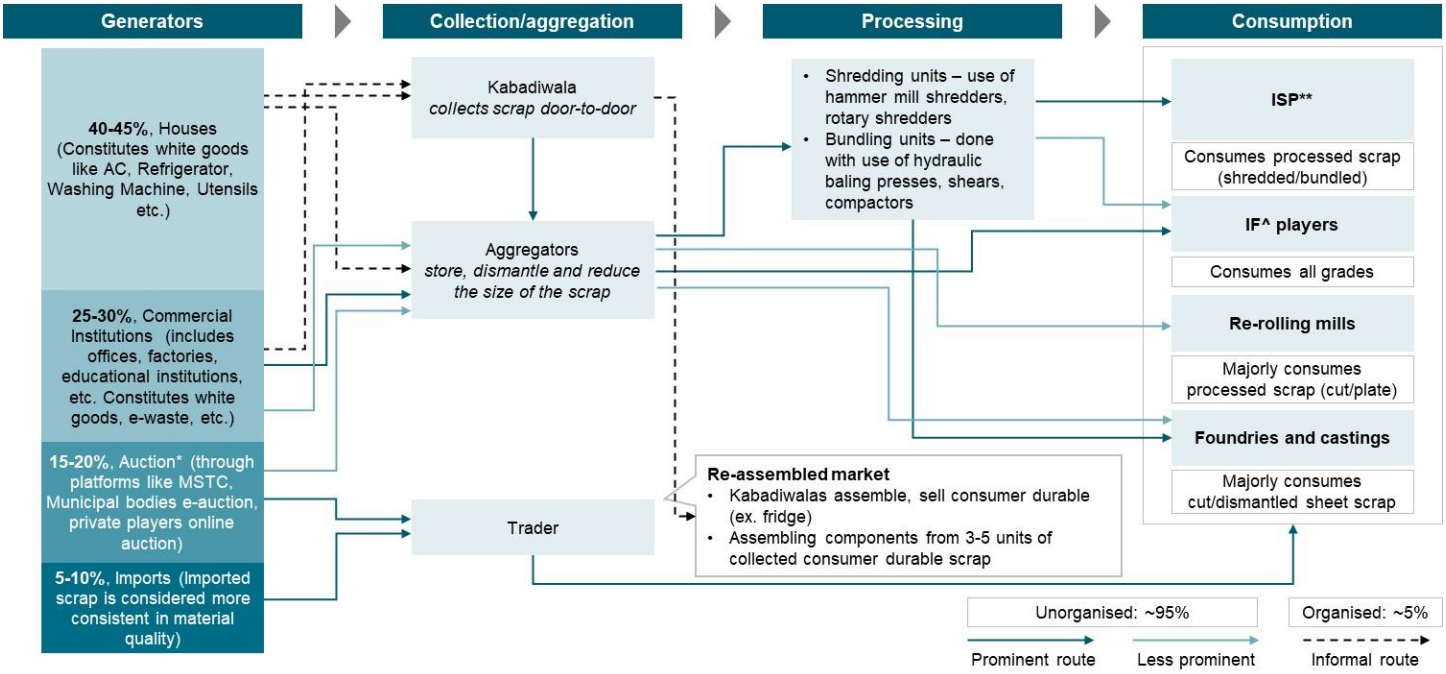
The automobile sector is, by both current volume and long-term potential, the most consequential segment within India’s scrap ecosystem because it converts a fast-growing stock of vehicles into a relatively steady stream of recoverable ferrous and non-ferrous metals. In fiscal 2025, end-of-life vehicles (ELVs) accounted for 57% of all old scrap generated in India, up sharply from 30% in fiscal 2015.

Figure 9 : Automobile scrap value chain- Process



White goods and household steel items are generated by a considerable number of households and commercial establishments, making collection the single biggest challenge in this segment. The generation of consumer durable scrap is spread across a broad base of households and institutions. 40-45% of this scrap is from houses, and includes ACs, refrigerators and washing machines, alongside general utensils. 25-30% is from commercial institutions, including offices, factories and educational establishments, with the products to scrap comprising white goods as well as e-waste such as laptops and monitors. 15-30% is through auctions on platforms such as MSTC, municipal tenders, e-auction sites and private players' online auctions. The remaining 5-10% is from imported scrap, which is considered more consistent in quality by some recyclers.

Figure 10 : Consumer durable scrap – value chain (stakeholders)



India is the world's largest ship-recycling country, with its Alang-Sosiya ship recycling yard in Gujarat's Bhavnagar district being at the centre of this activity. The ship-recycling value chain is different from the other segments in several ways: (1) It manages imported raw materials (obsolete vessels purchased from global ship owners). (2) It produces a high proportion of re-rollable scraps. (3) And it operates under an increasingly strict regulatory setup aligned with the Hong Kong International Convention (HKC).

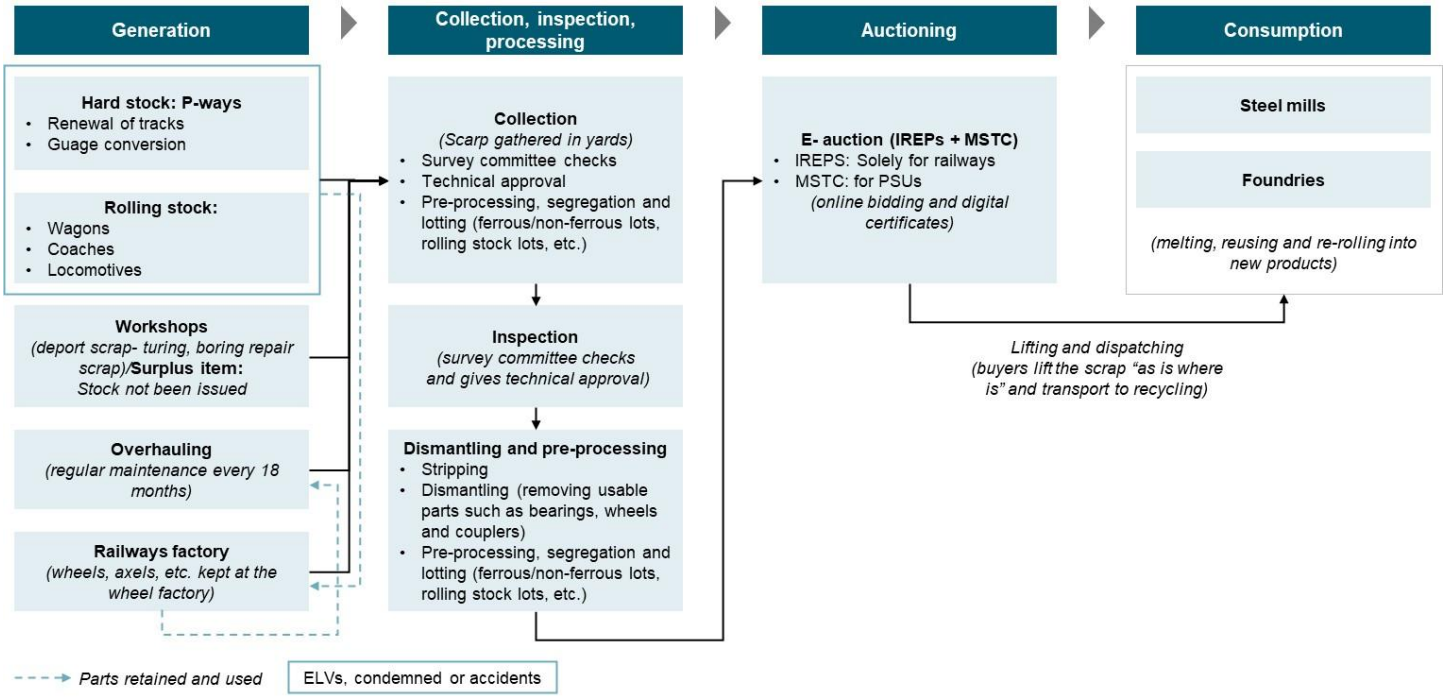
Figure 11 : Ship recycling process



GMB: Gujarat Maritime Board; GPCB: Gujarat Pollution Control Board; HKC: Hong Kong Convention; ISP: Integrated steel plant; IF: Induction furnace
Source: Crisil Intelligence

Indian Railways operates one of the most organised scrap-disposal systems in the country. This is very different from the informality that marks most other segments. The generation, collection, processing, auctioning and consumption of railway scrap follows a well-defined institutional setup. Permanent way (P-way) scrap, which has 100% steel intensity and hardly any wastage during dismantling, is 90% re-rolled and reused, with just 10% going for remelting. Abandoned P-ways account for 65% of the overall scrap generated by railways. Scrap traders and mills purchase this material through bidding in auctions on the IREPS platform, take delivery from depots and workshop yards, and re-roll the steel into new products for downstream fabricators, towers and structure manufacturers.

Figure 12 : Railway scrap – value chain



Construction and demolition (C&D) waste recycling represents one of the less mature but rapidly evolving segments of India's resource recovery landscape. The waste stream is enormous. India generates an estimated 150-500 million tonne of C&D waste annually, but the processing infrastructure remains limited. Only larger cities such as Delhi, Pune, Gurugram, Noida, Pimpri-Chinchwad, Thane, Ghaziabad, Kolkata and Hyderabad have established their recycling plants through private investments. Smaller cities struggle to find bidders for establishing C&D recycling plants due to the lesser quantum of waste generated though cities such as Surat, Lucknow, Alwar, Moradabad, Bareilly and Rewari have established or are in the process of setting up plants with support from schemes such as the Swachh Bharat Mission (SBM) 2.0, NCAP, and the 15th Finance Commission (XV-FC).The C&D waste processing flow begins with generation at construction or demolition sites, whether municipal solid waste generation or through door-to-door collection. The material is then transported to a material recovery and processing facility, where it is sorted into four categories. Organic waste is sent for bio-methanation. Recyclables are sent for pyrolysis. Inert material is sent for bio-mining and construction & demolition waste is sent for landfilling or conversion into reusable products.

Figure 13 : C&D municipality – Recycler structure

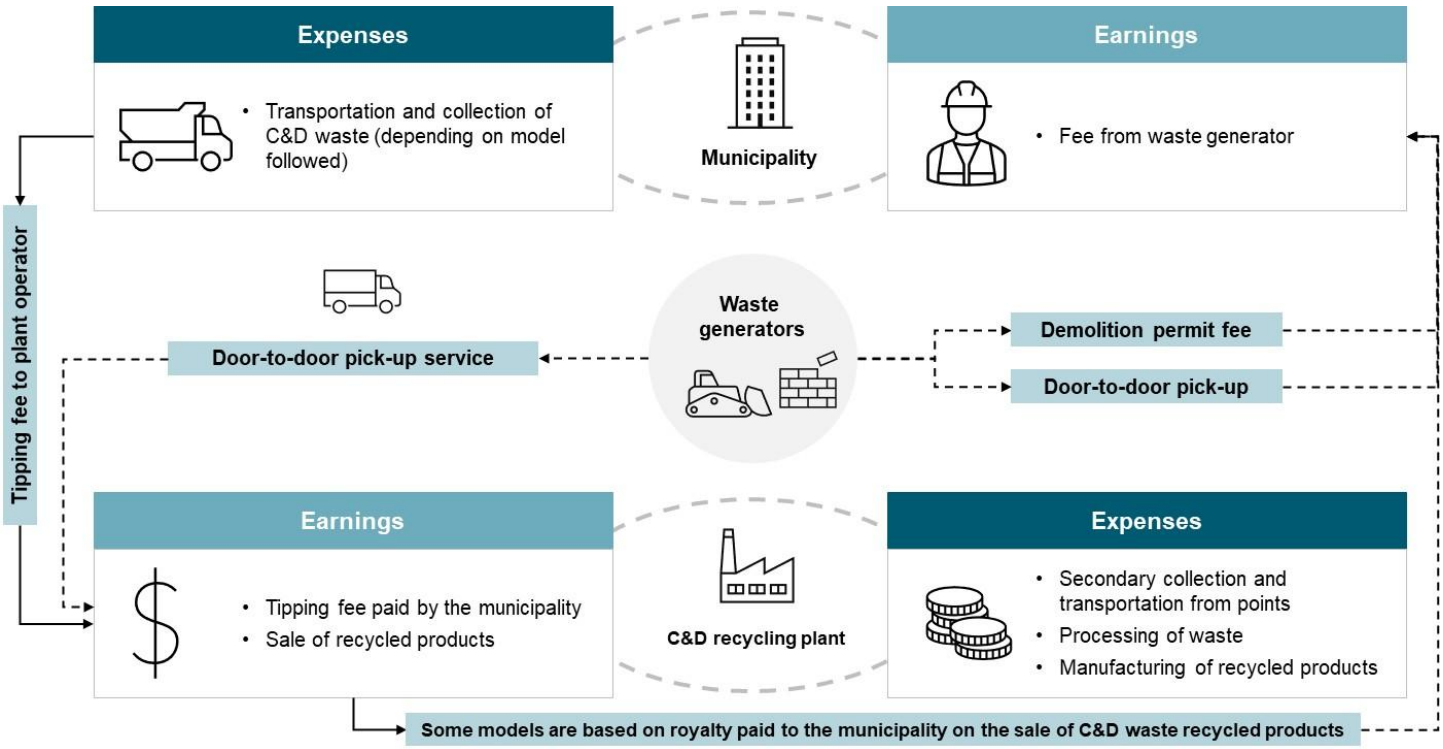


Table 19 : Segment-wise value chain characteristics

Segment	Main Generation Sources	Collection Channels & Degree of Formalization	Processing Methods & Technology	Consumption Destinations	Formal vs Informal Split (%)	Key Gaps / Challenges
Automobile	Individual owners, Taxi/truck fleets, Insurance auctions, Govt. departments, OEM/dealers	Formal: RVSFs, channel partners, e-auctions; Informal: Local yards, kabadiwalas	Formal: Mechanised depollution, shredding, baling; Informal: Manual dismantling, basic tools, no depollution	Steel plants, IFs, Re-rolling mills, foundries, second hand parts markets	30-35% formal; 65-70% formal	Informal sector offers higher cash, attracts volume, RC often not deregistered, Poor traceability, Environment risk from informal practices
Consumer Durables	Households (white goods), Commercial Institutions-Buybacks schemes, Auctions	Highly Informal: Kabadiwalas, small aggregators, multi-level intermediaries	Manual dismantling, basic sorting; Limited shredding/baling in formal units	ISPs, IFs, Re-rolling mills, foundries, re-assembled goods market	20-25% formal; 75-80% informal	Fragmented, low-value, dispersed scrap, High collection costs, Reassembled market diverts material from recycling
Ship Recycling	Imported obsolete vessels (via global cash buyers)	Organised: Ship recyclers at Alang, regulated by Gujarat Maritime Board, GPCB, Customs	Decontamination, gas-cutting, hydraulic shears, cranes, magnetic separation	Re-rolling mills (plates), Ifs, ISPs (melting scrap), Foundries, Export (HMS bundles)	~100% formal	Regulatory compliance costs, Environmental management, Dependency on global ship supply
Railways	Track renewal (P-way), Condemned rolling stock, Workshops/factories	Highly Organised: Auction (IREPS, MSTC), direct from railway yards	Pre-processing, mechanised dismantling, plasma/gas cutting, baling, shredding	Re-rolling mills (rails), Steel plants, foundries	~100% formal	Auction logistics, Limited by planned renewal cycles, Minimal informal leakage
Construction & Demolition Waste	Residential demolition, Industrial, commercial, infrastructure demolition	Emerging: Municipal collection, private recyclers, demolition contractors	Sorting, crushing, magnetic separation, shearing, baling	Re-rolling mills, foundries, aggregates for construction	Mostly formal (where plants exist), but coverage is low	Low steel intensity in C&D waste, Processing infra limited to large cities, Informal demolition bypasses recycling plants

Note: OEM- Original Equipment Manufacturer; RVSF- Registered Vehicle Scrapping Facility; RC- Registration Certificate; ISP-Induction Steel Plant; IF-Induction Furnace; GPCB- Gujarat Pollution Control Board; HMS- Heavy Melting Scrap; MSTC-Metal Scrap Trade Corporation Limited; IREPS- Indian Railways E-Procurement System; P-Way- Permanent Way; C&D- Construction and Demolition

Source: Industry, Crisil Intelligence

India's steel scrap value chain demonstrates significant diversity and operational gaps, particularly between formal and informal channels. While organized segments like ship recycling and railways ensure high traceability and compliance, informal-dominated streams such as automobiles and consumer durables face challenges in documentation, environmental management, and quality control. Addressing these gaps especially the low collection efficiency in informal sectors is crucial for improving scrap availability, enhancing recycling outcomes, and supporting the growth of the secondary steel industry.

Re-rollable / re-usable vs re-melting scrap

Not all scraps go through a furnace. Some of it, particularly heavy plates from ships, used rails from railways and reusable auto components, can be directly re-rolled or reused without melting, and this split determines who the buyer is and what the final product looks like.

Re-melting accounted for 83% (~21.6 MT) of overall scrap in fiscal 2025, while the remaining 17% (~4.4 MT) was reused or re-rolled. By fiscal 2047, the re-melting share is expected to be at 78 to 80%.

Figure 14 : Re-rollable / re-usable vs re-melting trajectory

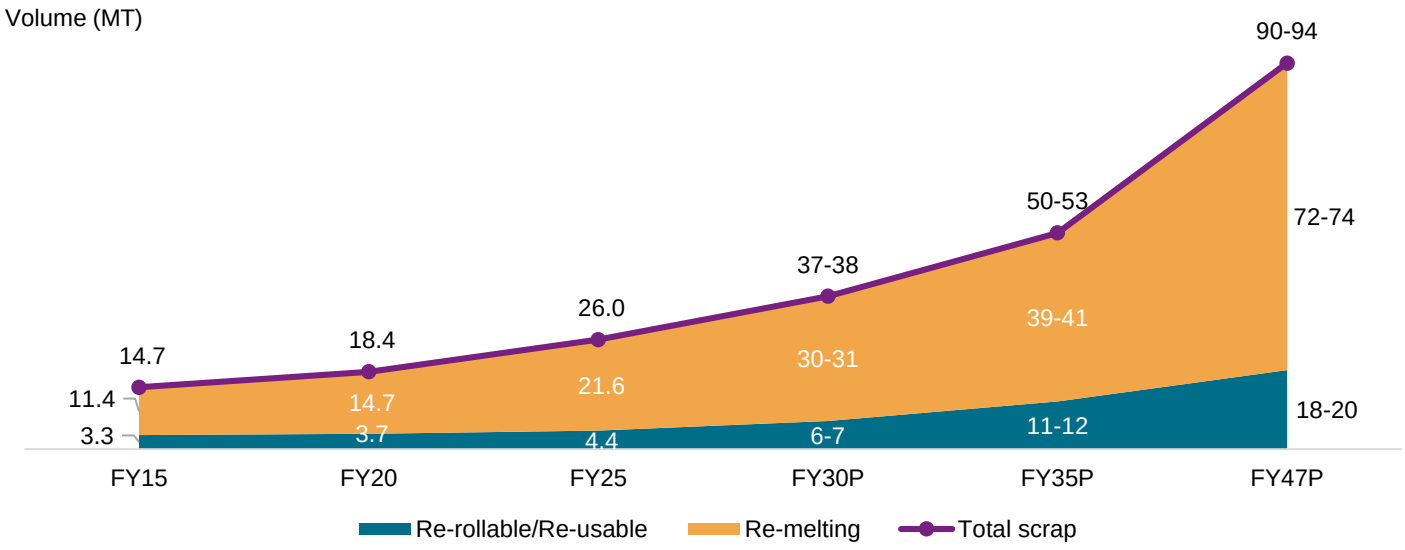
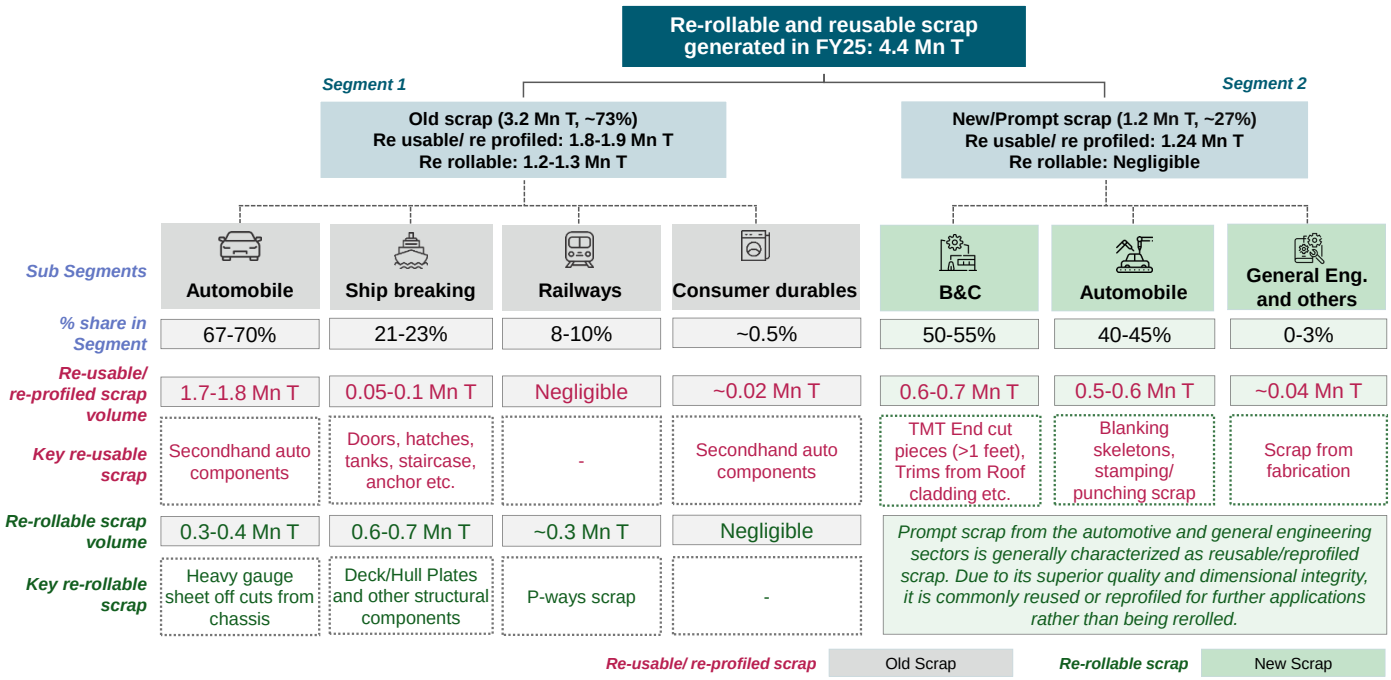


Figure 15 : Re-rollable / reusable scrap breakdown for fiscal 2025



Note: Refer to annexures for subsegment-wise details and insights
Source: Crisil Intelligence

India’s steel scrap ecosystem is dominated by re-melting scrap, which accounted for approximately 21.6 MnT or 83% of total scrap generation in FY25. Re-melting scrap refers to material that is processed and subsequently melted in steelmaking furnaces such as BOF, EAF and IF units for the production of new steel. In contrast, re-rollable and reusable scrap accounted for around 4.4 MnT or 17% of total scrap generation. This category comprises scrap that can be directly reused, re-profiled or re-rolled into new products without undergoing complete melting, thereby preserving material value and reducing processing costs. The growth trajectory indicates that while re-melting will continue to remain the dominant utilization route, the volume of re-rollable and reusable scrap is expected to increase significantly as the availability of obsolete scrap rises over time.

The contribution of re-rollable and reusable scrap is expected to increase from 4.4 MnT in FY25 to nearly 18-20 MnT by FY47, driven primarily by the growth of obsolete scrap from automobiles, ship recycling, railways and other end-of-life assets. However, re-melting scrap is projected to remain the largest category, increasing from approximately 21.6 MnT in FY25 to 72-74 MnT by FY47. This reflects the continued importance of furnace-based recycling in supporting India's steel production ambitions. The long-term increase in re-rollable and reusable scrap demonstrates the growing availability of heavy-gauge steel components and structural sections that can be directly reused or reprocessed with minimal metallurgical transformation.

A key observation from the analysis is that old scrap is the primary source of re-rollable and reusable material. Of the total 4.4 MnT of re-rollable and reusable scrap generated in FY25, approximately 3.2 MnT (73%) originated from obsolete scrap streams, while the remaining 1.2 MnT (27%) was contributed by new or prompt scrap. Within old scrap, approximately 1.2-1.3 MnT was suitable for direct re-rolling, while 1.8-1.9 MnT was classified as reusable or re-profiled material. This underscores the strategic importance of obsolete scrap collection and processing as India moves towards a more circular steel economy.

The automobile sector emerged as the largest contributor to reusable and re-rollable old scrap, accounting for approximately 67-70% of the total old-scrap reusable pool. A significant proportion of end-of-life vehicles entering scrap yards are not fully dismantled and melted. Instead, numerous components such as engines, body panels, transmission systems, axles and structural sections are recovered and sold through secondary markets. It is estimated that the automobile sector generated 1.7-1.8 MnT of reusable scrap and approximately 0.3-0.4 MnT of re-rollable scrap in FY25. This reflects the extensive reuse ecosystem that exists around vehicle dismantling, particularly through informal and semi-formal channels.

Ship recycling represents the second-largest contributor to re-rollable scrap, accounting for approximately 21-23% of total re-rollable and reusable old scrap. Shipbreaking inherently generates large volumes of heavy-gauge steel plates, deck sections and structural beams that can be directly re-rolled without melting. Nearly 88% of steel recovered from ships is suitable for re-rolling, making ship recycling one of the most efficient sources of secondary steel feedstock. In FY25, shipbreaking contributed around 0.6-0.7 MnT of re-rollable scrap and an additional 0.05-0.10 MnT of reusable material, supplying downstream re-rolling mills and infrastructure fabricators with relatively low-cost raw material.

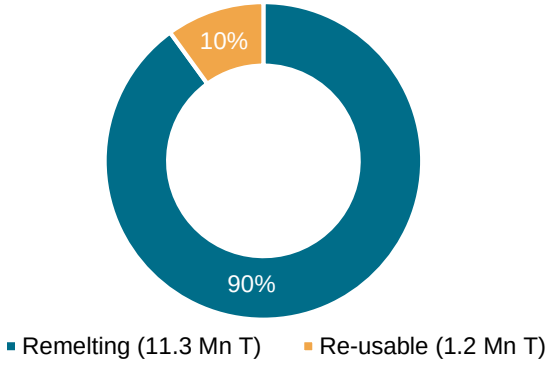
The railways sector also contributes significantly to the re-rollable scrap pool. Track renewals and disposal of condemned railway assets generate high-quality steel, particularly from permanent-way (P-way) rails. Due to their known metallurgy and high steel intensity, approximately 65% of railway scrap is directly re-rolled or reused, while only a limited portion enters remelting routes. In FY25, railway scrap contributed approximately 0.3 MnT of re-rollable material, which is subsequently used in downstream fabrication, structural products and secondary steel manufacturing applications.

In contrast, consumer durables contribute only a negligible share to the re-rollable scrap market. Most reusable value arises through refurbishment and resale rather than re-rolling. Approximately 0.02 MnT of reusable scrap is generated through repair and reconstruction of appliances such as refrigerators, washing machines and air-conditioners. The material remains largely within informal collection and repair networks and contributes minimally to direct re-rolling opportunities.

The dynamics are significantly different for new or prompt scrap. Of the 12.5 MnT of prompt scrap generated in FY25, approximately 90% (11.3 MnT) was consumed as re-melting scrap, while only 1.2 MnT was reused or re-profiled. Prompt scrap generated by the automobile, construction and fabrication sectors typically consists of high-purity offcuts, blanking skeletons, punching waste and fabrication remnants. Due to their dimensional integrity and material consistency, these scraps are generally reused directly by fabricators or small engineering units rather than being re-rolled. Building and construction activities contributed approximately 50-55% of reusable prompt scrap volumes, followed by the automobile sector at 40-45%, while general engineering and other sectors accounted for only a marginal share.

Overall, the analysis demonstrates that the re-rollable and reusable scrap ecosystem is heavily dependent on obsolete scrap streams, particularly automobiles, ship recycling and railways. While re-melting will remain the dominant route for steel recycling, the growing availability of reusable and re-rollable material represents an important opportunity to improve resource efficiency, reduce energy consumption and enhance circularity across the steel value chain. As India's stock of vehicles, infrastructure and industrial assets matures over the coming decades, the volume of directly reusable steel is expected to increase substantially, strengthening the role of secondary steel production outside conventional melting routes.

Figure 16 : New scrap: Reusable vs remelting (FY25)



Source: Crisil Intelligence

Within the re-melting and re-rollable split, the behaviour is quite different by scrap type. New scrap is overwhelmingly re-melting grade of the 12.5 MT of new scrap in fiscal 2025, 90% (11.3 MT) was re-melting and only 10% (1.2 MT) was re-rollable. Home scrap generated goes 100% into remelting by nature. Obsolete scrap has a mix of re-melting and re-rollable/re-usable scrap, with the split varying by source sector.

Figure 17 : Old scrap re-rollable/re-usable vs re-melting by sector (%)



Note: Scrap generation volume inclusive of reusable as well as remelting scrap
Source: Crisil Intelligence

The share of re-rollable output varies sharply across old scrap sectors, with ship recycling yielding the highest proportion of directly re-rollable material and construction scrap going entirely into remelting.

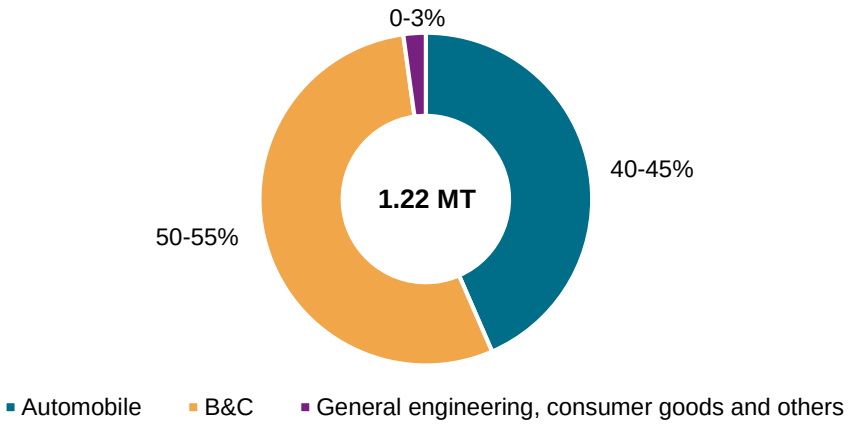
Automobiles have a 60% share of re-rollable, where only 35-45% of cars reaching scrap yards are fully dismantled and scrapped, while components from ~60% of cars coming for scrapping are reused for reassembly. Ship recycling has the highest re-rollable share at 88%, with its plates and structural components ideally suited for direct re-rolling. Railways follow at 65% re-rollable. In contrast, building and construction scrap goes 100% into remelting and is not considered fit for re-rolling purposes.

Re-usable new scrap

Of the total re-usable new scrap (1.22 MT, ~10% of overall new scrap) in fiscal 2025, 50-55% came from the B&C segment, followed by automobile (40-45%). The share of general engineering, consumer goods and other segments remained low (almost negligible), as scrap from these sources is mostly sent for remelting.

The primary buyers of re-usable scrap are micro, small and medium enterprise (MSME) secondary steel processors, downstream steel fabricators and light engineering units, which convert the scrap into value-added fabricated products.

Figure 18 : Re-usable new scrap break-up by segment (fiscal 2025)



Source: Crisil Intelligence

Re-rollable/re-usable old scrap

Unlike home scrap which entirely goes into remelting and new scrap of which only ~10% is suitable for re-rolling re-rollable old scrap accounted for ~50% of the total old scrap generated in fiscal 2025.

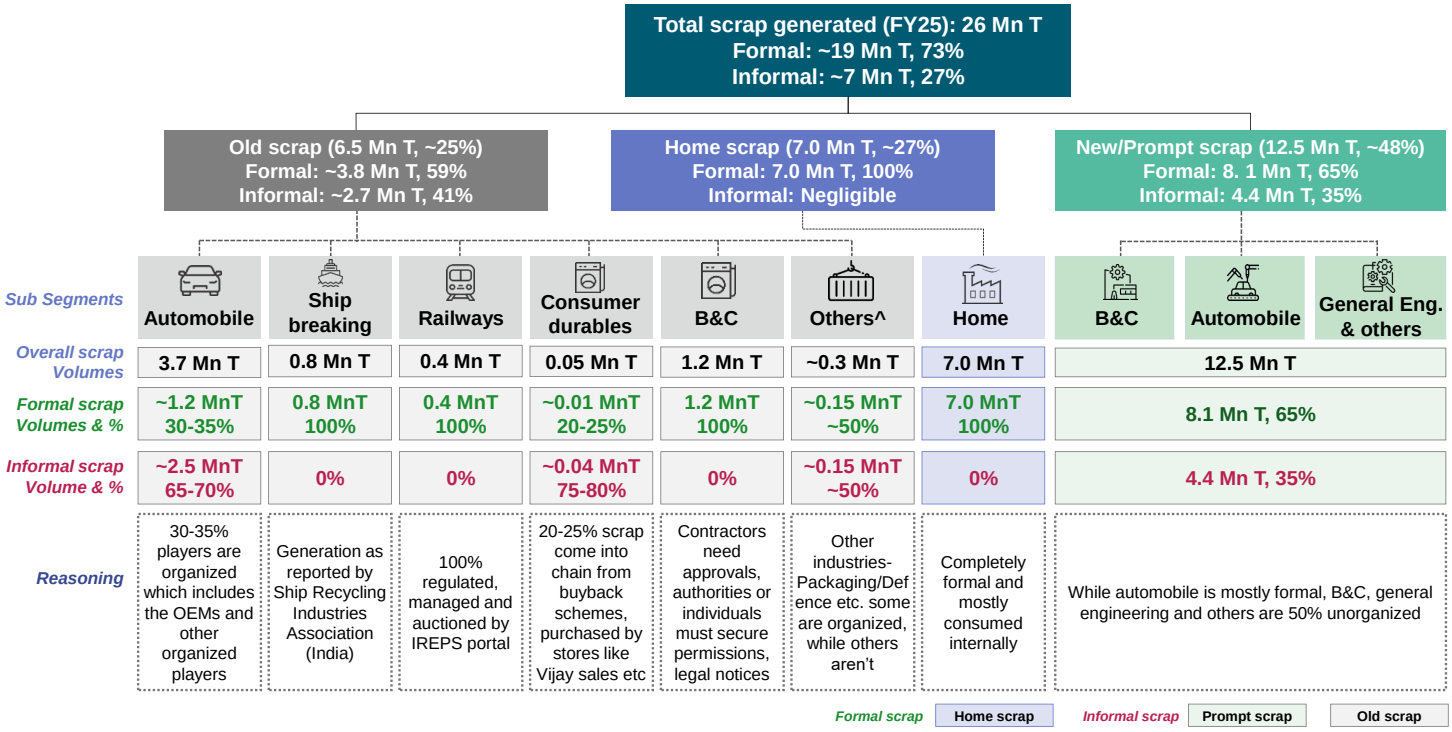
The automobile segment accounted for 67-70% of the total re-rollable old scrap (3.23 MT) in fiscal 2025, followed by ship-breaking (21-23%) and railways (8-10%).

The share of consumers durables was negligible (~0.5%) due to the lower contribution of consumer durables scrap in total old scrap.

Construction and demolition scrap mostly goes into remelting and is not considered fit for re-rolling purposes.

Formal Vs Informal steel scrap

Figure 19 : Informal / formal scrap breakdown for fiscal 2025



Source: Crisil Intelligence

In FY25, ~73% (19 MnT) of India's 26 MnT steel scrap generation came from formal channels, while 27% (7 MnT) remained informal. Home scrap is fully formal, whereas old scrap is the least formalized, with ~41% (2.7 MnT) handled through unorganized networks, particularly in the automotive sector. Formalization is highest in ship breaking, railways, construction, and home scrap, supported by regulations and organized disposal systems. In contrast, automobiles, consumer durables, and some industrial segments continue to rely heavily on informal collection networks. Within prompt scrap, ~65% (8.1 MnT) is formal and 35% (4.4 MnT) remains informal. The findings highlight substantial scope for policy support, digital traceability, and organized collection infrastructure to accelerate formalization and improve scrap recovery efficiency.

Home scrap, which accounted for 7.0 MnT (27% of total scrap generation) in FY25, is entirely formalized. Generated during steelmaking operations in the form of crop ends, rejected billets, defective castings and process losses, home scrap remains within the manufacturing facility and is directly recycled back into production. As a result, there is no informal participation in this segment, making it the most organized component of India's scrap ecosystem. The complete formalization of home scrap reflects the high degree of process control and material accountability maintained by steel producers.

New or prompt scrap, which represented 12.5 MnT (48% of total scrap generation), exhibited a significantly higher level of formalization, with approximately 8.1 MnT (65%) originating from organized channels. Prompt scrap is generated during manufacturing and fabrication activities such as automotive stamping, steel cutting, blanking and fabrication. While scrap generated by large automobile OEMs and organized construction companies generally moves through traceable and documented channels, a substantial portion generated by small fabricators, engineering workshops and MSMEs is sold through local trader networks. Consequently, around 4.4 MnT (35%) of prompt scrap continues to remain within informal collection systems.

The greatest challenge lies within the old scrap segment, which generated 6.5 MnT (25% of total scrap) in FY25. Of this, only 3.8 MnT (59%) was collected through formal channels, while approximately 2.7 MnT (41%) remained informal. Old scrap originates from end-of-life vehicles, consumer durables, buildings, infrastructure, machinery and other post-consumer products. Unlike home and prompt scrap, obsolete scrap is geographically dispersed, fragmented and often traded through cash-based networks, making formal collection significantly more difficult. Consequently, old scrap remains the least formalized component of India's scrap ecosystem despite representing the largest future opportunity for enhancing domestic scrap availability. Within old scrap, the automobile sector emerged as the single largest contributor to informality. Of the 3.7 MnT of automobile scrap generated in FY25, only 1.2 MnT moved through organized channels, while nearly 2.5 MnT was processed through informal scrapyards and dismantlers

In contrast, ship breaking and railway scrap are almost entirely formalized. Ship recycling, which generated approximately 0.8 MnT of scrap in FY25, is conducted under a highly regulated framework involving the Directorate General of Shipping, Gujarat Maritime Board and environmental authorities. Similarly, railway scrap, representing approximately 0.4 MnT, is disposed through organized auction platforms such as MSTC and IREPS, ensuring full traceability and documentation. Consequently, both sectors exhibit formalization levels close to 100%, demonstrating how strong regulation and centralized disposal mechanisms can effectively eliminate informal leakage.

The consumer durables segment remains one of the most fragmented areas of the scrap ecosystem. Although the overall scrap volume is relatively small at approximately 0.05 MnT, only 20-25% is estimated to flow through formal recyclers. A significant proportion of appliances such as refrigerators, washing machines and air conditioners is collected through local kabadiwala networks and diverted into repair, refurbishment and second-hand markets. This extensive informal infrastructure limits the quantity of material reaching authorized recyclers and reduces transparency across the value chain.

Overall, the analysis highlights that informality is concentrated in a few key sectors rather than being uniformly spread across the industry. Automobiles alone account for the majority of informal old scrap volumes, while consumer durables continue to remain heavily dependent on informal collection channels. Conversely, sectors such as ship recycling, railways, home scrap and organised construction scrap demonstrate that strong regulatory oversight, centralized disposal mechanisms, digital traceability and formal auction systems can significantly improve material recovery and transparency.

Ship recycling is the most significant source of directly re-rollable steel, with approximately 88% of ship-derived scrap suitable for reuse or re-rolling. Large steel plates, deck structures and hull sections recovered from ships are cut and sold directly to re-rolling mills, particularly around the Alang recycling cluster. In FY25, ship recycling generated approximately 0.7-0.8 MnT of re-rollable scrap, supplying fabricators, infrastructure projects and structural steel manufacturers with low-cost secondary steel feedstock.

The railways sector also contributes materially to the re-rollable scrap market. Steel recovered from permanent-way (P-way) rail replacements possesses known metallurgy and high steel intensity, making it highly suitable for direct re-rolling. Approximately 65% of railway scrap is reused or re-rolled, generating nearly 0.3 MnT of re-rollable material annually. This scrap is primarily procured through organised auction platforms and subsequently converted into structural products for towers, fabrication and industrial applications.In contrast, consumer durables contribute only a negligible share to the re-rollable scrap pool. A limited volume of discarded appliances is refurbished and reassembled through informal networks before being resold in secondary markets. While this segment supports reuse, its overall contribution to re-rollable steel volumes remains insignificant relative to automobiles, ship breaking and railways.

Overall, automobiles drive the largest volume of reusable scrap, while ship recycling generates the highest proportion of re-rollable material. These sectors represent the backbone of India's re-rollable and reusable scrap ecosystem and play an important role in improving resource efficiency, reducing remelting requirements and supporting circular steel consumption.

Table 20 : Segment-wise re-rollable/re-usable old scrap

Old scrap segment	Key scrap-generating areas	Percentage of scrap re-rolled/reused out of the total scrap generated by the sector	Who buys it?	Where is it sold?	Key process	End-products and end-users
Consumer durables	Approximately one out of every six discarded appliances (refrigerators, washing machines, etc.) is reassembled by ragpickers/kabadiwalas	17% (~0.02 MT)	Level 1 scrap collectors (local ragpickers) Level 2 scrap collectors (specifically handling consumer durables scrap)	L2 scrap collectors Households	Manual dismantling using hand tools (hammers, screwdrivers, etc.) Reassembly of usable parts	Refurbished appliances or parts sold to household consumers
Automobile	Only 35-45% of cars reaching scrap yards are fully dismantled and scrapped; components from about 60% of cars coming for scrapping are reused for reassembly	60% (2.2-2.3 MT)	Second-hand component dealers, local scrap dealers, component salvagers	Auto parts/components markets and clusters (e.g., Mayapuri in Delhi, Pune and Chennai) Informal set-ups in small towns and villages	Manual removal of parts (wheels, doors, seat frames) with cutters Engines rebuilt and resold, wrenches, hoists, inspection tools Transmissions sold again by the second-hand components market	Reused auto components for households, car repair workshops, and vehicle reassembly
Railways	Permanent ways (P-ways) (100% of steel intensity, hardly any wastages during dismantling) are 90% re-rolled/reused, just 10% goes for remelting	65%* (~0.3 MT)	Scrap traders and mills (via bidding in auctions on IRePS)	Depots and workshop yards – buyers collect (take delivery) post sale	Re-rolling of steel into new products	Steel products for downstream fabricators, and tower and structure manufacturers
Ship-breaking/ recycling	Plates and other structural components	88% (0.7-0.8 MT)	Re-rolling mills near Alang (Bhavnagar), Sundar Nagar	-	-	Downstream steel fabricators, tower/structure-making industries, infrastructure projects, and the retail market

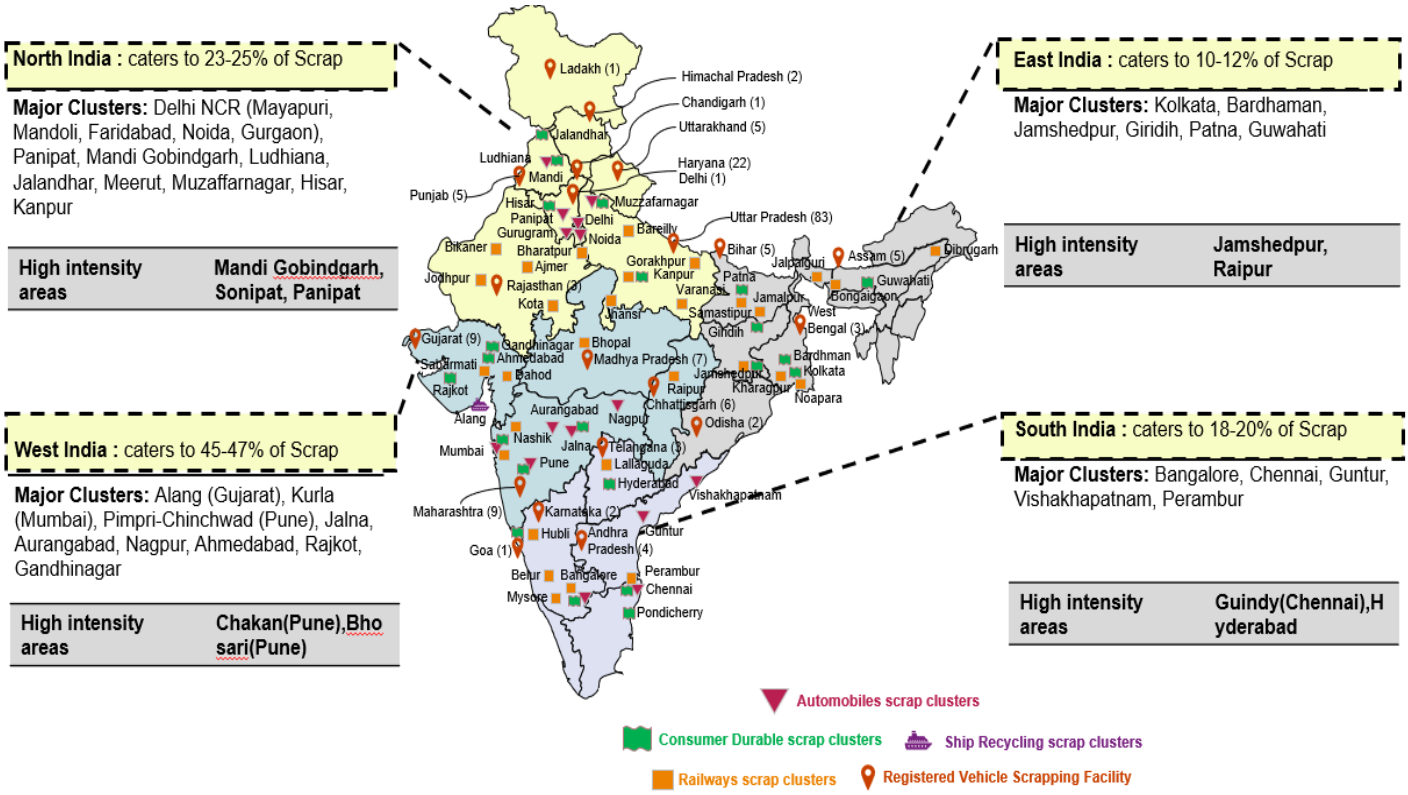
**Abandoned P-ways make up 65% of the overall scrap generated by railways*

Source: Crisil Intelligence

Cluster-wise old scrap generation

The assessment maps approximately 3.69 MnT of old scrap generation annually, representing around 60% of the estimated overall old scrap generation in India, across key scrap-generating clusters. The assessment covers major clusters across the East, North, South and West regions, with regional coverage of approximately 35%, 62%, 59% and 60%, respectively.

Figure 20 : Key Clusters generating old scrap



Source: Crisil Intelligence

Table 21 : Key States generating old scrap (FY25)

Zone	Cluster	State	Estimated Dealers	Estimated Scrap Volume / Year (Tons)
East			**322**	**309,600**
	Jamshedpur	Jharkhand	145	222,000
	Patna	Bihar	177	87,600
North			**1,767**	**1,060,800**
	Delhi	Delhi (NCT)	137	73,200
	Jalandhar	Punjab	120	141,600
	Lucknow	Uttar Pradesh	40	28,800
	Mandi Gobindgarh	Punjab	600	432,000
	Meerut	Uttar Pradesh	200	72,000
	Panipat	Haryana	200	94,800
	Sonipat	Haryana	470	218,400

Zone	Cluster	State	Estimated Dealers	Estimated Scrap Volume / Year (Tons)
South			**2,899**	**855,328.80**
	Bangalore	Karnataka	190	78,000
	Calicut	Kerala	41	2,100
	Chennai	Tamil Nadu	862	218,656
	Coimbatore	Tamil Nadu	400	64,800
	Hyderabad	Telangana	300	216,000
	Kochi	Kerala	340	94,200
	Palakkad	Kerala	715	156,720
	Pondicherry	Puducherry (UT)	11	852
	Vizag	Andhra Pradesh	40	24,000
West			**1,400**	**1,468,695**
	Aurangabad	Maharashtra	130	12,900
	Jaalna	Maharashtra	110	17,100
	Mumbai	Maharashtra	573	97,620
	Nagpur	Maharashtra	172	279,975
	Pune	Maharashtra	415	1,061,100
Grand Total			**6,388**	**3,694,423.80**

Source: Crisil Intelligence

Key scrap-generating clusters identified include Jamshedpur and Patna in the East; Delhi NCR, Jalandhar, Mandi Gobindgarh, Sonipat and Panipat in the North; Chennai, Hyderabad and Palakkad in the South; and Mumbai, Pune, Nagpur, Jalna and Aurangabad in the West. The mapping provides a granular view of scrap availability across major industrial and consumption centres and serves as a basis for assessing the regional distribution of old scrap generation.

Domestic old steel scrap collection gap

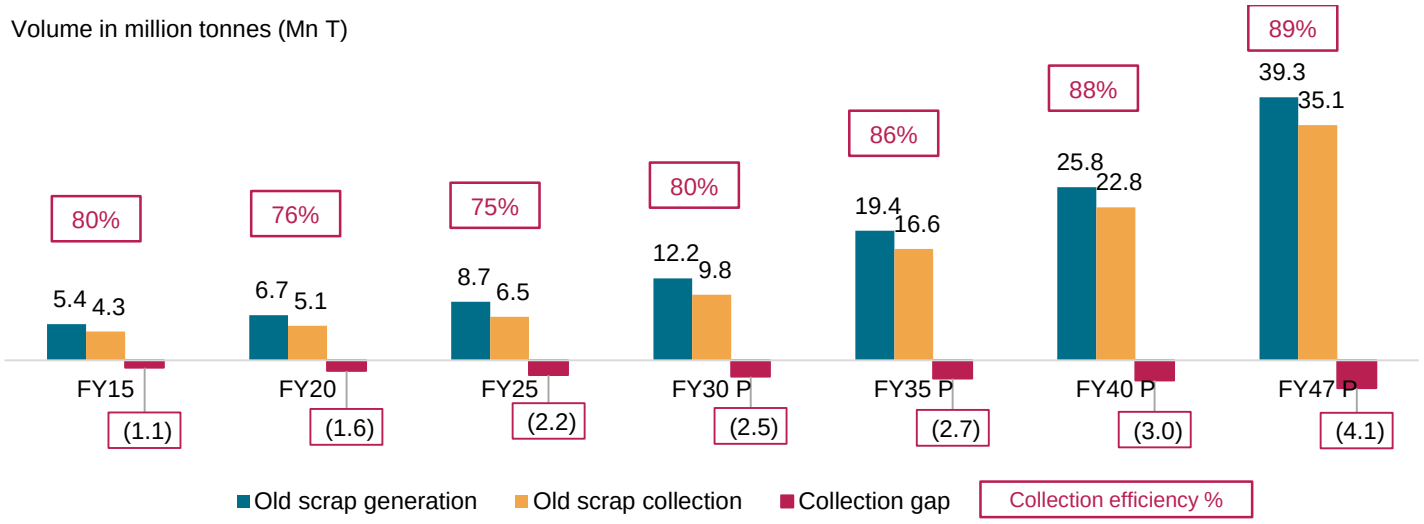


Figure 21 : Old scrap collection % efficiency trend

Source: Crisil Intelligence

India's old/obsolete steel scrap collection efficiency stood at 75% fiscal 2025, this collection gap is majorly due to inefficiencies in scrap collection from Automobile, Consumers durables as well as construction and demolition segments

India’s old steel scrap collection efficiency is projected to climb to 80% by fiscal 2030, 86% by fiscal 2035 and 89% by fiscal 2047, reflecting stronger policy push and formalization & improvisation in traceability across the value chain.

Table 22 : Collection efficiency

Segment wise collection efficiency %							*Factors contributing to the inefficiencies*
Year	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY40P**	
Automobile	64%	69%	70%	75%	80%	85%	Low RVSF penetration across India, low awareness amongst consumers of diligent scrappage mechanisms, nascent technologies used for processing (Data on the number of ELVs lying at police stations across India is not available publicly)
Construction and demolition	60%	65%	70%	73%	75%	80%	Plan Vs Actual facilities of construction & demolition facilities not in place, nascent technologies used for processing
Consumers durables	60%	62%	65%	70%	75%	80%	Low collection % on account of high-volume factors of kabadiwalas present and leakage into secondhand market

Source: Crisil Intelligence

India’s old/obsolete steel scrap collection efficiency stood at 75% in fiscal 2025, this collection gap is largely due to inefficiencies in scrap collection from Automobile, Consumers durables as well as construction and demolition segments.

India’s old steel scrap collection efficiency is projected to climb to 80% by fiscal 2030, 86% by fiscal 2035 and 89% by fiscal 2047, reflecting stronger policy push and formalization & improvement in traceability across the value chain.

Unaccounted steel scrap

A significant portion of end-of-life steel remains outside the formal recycling ecosystem despite being technically recoverable. This unaccounted steel scrap comprises steel-bearing assets that are stranded due to legal disputes, ownership complexities, delayed asset liquidation, abandoned projects, or inadequate recovery mechanisms. Consequently, these materials do not enter the organized scrap collection network in a timely manner, resulting in lower domestic scrap availability and reduced material circularity. Improving the identification and recovery of such scrap reservoirs can enhance collection efficiency and support the growing demand for ferrous scrap.

A sizeable volume of technically recoverable end-of-life steel remains outside formal recycling channels due to legal, ownership, procedural, and visibility constraints. This “unaccounted” scrap is embedded in stranded assets such as impounded vehicles, stalled construction projects, insolvent industrial units, idle mining equipment, and infrastructure replacement projects.

Table 23 : Sources of Unaccounted steel scrap

Source of steel scrap	Why it remains outside the formal scrap flows
Impound & Accident Vehicles (Police Stations, RTO Yards, Courts)	Prolonged legal retention, fragmented ownership, delayed disposal processes
Stalled Real Estate Projects (Abandoned Construction Sites)	Steel remains locked within incomplete structures for extended periods
Disputed Industrial Assets (Closed Factories, Mills, Power Plants) Insolvency-Affected Industrial Assets	Delays in liquidation and asset disposition postpone material recovery
Idle Mining & Quarry Equipment	Equipment remains stranded due to remote locations and ownership complexities
Infrastructure Renewal & Replacement Projects	Significant steel becomes available during upgrades, but recovery visibility is limited

Source: Crisil Intelligence

The major sources of unaccounted steel scrap span multiple sectors, including impounded and accident vehicles, stalled real estate projects, insolvency-affected industrial assets, idle mining and quarry equipment, and infrastructure renewal projects. While these assets contain significant quantities of recoverable steel, prolonged legal proceedings, fragmented ownership, remote locations, and limited visibility of recovery opportunities often delay or prevent their integration into formal scrap flows. Addressing these structural bottlenecks through streamlined disposal processes, improved asset tracking, and greater participation of organized recyclers can unlock an important secondary source of steel scrap for the domestic market.

Unlocking these scrap reservoirs will require faster disposal mechanisms, clearer ownership resolution, improved asset mapping, and stronger participation from organized recyclers. Better integration of these stranded steel-bearing assets into formal scrap flows can improve collection efficiency and support rising ferrous scrap demand.

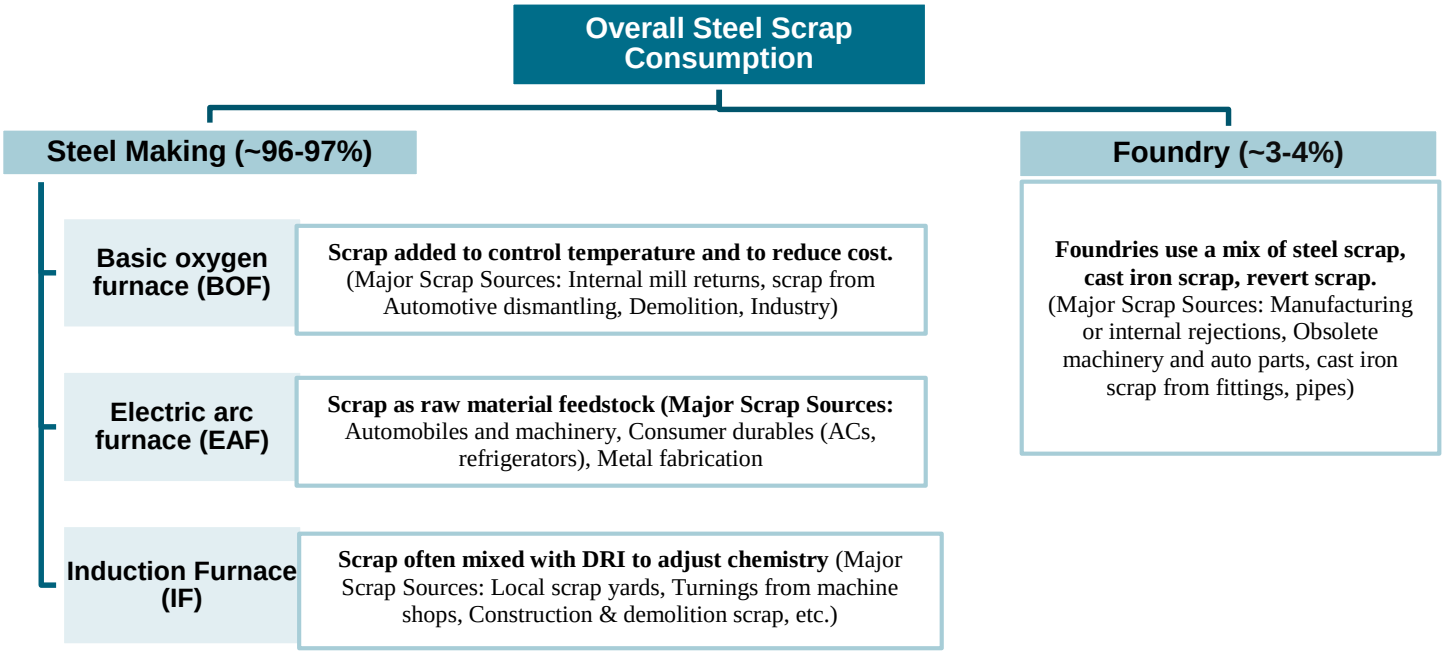
Chapter 2

Consumption & Import Dependencies



Overall steel scrap consumption can be broadly split between steelmaking (97-98%) and foundry (2-3%)

Figure 22 : Steel scrap consumption

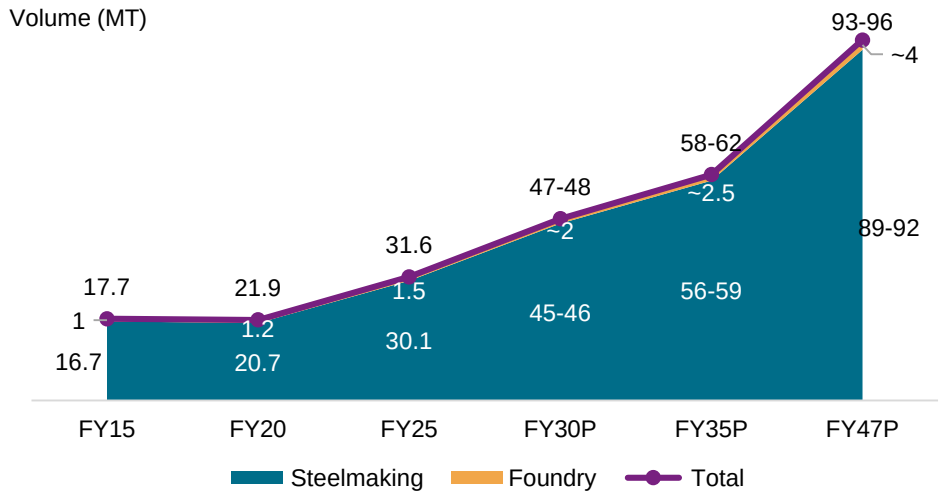


Steelmaking accounts for ~95% of all scrap consumed in the country.

India's ferrous scrap demand has been on a steep growth path, rising from 17.7 MT in fiscal 2015 to 31.6 MT in fiscal 2025. Demand is set to reach 93-96 MT by fiscal 2047, driven primarily by steelmaking.

Table 24: Scrap consumption growth rates

Figure 23 : Ferrous scrap consumption overview (fiscals 2015-2047P)



CAGR	Steelmaking	Foundry
FY20-FY25	7.8%	4.8%
FY25-FY30P	8.5–9%	4.5–5.5%
FY30P-FY35P	4.0–5.0%	4.5–5.5%
FY35P-FY47P	3.5–4.5%	4.0–4.5%

Note: P – projected, Source: Crisil Intelligence

Table 25: Steel making vs Foundry scrap share (%)

% Share	FY25	FY30P	FY35P	FY47P
Steelmaking	95%	96–97%	96–97%	96–97%
Foundry	5%	3–4%	3–4%	3–4%

Source: Crisil Intelligence

Steelmaking scrap demand is expected to log a robust CAGR of 8.5-9% between fiscals 2025 and 2030, before moderating to 4.0-5.0% beyond fiscal 2030, reflecting both capacity additions and higher scrap usage in EAF/IF routes.

Foundry demand remains small but is steadily rising (CAGR of 4.5-5.5%). Its share remains limited at 3-4%, highlighting that incremental scrap demand continues to be led by steelmaking. Foundries are a small but quality-sensitive consumer of scrap, relying heavily on clean auto-industry punching waste and internally recycled casting rejects. Overall foundry scrap consumption is split between purchased scrap (~65%) and own generated return scrap from the casting/foundry process (~35%).

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Overall foundry scrap consumption is split between purchased scrap (~65%) and own generated return scrap from the casting/foundry process (~35%).

Figure 24 : Foundry scrap composition



Table 26: Foundry scrap composition

Source	Share	Yield	Key characteristics
Purchased (CRC, metal punching, stamping steel scrap from automobile and other fabrication industries)	~65%	97-98%	Auto-industry punching (70-80% of input for purchased scrap) remains the dominant scrap category in many foundries
Own generated return (from the casting/foundry process)	~35%	97%	Gates, runners, risers and rejected castings recycled internally

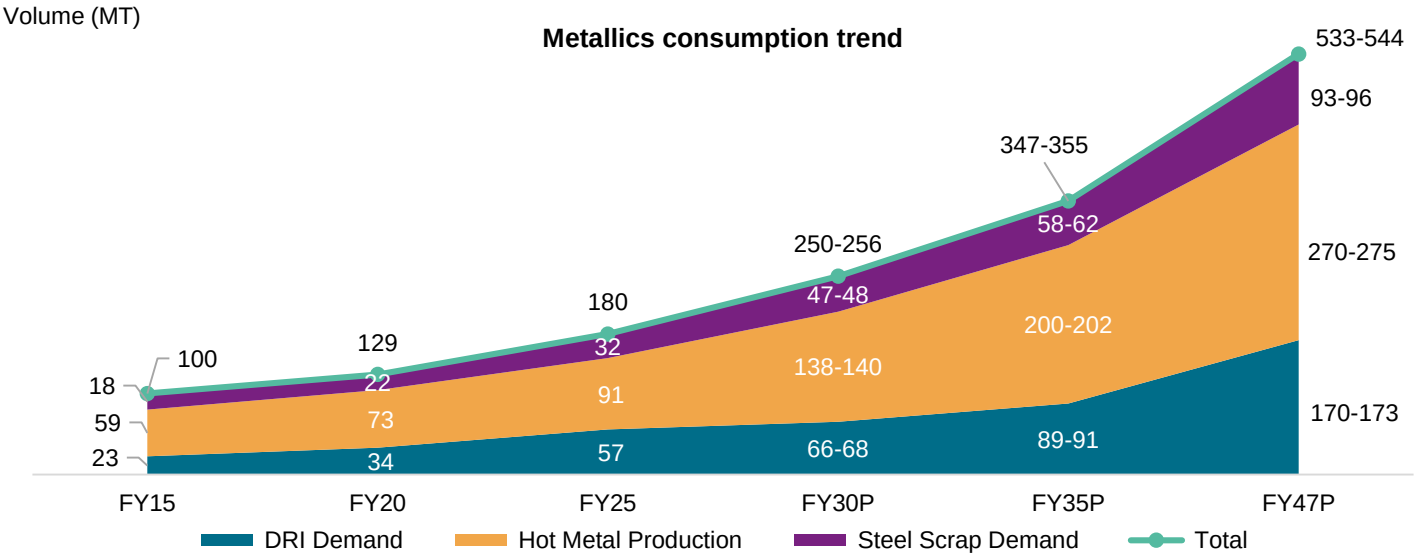
Source: Crisil Intelligence

Foundries maintain strict scrap quality control to avoid oxidation defects and ensure casting integrity. They prefer scrap from flat products due to higher availability from automotive and fabrication clusters, combined with clean, uniform and predictable chemistry.

Raw material demand in steelmaking

Steel scrap is one of the three key metallics (alongside hot metal and DRI) used in India's steelmaking furnaces, and its share in the overall metallics mix is rising faster than the other two.

Figure 25 : Raw material demand in steelmaking



Source: Industry, Crisil Intelligence

Table 27: Charge mix share over the years

Metallics	FY20–FY25 CAGR	FY25–FY30P CAGR	FY30P–FY35P CAGR	FY35P–FY47P CAGR
Steel Scrap	7.8%	8.5–9.0%	4.5–5.5%	3.5–4.5%
Hot Metal	3.6%	8.5–9.0%	7.5–8.5%	2.5–3.5%
DRI	12.9%	2.5–3.0%	5.5–6.5%	5.0–6.0%

Source: Crisil Intelligence

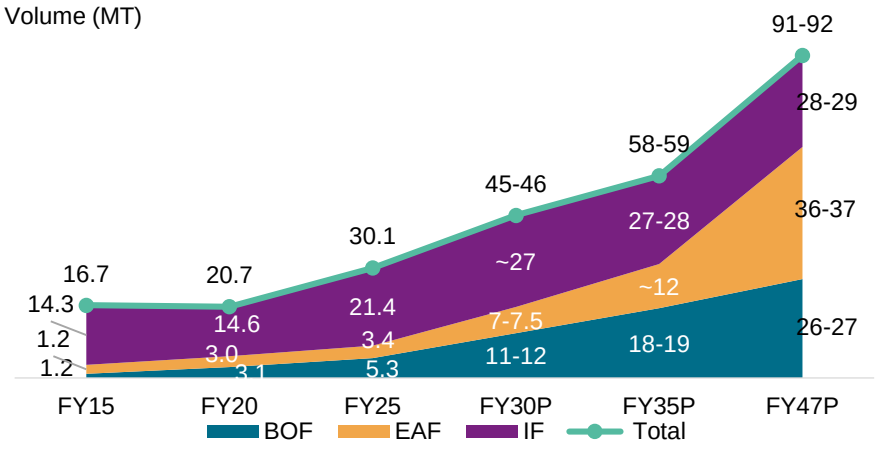
India's total metallics demand is projected to rise sharply from 129 MT in fiscal 2020 to 250-256 MT by fiscal 2030, driven by strong growth in scrap demand (from 18 MT in fiscal 2015 and 32 MT in fiscal 2025 to 93-96 MT by fiscal 2047).

Route-wise scrap demand

The three steelmaking routes- BOF, EAF and IF use scrap differently in their charge mix, and the share of scrap in each route is projected to rise over the coming decades. India's steel scrap demand is projected to increase sharply from 20 MT in fiscal 2015 to 89-92 MT by fiscal 2047, with the BOF and EAF routes expanding their scrap percentage in the charge mix.

Table 28: Route wise scrap demand growth rates

Figure 26 : Route-wise scrap demand



Route-wise scrap share in charge mix (%)			
Route	**FY15**	**FY25**	**FY47P**
BOF	3%	8%	13–15%
EAF	5%	10%	16–18%
IF	47%	35%	43–45%

Source: Crisil Intelligence

IF scrap share in the overall charge mix is expected to reach 43-45% by fiscal 2047, from the current 35% (fiscal 2025), reflecting a gradual shift towards cleaner steelmaking technologies.

BOF scrap usage is projected to rise from 3% in fiscal 2015 to nearly 13-15% by fiscal 2047, and that of EAF from 10% to 16-18%.

Table 29 : Route-wise scrap share in charge mix (%)

Route	FY15	FY20	FY25	FY30P	FY35P	FY47P
BOF	3%	6%	8%	10–12%	11–13%	13–15%
EAF	5%	10%	10%	12–14%	13–15%	16–18%
IF	47%	40%	35%	41–43%	42–44%	43–45%

Source: Crisil Intelligence

IF scrap share in the overall charge mix is expected to reach 43-45% by fiscal 2047, from the current 35% (fiscal 2025), reflecting a gradual shift towards cleaner steelmaking technologies. BOF scrap usage is projected to rise from 3% in fiscal 2015 to nearly 13-15% by fiscal 2047, and that of EAF from 10% to 16-18%.

Table 30 : Detailed charge mix by route (% of total charge)

BOF Route						
Raw material	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY47P**
HM/PI	96%	93%	91%	88%	88%	86%
Scrap	*3%*	*6%*	*8%*	*11%*	*12%*	*13%*
Ferro alloys	1%	1%	1%	1%	1%	1%
EAF Route						
Raw material	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY47P**
HM/PI	54%	55%	46%	42%	36%	30%
Sponge Iron	40%	34%	43%	44%	50%	52%
Scrap	*5%*	*10%*	*10%*	*13%*	*14%*	*17%*

EAF Route						
Ferro alloys	1%	1%	1%	1%	1%	1%
IF Route						
Raw material	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY47P**
HM/PI	8%	5%	5%	5%	4%	3%
Sponge Iron	36%	54%	57%	52%	52%	52%
Scrap	*47%*	*43%*	*35%*	*45%*	*43%*	*44%*
Ferro alloys	1%	1%	1%	1%	1%	1%

Note: HM/PI – hot metal/pig iron
Source: Crisil Intelligence

The IF route's scrap share dropped from 47% in fiscal 2015 to 35% in fiscal 2025 as DRI availability increased and it became more cost-competitive in certain periods.

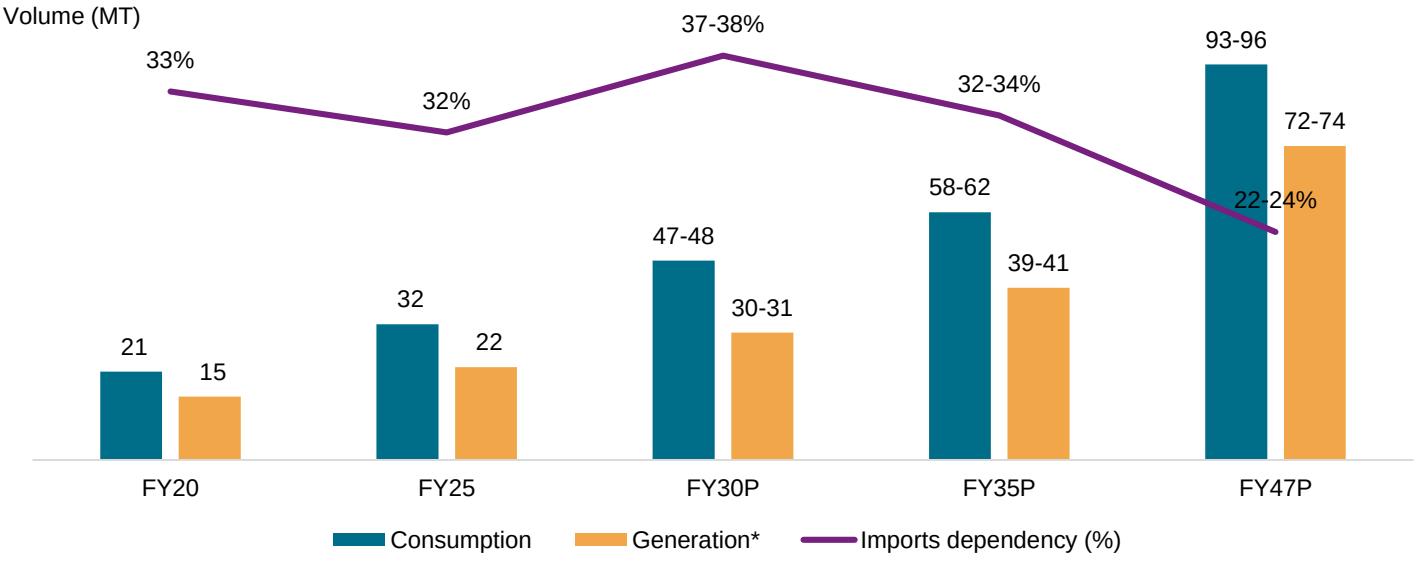
However, the path ahead shows a recovery towards ~44% by fiscal 2047, as scrap availability improves and the economic advantages of scrap over DRI (in terms of energy consumption and productivity) reassert themselves.

The EAF route's scrap share is projected to increase to 17% by fiscal 2047 from the current 10%, reflecting the global trend of EAFs increasing their scrap usage intensity as they scale up and seek to reduce carbon footprint.

Import dependency

Despite strong growth in domestic generation, India is a structural net importer of steel scrap, with the production-consumption gap necessitating imports in the raw material mix.

Figure 27 :Import dependency trajectory (fiscals 2020-2047P)



**Generation represents domestic scrap generated and used only for remelting.*
Source: Crisil Intelligence

India's steel scrap imports dependency stood at 34% (6.8 MT) during fiscal 2022, declining to 32% (9.3 MT) in fiscal 2025 on the back of better domestic scrap collection and processing.

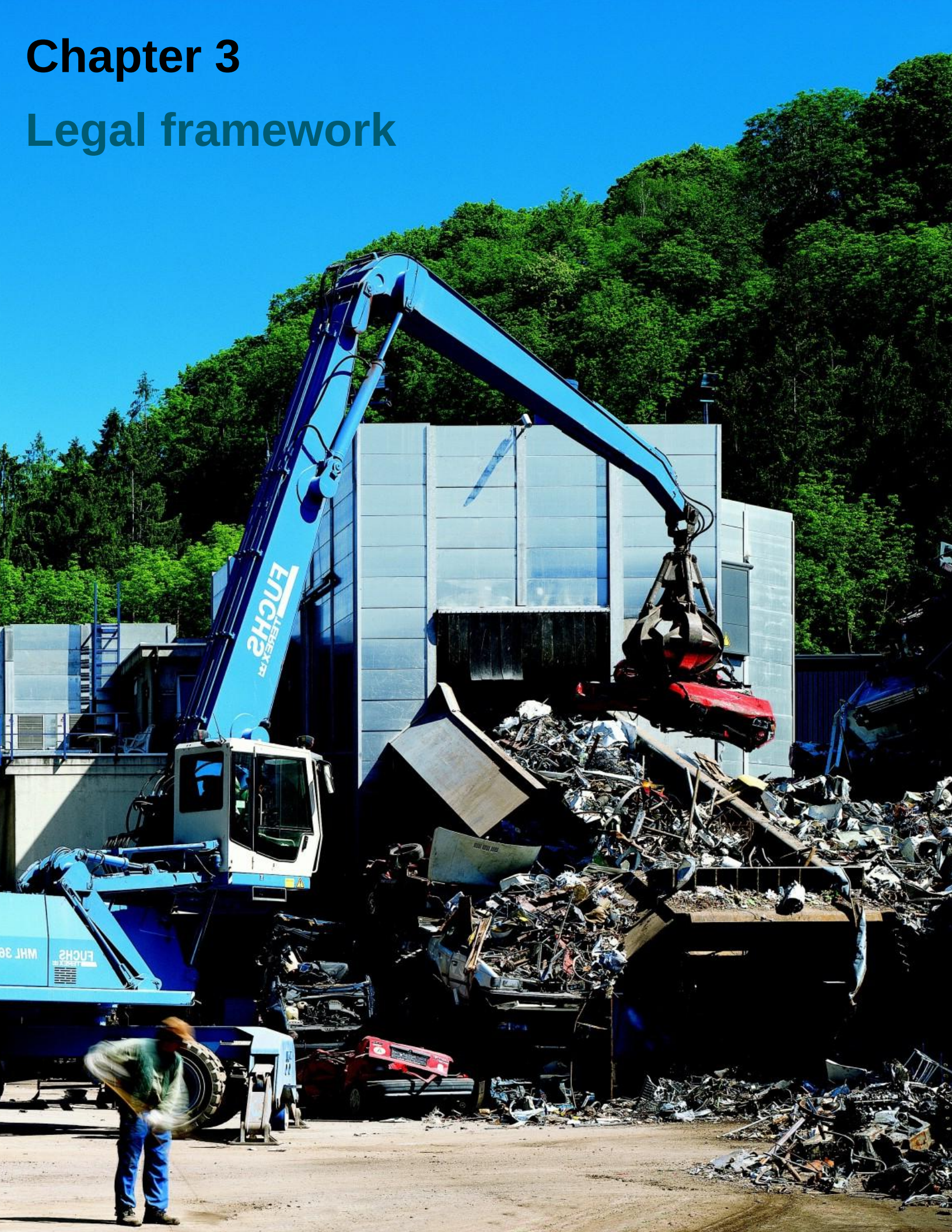
We project the dependency to rise to 37-38% in the near term (fiscal 2030). The commissioning of new capacity, particularly EAF and BOF, will generate demand faster than the domestic scrap supply’s growth. Moreover, the steel consumed by India's construction and automobile sectors in the 2010s will not begin returning as scrap in large volumes until the late 2030s and 2040s.

The trend will reverse beyond fiscal 2030. As India's installed steel stock matures and collection infrastructure gets stronger, import dependency is expected to come down to 32-34% by fiscal 2035 and further to 22-24% by fiscal 2047. Higher recovery and collection of domestically generated steel scrap will drive this long-term decline even as overall scrap demand continues to rise.

For the next decade, India will need to retain and expand its access to global scrap markets while investing in the domestic collection and processing infrastructure to lower reliance on imported material.

Chapter 3

Legal framework



Timeline of steel scrap-related policies

Between 2000 and 2011, India laid the institutional foundation for a formal, traceable and environmentally compliant steel scrap ecosystem through a series of regulatory interventions covering hazardous waste, scrap imports, recycling infrastructure and producer responsibility. During this period, policy focus gradually shifted from regulating imported waste to developing a broader framework for responsible recycling, environmental protection and material traceability.

The first major milestone came in 2000, when the Hazardous and Other Wastes (Management and Transboundary Movement) Rules were amended to regulate the import and export of hazardous waste. This established the principle that international movement of waste and scrap should be subject to environmental safeguards, documentation and regulatory oversight. The amendment brought greater attention to the risks associated with contaminated scrap imports and created an early distinction between recyclable scrap and hazardous waste streams.

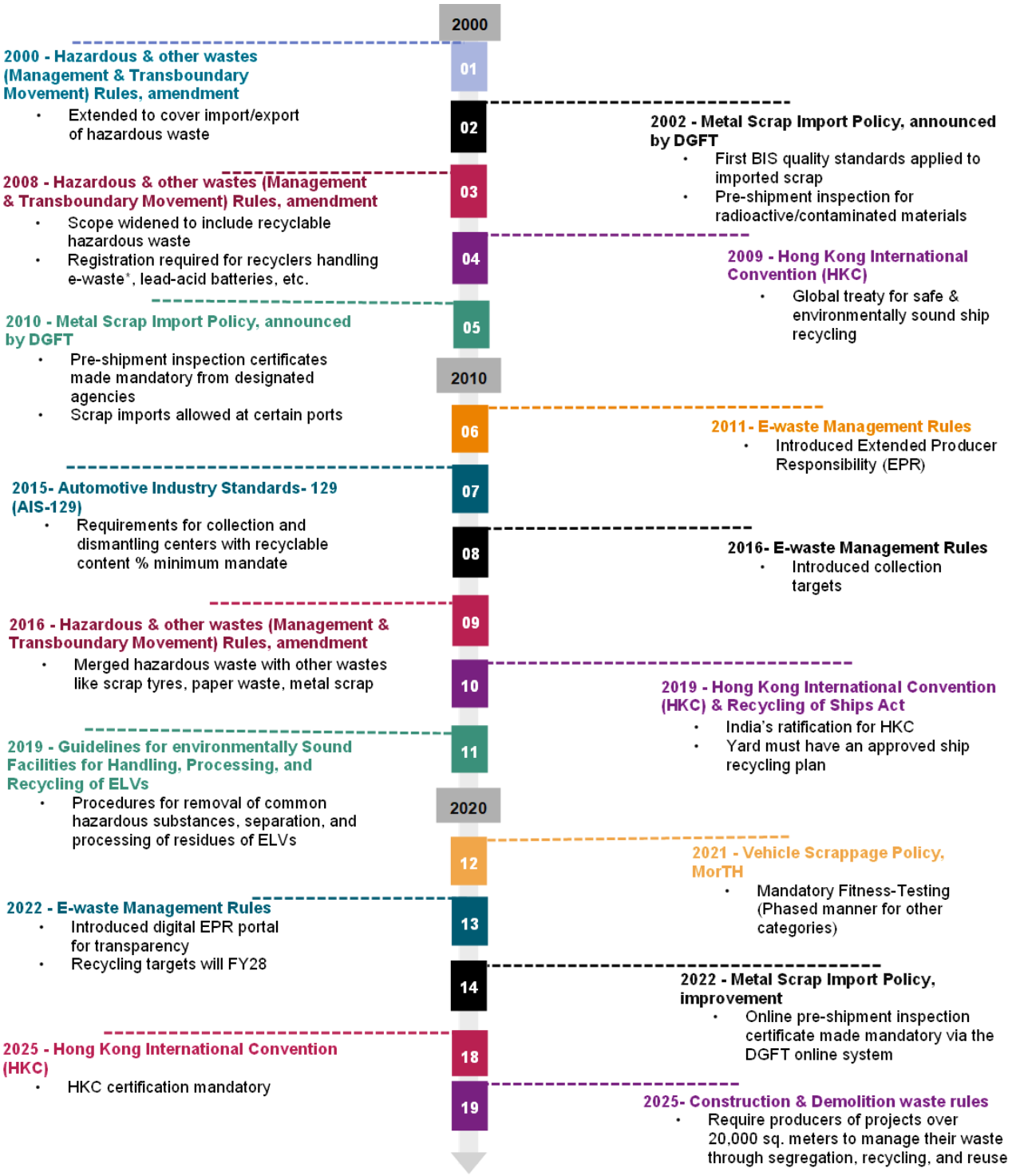
In 2002, the Directorate General of Foreign Trade (DGFT) introduced the Metal Scrap Import Policy, which established India's first dedicated quality-control framework for imported metal scrap. The policy applied Bureau of Indian Standards (BIS) norms to imported scrap and introduced pre-shipment inspections for radioactive and contaminated material. These measures were intended to prevent unsafe consignments from entering the country and improve the quality and reliability of imported scrap used by domestic recyclers and steel producers.

The regulatory framework was strengthened further in 2008, when hazardous waste rules were expanded to cover recyclable hazardous waste. The amendment introduced registration requirements for recyclers handling materials such as e-waste, batteries and other recoverable waste streams. By requiring recyclers to operate through authorized facilities, the amendment marked an important step towards formalisation of the recycling sector and improved monitoring of environmentally sensitive recycling activities.

A significant international development occurred in 2009 with the adoption of the Hong Kong International Convention (HKC) for the Safe and Environmentally Sound Recycling of Ships. The convention established global standards for ship recycling, including hazardous material management, recycling plans, worker safety and facility authorisation. In 2010, DGFT further strengthened the Metal Scrap Import Policy by mandating pre-shipment inspection certificates from designated agencies and restricting imports to designated ports equipped to handle scrap consignments. These changes improved traceability, strengthened quality control, enhanced customs oversight and reduced the risk of contaminated or incorrectly declared scrap entering domestic recycling channels.

The introduction of the E-Waste Management Rules in 2011 marked a fundamental shift in India's waste management approach through the introduction of Extended Producer Responsibility (EPR). For the first time, producers of electrical and electronic products were made responsible for facilitating collection and recycling of end-of-life products. The framework covered refrigerators, air conditioners, washing machines, televisions, computers and other consumer durables containing valuable metallic components. Although the rules did not initially prescribe collection targets, they established the principle of producer accountability and created the foundation for subsequent take-back systems, collection networks and recycling targets. Overall, the regulatory developments between 2000 and 2011 established four critical pillars of India's modern scrap ecosystem: control of hazardous and recyclable waste movement, stronger quality standards for imported scrap, formalisation of recycling activities through registration and authorisation, and the introduction of producer responsibility for end-of-life products. These measures created the legal and institutional architecture on which subsequent frameworks for vehicle scrappage, ship recycling, batteries, e-waste, construction and demolition waste, and digital traceability systems were later built.

Figure 28 : Evolutionary timeline of the steel scrap recycling initiative



State-level policies and action plans

Several states have also introduced their own measures for vehicle scrapping and scrap management.

Table 31 : State-wise policies and plans

Timeline	State	Aim	Measures
Aug-18	Delhi	Scrap 10-year-old diesel vehicles and 15-year-old petrol vehicles	Up to 25% rebate on road tax with vehicle scrapping certificate
Dec-18	Kolkata, West Bengal	Air pollution control	Phasing out/scrapping of more than 15-year-old commercial vehicles based on the Eastern Bench of the NGT; only four stroke LPG three-wheelers allowed
Feb-19	Kohima, Nagaland	Air quality monitoring	Phasing out 15-year-old commercial diesel vehicles
Sep-19	Mumbai, Maharashtra	Action plan for control of air pollution	Bharat Stage (BS)-II and BS-III bus scrapping policy developed; restrict age of taxies to 20 years and 16 years for autorickshaws
2021	Madhya Pradesh	Vehicles scrappage policy	Incentives on new vehicle purchase; waiver of pending dues/liabilities
Jul-22	Assam	Vehicle Scrappage Policy of Assam, 2022	Incentivise voluntary scrappage of old and unfit vehicles; support to RVSF
Dec-22	Odisha	Improve air quality, regularise informal facilities and promote circular economy	Vehicles over 15 years old banned in low emission zones; incentives to customers; land incentives, capital investment subsidy, SGST reimbursement to RVSFs

Source: Crisil Intelligence

The pattern across states is clear. The early movers (Delhi, Kolkata, Kohima and Mumbai) focused mainly on air quality and pollution control, using age-based bans on older vehicles.

The later adopters (Madhya Pradesh, Assam and Odisha) took a broader approach, combining pollution goals with economic incentives for scrapping, support for RVSFs and promotion of the circular economy.

Legal Framework: Acts/ Rules notified by Government of India that empowers Central Government to take enforceable actions

The Government of India has established a comprehensive regulatory framework across major scrap-generating sectors through sector-specific Acts and Rules. These provisions define the responsibilities of stakeholders, designate enforcement authorities, and provide legal powers for monitoring, inspections, penalties, and compliance actions. Mapping these enforceable provisions helps identify the regulatory levers available to improve scrap collection, formalization, traceability, and environmentally compliant recycling across key scrap streams.

Table 32 : Key legally enforceable Acts/ Rules notified by Government of India

Parent act / convention	Relevant rule / Provision under the act	Sector Covered	Primary Enforcement Body
Motor Vehicles Act, 1988	Vehicle Scrapping Facility Rules, 2021; amendments in 2022, 2024 & 2025	**Automobiles (ELVs)**	MoRTH
	ELV Rules, 2025 effective Apr-25	**Automobiles (ELVs)**	MoRTH
Environment (Protection) Act, 1986	C&D Waste Management Rules, 2025; supersede 2016 Rules; effective Apr-26	**Construction & Demolition**	CPCB
	E-Waste Management Rules, 2022; amendments in 2023 & 2024	**Consumer Durables/ Electronics**	CPCB
	Battery Waste Management Rules, 2022; amendments in 2023, 2024 & 2025	**Consumer Durables / Automotive Batteries**	CPCB
	Hazardous & Other Wastes Rules, 2016; latest amendment in 2025	**Automobiles, Ship Recycling, Consumer Durables**	CPCB
	Solid Waste Management Rules, 2026; supersede 2016 Rules; effective Apr-26	**Municipal Scrap Streams, Construction & Demolition**	CPCB
Recycling of Ships Act, 2019	Ship Recycling Facility Authorization provisions	**Ship Recycling**	Directorate General of Shipping (DGS)
	Inventory of Hazardous Materials (IHM) provisions	**Ship Recycling**	Directorate General of Shipping (DGS)
	Ready for Recycling Certificate provisions	**Ship Recycling**	Directorate General of Shipping (DGS)
	Ship Recycling Plan (SRP) requirements	**Ship Recycling**	Directorate General of Shipping (DGS)
	Recycling of Ships Rules, 2021; amended in 2025; Regulations, 2026	**Ship Recycling**	Directorate General of Shipping (DGS)
Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009	Convention entered into force Jun-25; implemented in India through domestic ship-recycling framework	**Ship Recycling**	Implemented through DGS

Source: Industry, Crisil Intelligence

1. Motor Vehicles Sector

The Motor Vehicles Act, 1988, along with the Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021, forms the core legal basis for vehicle scrappage and ELV management. The Act authorizes the Ministry of Road Transport and Highways (MoRTH) to regulate vehicle registration, scrapping facilities, and related functions. The Central Motor Vehicles Rules, 1989, further specify provisions related to vehicle fitness, registration, and testing stations, ensuring compliance through MoRTH's enforcement mechanisms.

2. Environment (Protection) Act, 1986

This parent legislation provides overarching authority for environmental regulation and enforcement. Under its umbrella, several sector-specific rules have been notified:

- **Construction & Demolition Waste Management Rules, 2016**: Regulate the handling and disposal of C&D waste, enforced by the Central Pollution Control Board (CPCB).
- **E-Waste (Management) Rules, 2022**: Govern electronic waste, including consumer durables, with CPCB as the primary enforcement body.
- **Battery Waste Management Rules, 2022**: Cover automotive and consumer batteries, ensuring environmentally sound disposal.
- **Hazardous and Other Wastes Rules, 2016**: Address hazardous waste management across automobiles, ship recycling, and consumer durables.
- **Solid Waste Management Rules, 2016**: Focus on municipal and construction waste streams, with CPCB overseeing compliance.

3. Ship Recycling Act, 2019

- This Act establishes a comprehensive legal framework for ship recycling, including:
    - **Facility Authorization**: Mandates licensing of ship recycling yards.
    - **Inventory of Hazardous Materials (IHM)**: Ensures ships are equipped with proper documentation.
    - **Ready for Recycling Certificate & Ship Recycling Plan (SRP)**: Require ships to obtain certification before recycling.
    - **Ship Recycling Rules, 2021**: Detail operational and safety standards enforced by the Directorate General of Shipping (DGS).

4. International Convention Implementation

India has adopted the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, through DGS regulations. This includes requirements for IHM, SRP, facility authorization, and survey & certification, aligning domestic standards with international best practices.

Automobile- Legally enforceable Acts/ Rules notified by Government of India

The automobile segment faces seven major challenges.

- RVSF penetration is low in most states. Currently, there are about 195 RVSFs, with formal channels handling less than 2% of auto scrap (as per the CVS data on the Parivahan portal).
- RVSF scrap reporting is poor, with inconsistent or partial data.
- Informal scrapping channels pay vehicle owners a higher amount for their vehicles than formal ones.
- RC deregistering is not being carried out properly.
- Illegal trading of Certificates of Deposit (CDs) is a problem.
- Skilled labour availability is very low, and gas cutting is common across all areas.

Automobile sector is supported by a structured regulatory framework covering vehicle scrapping, deregistration, ELV generation, hazardous waste management, and battery recycling.

Table 33 : Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced By (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021	State Transport Authorities / MoRTH	Formal scrap generation	Rule 5: Vehicle Scrapping Facility must obtain registration before operation
	State Transport Authorities / MoRTH	Authorized scrapping capacity	Rule 6: Registration Authority empowered to grant/refuse registration
	State Transport Authorities / MoRTH	Compliance / Formalization	Rule 8: Registration may be suspended or cancelled for violations
	State Transport Authorities / MoRTH	Reporting compliance	Rule 11: Facility required to maintain records and furnish information
	State Transport Authorities / MoRTH	Collection %	Rule 18: Certificate of Deposit upon receipt of vehicle
	State Transport Authorities / MoRTH	Traceability / Formalization	Rule 19: Certificate of Vehicle Scrapping after scrapping process
	MoRTH	ELV generation	Rule 175A onwards: Vehicles failing fitness requirements may be declared unfit
Central Motor Vehicles Rules, 1989	State Transport Authorities	Vehicle retirement	Fitness Certificate renewal requirements for older vehicles
Motor Vehicles Act, 1988	State Transport Authorities	Deregistration / ELV generation	Section 56: Mandatory certificate of fitness for transport vehicles
	State Transport Authorities	Deregistration	Section 55: Cancellation of registration where vehicle incapable of use
Environment (Protection) Act, 1986	CPCB/SPCBs	SOP compliance	Section 5: Power to issue directions including closure or regulation
	CPCB/SPCBs	Compliance	Section 15: Penalties for contravention
Hazardous & Other Wastes Rules, 2016	CPCB/SPCBs	Hazardous component management	Rule 6: Authorization requirement for handling hazardous waste
	CPCB/SPCBs	SOP compliance	Rule 8: Responsibilities of occupiers for environmentally sound management
Battery Waste Management Rules, 2022	CPCB	Battery collection %	EPR obligations and mandatory collection/recycling targets

Source: Industry, CRISIL Intelligence

Enforcement of these provisions can strengthen formal vehicle scrappage, improve traceability of end-of-life vehicles, enhance authorized scrapping capacity, and increase recovery of recyclable materials through the organized ecosystem.

Table 34 : Key action plans and implementation teams- Automobile

Unique Problem	Action Plan	Implementation Team
RVSF penetration is low in states - currently 195 RVSFs with <2% of Auto scrap handling (as per CVS, on Parivahan portal)	Drive state-wise expansion of RVSFs to improve geographic coverage and increase the share of end-of-life vehicles processed through authorised scrappage facilities.	MoRTH to lead implementation with State Transport Depts + MoEFCC + MoS
RVSF scrap reporting poor (inconsistent / partial data etc.)	Standardise digital scrap reporting and integrate it with VAHAN and deregistration systems, supported by stronger compliance monitoring and regular state-level reporting.	MoRTH (lead); partners: State Transport, MoS, NIC/VAHAN teams
Higher amount paid to vehicle owner in case of scrapping illegally	Link scrappage incentives to verified deregistration and RVSF certification, while strengthening enforcement and transaction traceability to discourage illegal scrapping.	MoRTH + State Transport; partners: MoS, MoF, State GST/Commercial Tax
RC deregistering is not being carried diligently	Enable seamless auto-deregistration through RVSF certificate uploads and strengthen monitoring of vehicle status and pending deregistration cases.	MoRTH (lead); partners: State RTOs, NIC/IT teams

Unique Problem	Action Plan	Implementation Team
Trading of CDs	Strengthening controls on Certificate of Deposit (CD) transactions by linking sales to required test certification and enhancing compliance checks across RVSFs and enforcement agencies.	MoRTH (lead); State enforcement, MoS

Refer to annexures for abbreviations
Source: Crisil Intelligence

The implementation approach will follow a clear RACI structure, with MoRTH providing overall accountability across the initiatives, while relevant central ministries, State Transport Departments, RTOs, RVSFs and other institutional partners will be responsible for execution, consultation and coordination as appropriate.

- RVSF penetration low in states - currently 195 RVSFs with <2% of Auto scrap handling (as per CVS, on Parivahan portal): For expanding RVSF penetration, State Transport Departments and RTOs will be responsible for implementation, with MoRTH accountable for overall delivery. MoEFCC and State Industries will be consulted on the relevant policy and industry aspects.
- RVSF scrap reporting poor (inconsistent / partial data etc.): For improving RVSF scrap reporting, NIC/VAHAN and State RTOs will be responsible for the system and compliance aspects, while RVSFs will be responsible for filing. MoRTH will remain accountable, with State Transport Departments consulted on implementation.
- Higher amount paid to vehicle owner in case of scrapping illegally: For addressing illegal scrappage and related payment practices, State Transport authorities will be responsible for enforcement, supported by the Ministry of Finance for incentive operations and mills/large aggregators. MoRTH will be accountable, with State GST authorities consulted on relevant transaction and tax matters.
- RC deregistering is not being carried diligently: For improving RC deregistration, NIC and State RTOs will be responsible for system execution, with MoRTH accountable for implementation. State Transport Departments will be consulted, while MoS and Niti Aayog will be kept informed.
- Trading of CDs: For strengthening controls over trading of Certificates of Deposit, RVSFs will be responsible for logging and compliance and State enforcement agencies for checks. MoRTH will be accountable, with State Home Departments consulted on enforcement-related matters.
- Gas cutting prevalent in all areas: For addressing unsafe gas-cutting practices, RVSFs will be responsible for implementation, supported by State Labour Departments and State Pollution Control Boards for inspections. MoRTH will be accountable for licensing conditions, while MoEFCC will be accountable for environmental and occupational health and safety norms. MoSDE will be consulted on the relevant skilling and workforce aspects.
- Skilled labor is very low: For addressing the shortage of skilled labour, States, NSDC and training partners will be responsible for delivery, with RVSFs supporting on-the-job training. MoRTH will be accountable, while MoSDE and State Skill Missions will be consulted on the skilling framework and implementation.

Overall, the RACI structure is intended to ensure clear ownership of implementation while maintaining coordination across central ministries, State-level authorities, RVSFs, technology partners and industry stakeholders.

Ship Recycling- Legally enforceable Acts/ Rules notified by Government of India

The ship recycling segment faces four specific challenges:

- Volumes and scrap yields have not been consistently reported after fiscal 2021.
- There is limited transparency in scrap grade segregation, with unclear separation between re-rollable, re-melting and re-sale grades.
- Resaleable items leak into informal channels.
- Gas cutting is common across all areas.

Ship recycling ecosystem is governed through dedicated legislation aligned with international standards, with provisions covering facility authorization, hazardous material management, reporting, and environmental compliance.

Table 35 : Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced by (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
The Recycling of Ships Act, 2019	Directorate General of Shipping (DGS)	Compliance %, Formal Collection %	Section 16: Ships may be recycled only at authorized Ship Recycling Facilities (SRFs).
	Directorate General of Shipping (DGS)	Compliance %	Section 17: Competent Authority may grant, renew, suspend or revoke authorization of Ship Recycling Facilities.
	Directorate General of Shipping (DGS)	Compliance %, Authorized Capacity	Section 18: Inspection of Ship Recycling Facilities for compliance with the Act and Rules.
	Directorate General of Shipping (DGS)	Reporting Compliance	Section 20: Ship Recycling Facilities must maintain records and furnish information as prescribed.
	Directorate General of Shipping (DGS)	Compliance %, Hazardous Material Management	Sections 7–10: Inventory of Hazardous Materials (IHM), certification and survey requirements.
	Directorate General of Shipping (DGS)	Formal Collection %	Section 12: Recycling can commence only after approval of Ship Recycling Plan.
	Directorate General of Shipping (DGS)	Compliance %	Sections 30–34: Penalties, offences and enforcement actions for violations.
Recycling of Ships Rules, 2021	Directorate General of Shipping (DGS)	Compliance %	Authorization procedure, inspections, monitoring and reporting requirements for SRFs.
	Directorate General of Shipping (DGS)	Reporting Compliance	Prescribed formats for maintenance of records, reporting and certification.
Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009	Implemented through DGS under Recycling of Ships Act, 2019	Compliance %	Requires Inventory of Hazardous Materials (IHM), Ship Recycling Plan (SRP), facility authorization and certification regime.
Environment (Protection) Act, 1986	CPCB / SPCBs	Environmental Compliance	Section 5: Power to issue directions including closure, prohibition or regulation of operations.
	CPCB / SPCBs	Compliance %	Section 15: Penalties for violation of environmental requirements.
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	CPCB / SPCBs	SOP Compliance	Rule 6: Authorization for handling hazardous waste streams generated during dismantling.
Hazardous and Other Wastes Rules, 2016	CPCB / SPCBs	Environmental Compliance	Rule 8: Responsibility of occupier for environmentally sound management of hazardous waste.

Source: Industry, CRISIL Intelligence

Effective enforcement is expected to improve formal recycling, ensure environmentally sound dismantling practices, strengthen compliance monitoring, and enhance recovery of recyclable steel through authorized facilities.

Table 36 : Key action plans and implementation teams- Ship Recycling

Unique Problem	Action Plan	Implementation Team
Ship recycling volumes and scrap yields not consistently reported post FY21	Standardise reporting of ship-recycling volumes and scrap yields through digital yard-level reporting and regular consolidated reporting and audits.	MoPSW + MoEFCC; State maritime boards, PCBs, MoS
Limited transparency a scrap grade segregation (re-rollable vs re-melting vs re-sale)	Standardise scrap-grade definitions and strengthen inspection and documentation of scrap lots to improve transparency across recycling and resale channels.	MoS + MoPSW; BIS, industry
Leakage of re-saleable items into informal channels	Strengthen inventory tracking at yards, establish authorised resale channels, and reinforce controls for hazardous and other regulated items.	MoEFCC + MoPSW; Customs, State authorities
Gas cutting prevalent in all areas	Strengthen controls around gas cutting through appropriate permits, gas-free certification, fire-safety readiness and periodic safety audits.	MoEFCC + State Labor Dept; MoPSW

Refer to annexures for abbreviations
Source: Crisil Intelligence

The ship recycling initiatives will be implemented through a coordinated framework involving MoEFCC, MoPSW, State authorities, ship recycling yards, BIS and other relevant stakeholders. MoEFCC will provide overall accountability for environmental and compliance-related interventions, while ship recycling yards and other designated operators will be responsible for implementing the required practices on the ground.

- For improving transparency and reporting of ship recycling volumes and scrap generation, port authorities and recycling yards will be responsible for maintaining and reporting relevant information, with MoEFCC accountable and State maritime/port authorities consulted. This will help strengthen monitoring of recycling activity and improve visibility across the formal ship recycling ecosystem.
- For improving segregation and preventing leakage of re-saleable materials into informal channels, ship recycling yards will be responsible for implementing appropriate segregation, tracking and handling practices, while relevant State and maritime authorities will support inspection and enforcement. BIS and MoPSW will be consulted on standards, operational requirements and sector-specific implementation, with MoEFCC retaining overall accountability.
- For addressing unsafe practices such as gas cutting, ship recycling yards and contractors will be responsible for implementation, supported by State Labour and other relevant authorities for inspections and enforcement.

Overall, the RACI framework places MoEFCC as the key accountable authority, with MoPSW, State authorities, BIS, recycling yards and other stakeholders taking responsibility for implementation, consultation and monitoring across the ship recycling value chain.

Construction & Demolition- Legally enforceable Acts/ Rules notified by Government of India

The construction and demolition segment faces six major challenges:

- Collection rate is low, at about 70%, in fiscal 2025.
- C&D waste processing facilities have not been set up as per targets.
- State PCBs are not reporting C&D waste data annually.
- Landfilling data has not been reported after fiscal 2022.
- Non-standard practices in recycling, with SOPs not being followed.
- Segregation practices are poor.

The C&D waste regulatory framework establishes clear responsibilities for waste generators, urban local bodies, and pollution control authorities across collection, segregation, processing, and reporting.

Table 37 : Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced by (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
Environment (Protection) Act, 1986 (Construction & Demolition Waste Management Rules, 2016)	CPCB / SPCBs / ULBs	Reporting Compliance	Rule 10: State Pollution Control Boards are required to submit annual reports on implementation. Section 15 EPA 1986: Penalties for non-compliance.
Environment (Protection) Act, 1986 (Rules 8 & 9, C&D Rules 2016)	Urban Local Bodies (ULBs)	C&D Processing Capacity	Rule 8 & Rule 9: ULBs must establish collection, processing and disposal facilities and facilitate recycling of C&D waste.
Environment (Protection) Act, 1986	CPCB	Reporting Compliance	Section 18(1)(b): CPCB may issue directions and monitor compliance through reporting mechanisms.
	CPCB / SPCBs	SOP Compliance	Section 5: Power to issue directions including closure, prohibition or regulation of activities.
	CPCB / SPCBs	Compliance %	Section 15: Penalties for contravention of environmental requirements.
Environment (Protection) Act, 1986 (Construction & Demolition Waste Management Rules, 2016)	ULBs	Collection %	Rule 4(1): Waste generators must segregate and store C&D waste separately.
	ULBs	SOP Compliance	Rule 4(3): Large generators must submit waste management plans before approval of construction activity.
	ULBs	C&D Processing Capacity	Rule 6: Local authorities must identify sites and establish collection, processing and recycling facilities.
	SPCBs	Reporting Compliance	Rule 11: SPCBs are required to monitor implementation and submit annual reports.
	CPCB	Reporting Compliance	Rule 12: CPCB responsible for reviewing implementation and preparing consolidated reports.
	SPCBs / ULBs	Applicable Across All Levers	Rule 13: Monitoring and enforcement responsibilities assigned to local authorities and pollution control boards.

Source: Industry, CRISIL Intelligence

Strong enforcement can improve segregation at source, expand processing infrastructure, enhance reporting compliance, and increase recovery of recyclable materials from construction and demolition waste.

Table 38 : Key action plans and implementation teams- Construction & demolition

Unique Problem	Action Plan	Implementation Team
Low collection rate ~70% in FY 25	Strengthen C&D waste collection through mandatory planning for projects above the applicable threshold, better linkage between collection arrangements and project permissions, and wider coverage of designated collection points. Gradually increase formal collection through stronger municipal monitoring.	MoHUA, ULBs, MoRTH, BIS
C&D waste processing facilities not established as per targets	Develop city-level C&D waste processing capacity plans, prioritise facility development in high-generation cities, and streamline land allocation and statutory clearances to accelerate commissioning of processing facilities.	MoHUA, ULBs, MoRTH, BIS
State PCBs not reporting C&D waste annually	Standardise C&D waste reporting formats and timelines, strengthen mandatory reporting by ULBs, and institute periodic state-level compliance reporting to improve data completeness and monitoring.	MoEFCC, MoHUA, State PCBs
Landfilling data not reported post FY22	Establish a consistent methodology for landfill data capture, supported by digital measurement and reporting systems. Strengthen reporting by ULBs and landfill operators to enable reliable tracking of landfill inflows and disposal trends.	MoHUA + ULBs, MoEFCC, PCBs

Unique Problem	Action Plan	Implementation Team
Non-standard in recycling being followed - SOPs not being adhered - SOPs not being adhered to	Standardise and periodically update recycling SOPs and QA/QC requirements, encourage the use of recycled products in construction, and strengthen periodic audits and compliance monitoring.	MoHUA + BIS, MoRTH
Poor segregation practices	Embed on-site segregation requirements in construction contracts, mandate separate handling and storage of C&D waste streams, and strengthen awareness and training of contractors to improve segregation at source.	MoHUA, ULBs, State Urban Depts

Refer to annexures for abbreviations
Source: Crisil Intelligence

The C&D waste initiatives will be implemented through a clear RACI structure, with MoHUA/ULBs providing overall ownership and accountability, while State PCBs, contractors, facility operators, BIS and other stakeholders support execution, consultation and monitoring.

- Collection and processing: ULBs will be responsible for implementation, with MoHUA accountable and State PCBs/Urban Departments or relevant technical stakeholders consulted.
- Reporting and data: State PCBs, ULBs and landfill operators will be responsible for data capture and reporting, with MoHUA accountable and relevant statistical and policy stakeholders consulted/informed.
- Recycling standards: Facility operators and BIS will drive implementation and compliance, with ULBs accountable and MoHUA consulted.
- Segregation: Construction contractors will be responsible for on-site segregation, with ULBs accountable and MoHUA consulted.

Consumers Durables- Legally enforceable Acts/ Rules notified by Government of India

The consumer durables segment faces four main challenges.

- Collection rate was low at about 65% in fiscal 2025.
- There is an unauthorised flow of components to the second-hand market.
- EPR compliance visibility is low beyond Tier 1 cities.
- Hazardous components (refrigerants, oils and foams) are handled improperly.

The regulatory framework for consumer durables primarily focuses on Extended Producer Responsibility (EPR), collection targets, material flow verification, and environmentally sound handling of hazardous components.

Table 39 : Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced by (State/Central)	KPIs/Lever Affected	Specific Enforcement Provisions
E-Waste (Management) Rules, 2022	CPCB	Collection %	Rule 4 & 13: Mandates Extended Producer Responsibility (EPR) targets and establishment of collection infrastructure.
Environment (Protection) Act, 1986	CPCB	Compliance %, Collection %	Rule 15: Empowers CPCB to levy Environmental Compensation (EC).
E-Waste (Management) Rules, 2022	CPCB	Compliance %, Collection %	Rule 16: Empowers CPCB to conduct verification and audits of material flow.
	CPCB	Compliance %, Collection %	Rule 16: Empowers CPCB to conduct verification and audits of material flow.
	CPCB	Compliance %, Collection %	Rule 16: Empowers CPCB to conduct verification and audits of material flow.
	CPCB/SPCBs	Compliance %, Collection %	Rule 16: Mandates random audits and inspections by CPCB/SPCBs.

Relevant Acts/Rules	Enforced by (State/Central)	KPIs/Lever Affected	Specific Enforcement Provisions
Environment (Protection) Act, 1986	CPCB	Compliance %	Section 15 (EPA): Penalties for false reporting and non-compliance.
	CPCB	Compliance %	Section 15 (EPA): Penalties for false reporting and non-compliance.
	CPCB	Compliance %	Section 15 (EPA): Penalties for false reporting and non-compliance.
Hazardous and Other Wastes Rules, 2016	CPCB	SOP Compliance	Rule 10 (ODS Rules): Strict regulations on handling refrigerants.
Ozone Depleting Substances (Regulation and Control) Rules, 2000	CPCB	SOP Compliance	Rule 4 (Hazardous Waste): Mandates authorization and safe disposal of hazardous materials.

Source: Industry, CRISIL Intelligence

Enforcement of these provisions can improve formal collection rates, strengthen compliance across producers and recyclers, increase traceability of material flows, and facilitate higher recovery of recyclable metals through the organized recycling ecosystem.

Table 40 : Key action plans and implementation teams- Consumer Durables

Unique Problem	Action Plan	Implementation Team
Low collection rate -65% in FY 25	Expand the take-back and collection network, register relevant aggregators, and strengthen the shift towards authorised collection channels.	MoEFCC; partners: State PCBs, ULBs, MoS
Unauthorized flow of components to the 2nd hand market	Establish an authorised refurbished category and strengthen documentation and controls for resale of used components.	MoEFCC; BIS, State enforcement
Low EPR compliance visibility beyond tier-1 cities	Strengthen district-level reporting and expand EPR collection and compliance coverage beyond major cities, with greater visibility of PRO and recycler activity.	MoEFCC; State PCBs, ULBs
Improper handling of hazardous components (refrigerants, oils, foams, etc.)	Strengthen recovery infrastructure and safe handling practices at authorised centres, supported by training and compliance monitoring for hazardous components.	MoEFCC + State PCBs; MoPNG, MoSDE

Refer to annexures for abbreviations
Source: Crisil Intelligence

The implementation of the consumer durables initiatives will require coordinated action across central ministries, State authorities, ULBs, Pollution Control Boards, producers and other industry stakeholders. MoEFCC will serve as the overall Accountable authority for driving the key interventions, while producers/RPROs, ULBs, State PCBs and authorised recyclers will be responsible for implementation across their respective areas.

- For improving collection rates, ULBs and collection/aggregation partners will be responsible for strengthening collection mechanisms and coverage, with MoEFCC providing overall accountability and State PCBs and other State authorities consulted on implementation.
- For addressing unauthorised flow of components and strengthening the formal recycling ecosystem, recyclers and State enforcement agencies will be responsible for compliance and enforcement, with MoEFCC accountable and BIS/State PCBs consulted. Producer and RPRO stakeholders will be responsible for improving EPR compliance and visibility, supported by MoEFCC, while State PCBs will play a key role in monitoring and enforcement.
- For improving collection and recycling of low-value or hazardous components, producers/RPROs will be responsible for establishing appropriate recovery and processing mechanisms, with MoEFCC accountable and State PCBs consulted. Similarly, authorised recyclers will be responsible for implementing safe handling and recovery practices for hazardous components, with relevant State PCBs and industry stakeholders providing oversight and technical inputs.

Overall, MoEFCC will remain Accountable for the implementation framework, while State PCBs, ULBs, producers, recyclers and enforcement agencies will assume responsibility for execution, monitoring and compliance.

Relevant ministries and industry bodies will be consulted where required, while stakeholders such as MoS and NITI Aayog will be kept informed of progress and key developments.

The Government of India has established a comprehensive regulatory framework across major scrap-generating sectors through sector-specific Acts and Rules. These provisions define the responsibilities of stakeholders, designate enforcement authorities, and provide legal powers for monitoring, inspections, penalties, and compliance actions. Mapping these enforceable provisions helps identify the regulatory levers available to improve scrap collection, formalization, traceability, and environmentally compliant recycling across key scrap streams.

Table 41:Key legally enforceable Acts/ Rules notified by Government of India

Parent act / convention	Relevant rule / Provision under the act	Sector Covered	Primary Enforcement Body
Motor Vehicles Act, 1988	Vehicle Scrapping Facility Rules, 2021; amendments in 2022, 2024 & 2025	Automobiles (ELVs)	MoRTH
	ELV Rules, 2025 effective Apr-25	Automobiles (ELVs)	MoRTH
Environment (Protection) Act, 1986	C&D Waste Management Rules, 2025; supersede 2016 Rules; effective Apr-26	Construction & Demolition	CPCB
	E-Waste Management Rules, 2022; amendments in 2023 & 2024	Consumer Durables/ Electronics	CPCB
	Battery Waste Management Rules, 2022; amendments in 2023, 2024 & 2025	Consumer Durables / Automotive Batteries	CPCB
	Hazardous & Other Wastes Rules, 2016; latest amendment in 2025	Automobiles, Ship Recycling, Consumer Durables	CPCB
	Solid Waste Management Rules, 2026; supersede 2016 Rules; effective Apr-26	Municipal Scrap Streams, Construction & Demolition	CPCB
Recycling of Ships Act, 2019	Ship Recycling Facility Authorization provisions	Ship Recycling	Directorate General of Shipping (DGS)
	Inventory of Hazardous Materials (IHM) provisions	Ship Recycling	Directorate General of Shipping (DGS)
	Ready for Recycling Certificate provisions	Ship Recycling	Directorate General of Shipping (DGS)
	Ship Recycling Plan (SRP) requirements	Ship Recycling	Directorate General of Shipping (DGS)
	Recycling of Ships Rules, 2021; amended in 2025; Regulations, 2026	Ship Recycling	Directorate General of Shipping (DGS)
Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009	Convention entered into force Jun-25; implemented in India through domestic ship-recycling framework	Ship Recycling	Implemented through DGS

Source: Industry, Crisil Intelligence

Table 42: Principal regulatory levers across scrap-generating sectors

Segment	Key regulatory lever	Intended impact on scrap value chain
Automobiles	RVSF registration, vehicle fitness testing, Certificate of Deposit, Certificate of Vehicle Scrapping, RC deregistration	Formalise ELV collection, improve traceability, prevent illegal dismantling and increase quality scrap recovery
Consumer durables / e-waste	EPR targets, producer registration, material-flow audits, environmental compensation	Increase formal collection, improve recycling accountability and reduce leakage to informal dismantling channels
Ship recycling	Authorised ship recycling facilities, IHM, Ship Recycling Plan, hazardous waste compliance	Ensure safe dismantling, improve environmental compliance and formalise recovery of re-rollable and melting scrap
Construction and demolition waste	Waste management plans, segregation requirements, collection and processing obligations, annual reporting	Improve C&D waste collection, recover embedded steel and reduce direct landfilling or informal disposal
Batteries and hazardous waste	EPR obligations, authorised handling, safe storage and disposal requirements	Improve recovery of metals and prevent unsafe handling of hazardous components

Source: Industry, Crisil Intelligence

The automobile sector illustrates how regulation is formalising the scrap value chain. The Motor Vehicles Act, 1988 and Vehicle Scrapping Rules, 2021 established Registered Vehicle Scrapping Facilities (RVSFs) as authorised entities for end-of-life vehicle dismantling, creating a formal process linked to deregistration. However, formalisation remains limited. Despite 195 registered RVSFs as of September 2025, formal channels account for less than 2% of automobile scrap volumes, indicating continued reliance on informal dismantling networks. Private initiatives are complementing policy efforts. Tata Motors' Re.Wi.Re network is expanding authorised scrapping capacity, while platforms such as Kabadiwala Connect leverage technology to improve collection, traceability and integration of informal recyclers.

A similar trend is visible in ship recycling, e-waste, consumer durables and C&D waste, where regulations and EPR frameworks have strengthened. Going forward, stricter enforcement, better reporting and stronger monitoring will be essential to improve collection efficiency, traceability and the availability of quality domestic steel scrap.

Chapter 4

Best Practices



Advanced economies have improved scrap recycling outcomes by combining clear ownership of end-of-life materials, strong formal-channel incentives, traceable transactions and stringent enforcement.

Table 43: Global best practices

Economy	Global practice	How it is implemented	Impact on execution / compliance	Inspiration for India
Japan	Upfront recycling fee for ELVs	Vehicle owners pay a mandatory recycling fee during the vehicle lifecycle; funds are released after verified recycling through authorised channels.	Pre-funds end-of-life processing and gives formal recyclers a predictable revenue stream.	Introduce an ELV recycling fee linked to VAHAN, released to RVSFs only after verified scrapping.
European Union	Producer-funded free take-back	ELV owners can hand over vehicles to authorised treatment facilities without disposal cost; manufacturers carry responsibility under EPR.	Removes consumer cost burden and reduces diversion to informal disposal.	Develop OEM-funded take-back for vehicles and large steel-containing appliances.
Australia	Cash restrictions and dealer registration	Scrap dealers must be registered, verify seller identity, maintain records and avoid cash transactions in key jurisdictions.	Improves traceability, reduces theft-linked scrap and limits informal cash-based trading.	Introduce KYC-based scrap procurement and restrict cash payments above a defined threshold for metal scrap.
United States	High daily penalties for environmental violations	Environmental laws impose large per-day penalties for air, water and hazardous waste violations.	Makes continuing non-compliance financially unsustainable and encourages preventive compliance.	Increase daily compounding penalties for uncorrected violations and repeat offenders.
China	Strong enforcement with daily compounding fines	Environmental violations that are not corrected can attract daily accumulating fines with strong regulatory follow-up.	Makes non-compliance more expensive than compliance, especially for industrial-scale operators.	Introduce escalating or uncapped daily fines for illegal dumping, false reporting and hazardous waste mishandling.
India: current gap	Formal framework exists, but implementation is uneven	India has RVSFs, e-waste EPR, battery rules, C&D waste rules and ship recycling regulations, but informal channels still dominate several streams.	Legal architecture is in place, but formal-channel economics and enforcement remain weak.	Shift from policy creation to implementation excellence through stronger enforcement, cost parity and traceable transactions.

Sources: JARC (jarc.or.jp); EU Commission DG Environment (environment.ec.europa.eu); EUR-Lex (CELEX:32024L1203); US EPA Federal Register Vol.90 No.5 (January 8, 2025); IEA Policy Database iea.org/policies/25165 (updated 23 October 2024); NSW Police SLED (police.nsw.gov.au); PIB India PRID=2209837; IndiaCode.nic.in (EPA as amended by Jan Vishwas Act 2023), Industry, Crisil Intelligence

Advanced economies demonstrate that successful scrap recycling systems are built around a simple principle: the formal route must be economically viable and easier to use, while the informal route must carry legal and financial consequences. Japan and Korea show the importance of pre-funded or producer-funded recycling systems, which ensure that recycling costs are not left to be recovered only from scrap resale value. This is particularly relevant for India, where formal recyclers often lose material to informal buyers who can offer higher cash payouts because they operate outside compliance norms.

For India, the policy architecture has already begun to take shape through RVSFs, e-waste EPR, battery rules, ship recycling regulations, C&D waste rules and hazardous waste norms. However, the main challenge is no longer only the absence of regulation; it is the gap between regulation and on-ground execution. Formal players continue to face a cost disadvantage due to taxes, compliance costs, documentation requirements and limited ability to match informal cash offers.

The key takeaway is that infrastructure alone will not formalise India's scrap ecosystem. RVSFs, C&D plants, authorised recyclers and digital portals will deliver results only when supported by assured feedstock, enforceable compliance and

credible deterrence. India has created the legal foundation; the next phase must focus on execution excellence so that formal recycling becomes the default channel for scrap generation, collection and processing.

Industry Recommendations to strengthen formalisation, traceability and processing efficiency across the scrap ecosystem

Table 44: Industry recommendations

Control Gap	Focus	Priority Actions	CRISIL'S Response
Limited incentives for formal scrap procurement	Incentivize procurement from formal recyclers	Encourage steelmakers to procure formal and compliant recyclers through transparent price incentives / premiums for properly sized, segregated, contamination-controlled and traceable scrap.	Promote quality-linked procurement frameworks to reward traceable and compliant scrap, improving material quality, supply-chain transparency and formal sector participation.
Limited recognition of processing equipment as recycling infrastructure	Recognize processing equipment as core recycling infrastructure	Recognize hydraulic shears, rail cutters, magnets, grabs, balers, shredders and material handlers, with suitable adoption support / incentives to accelerate mechanization and equipment adoption.	Recognize scrap-processing equipment as critical recycling infrastructure to accelerate mechanization, improve operational efficiency and enhance scrap quality.
Limited traceability and formalization in scrap procurement	Promote traceable procurement	Expand KYC-based scrap procurement and digital payment mechanisms to improve traceability, formalization and transparency.	Strengthening traceability and formalization across the scrap value chain through greater adoption of KYC-based procurement and digital payment mechanisms.
Limited mechanized processing in public-sector scrap disposal	Enable mechanized processing in public-sector scrap disposal	Allow on-site mechanized processing in public-sector auctions and contracts involving railway, infrastructure, vehicle and industrial scrap, while encouraging formal recyclers to participate.	Facilitate on-site mechanized processing in public-sector scrap disposal to improve material recovery, operational efficiency and participation of organized recyclers.
Gaps in scrap-import facilitation and port readiness	Improve PSIC facilitation and port readiness	Effectively implement the PSIC exemption for imports from notified safe countries and install radiation-detection scanners at the remaining eight designated ports to enable smoother and faster scrap clearance.	Strengthen scrap-import facilitation through effective implementation of PSIC-related measures and enhanced port infrastructure to enable faster and more efficient clearance processes.

Source: Industry, Crisil Intelligence

Industry consultations identified a set of priority interventions to strengthen the formal scrap ecosystem, with emphasis on formal procurement, mechanisation, traceability and streamlined regulation. Key recommendations include incentivising procurement from compliant recyclers, promoting mechanised scrap processing and recognising processing equipment as recycling infrastructure. Further, KYC-based procurement, digital payment trails and improved traceability can support greater formalisation and transparency. Industry also highlighted the need to facilitate scrap imports through smoother PSIC processes and improved port infrastructure, while adopting a risk-based regulatory approach that differentiates compliant recyclers from non-compliant operators. These measures are broadly aligned with recent policy recommendations around formalisation, traceability, mechanisation and strengthening domestic recycling capacity.

Annexures

Scrap classification

Steel scrap refers to discarded steel that is recovered from end-of-life products (e.g., vehicles, appliances, machinery, buildings) and from industrial manufacturing off-cuts and is processed for reuse as a metallic input in steelmaking. It is typically categorized as per its origin and physical form.

Scrap is a strategically important raw material because it enables steel production with lower energy use and emissions than primary steelmaking routes dependent on iron ore and coking coal. It is the principal feedstock for electric arc furnace (EAF) and induction furnace (IF) routes, and it is also used as a cooling and metallic charge component in basic oxygen furnace (BOF) operations. As global steel value chains face decarbonization pressures, the role of high-quality scrap increases because it supports higher recycled content in steel and reduces reliance on carbon-intensive virgin inputs.

Classification by origin

By origin, all ferrous scrap is typically grouped into three broad categories-home (virgin) scrap, new (prompt) scrap, and old (obsolete) scrap. This classification is useful in scrap market analysis because origin strongly influences quality, chemistry certainty, processing needs, yield, and price, all of which ultimately affect melt cost and finished steel quality.

Home scrap (also called virgin scrap) is the internal scrap generated within steel mills during the production process. It includes crop ends, rejected billets and slabs, defective castings, and other process rejects. Home scrap is the cleanest form of scrap because its chemistry is fully known, and it is recycled directly within the plant that generated it. Its sub-grades include CR (cold-rolled) busheling (yield: 97-98%), which refers to clean, cold-rolled offcuts.

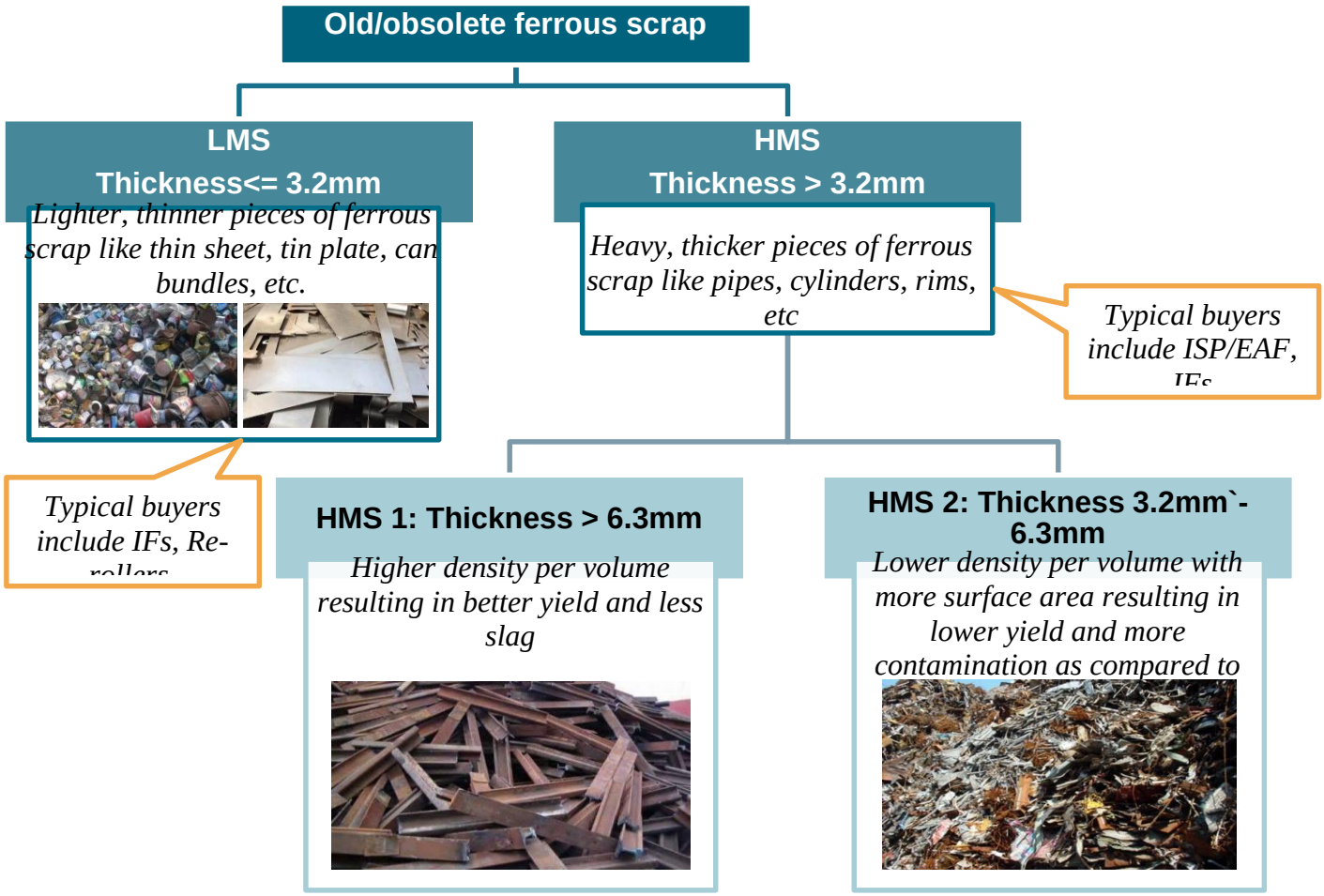
New scrap (also called prompt scrap) is unused steel during manufacturing or fabrication processes in the downstream of steel mills. Examples include stamping and punching waste from auto body panel production (yield: 99-100%) and end cuttings and bundles from structural fabrication (yield: 94-97%). New scrap is generally of known composition and high purity, making it a preferred feedstock for quality-conscious consumers.

Old scrap (also called obsolete scrap) is post-consumer ferrous scrap that has completed its service life. This is the most heterogeneous category, spanning everything from end-of-life vehicles and scrapped ships to demolished buildings and discarded appliances. Old scrap requires the most processing to separate contaminants and achieve furnace-ready grades.

Classification by physical form

By physical form, ferrous scrap traded in the Indian market is broadly classified into two main categories based on thickness: light melting scrap (LMS) and heavy melting scrap (HMS). This distinction is important because it influences how scrap is handled, processed, and charged into steelmaking furnaces, as well as its suitability for different types of steel production.

Figure : LMS vs HMS classification



Source: Crisil Intelligence

LMS consists of lighter, thinner pieces of ferrous scrap with a thickness of 3.2 mm or less. This includes thin sheet metal, tin plate, can bundles and similar materials. LMS is generated primarily from consumer durables, automotive body panels and light fabrication operations. It is bought by units with induction furnaces, re-rollers and foundries. LMS has lower yield (90-92%) due to higher surface area, more contamination and greater oxidation losses during melting.

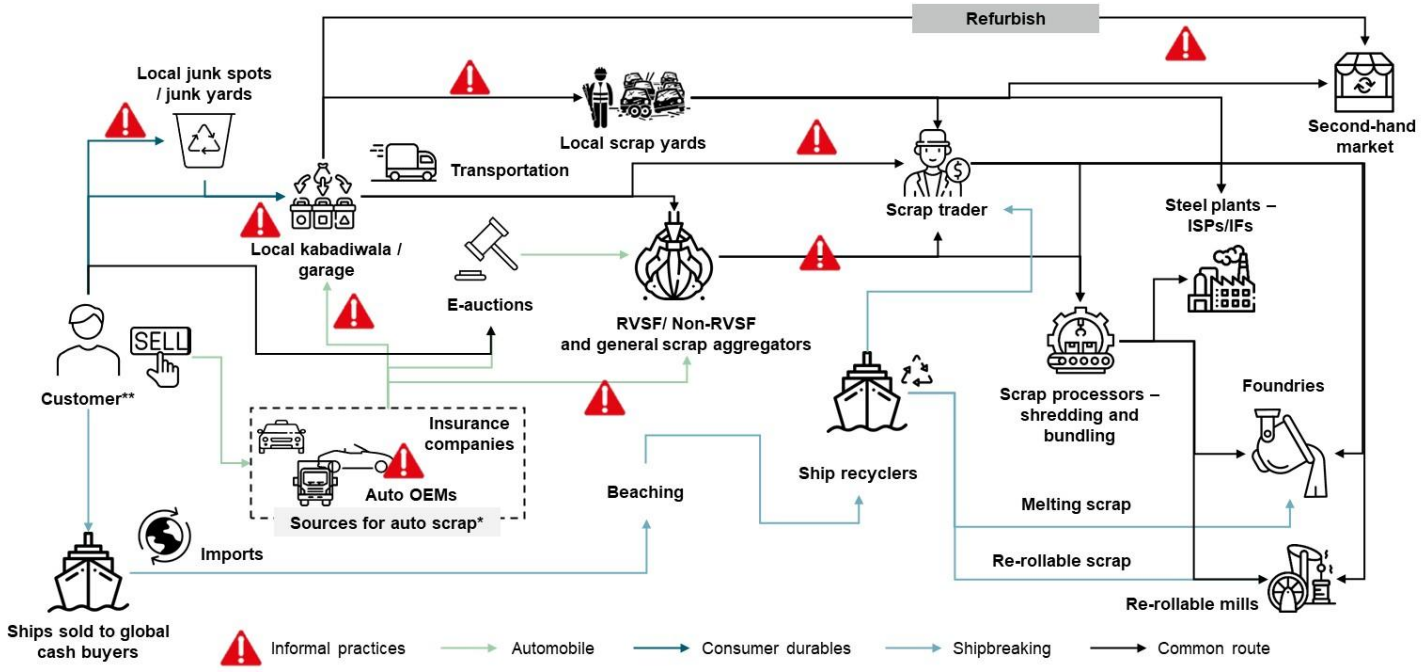
HMS consists of heavier, thicker pieces of ferrous scrap with a thickness greater than 3.2 mm. This includes pipes, cylinders, rims, structural sections and plates. HMS is generated primarily from ship breaking, railways, building and C&D, and heavy industry. Its buyers are ISPs, EAFs, and larger induction furnaces that can handle the heavier charge. HMS is further subdivided into two grades:

HMS 1, with its thickness of 6.3 mm or more, offers higher density per volume, resulting in better yield and less slag generation during melting.

HMS 2, thickness between 3.2 mm and 6.3 mm, has lower density and more surface area, resulting in somewhat lower yield and more contamination compared with HMS 1.

Steel scrap value chain

Figure : Overall scrap value chain



Source: Crisil Intelligence

[A flow diagram showing the convergence of automobile (red arrows), consumer durables (dark blue arrows), shipbreaking (light blue arrows) and common routes (black arrows), with nodes for local junk spots, local kabadiwala, e-auctions, RVSFs, ship recyclers, scrap processors, scrap traders, steel plants, foundries, re-rollable mills, and the second-hand market. Informal practices are flagged with warning triangles.]

***Auto Sources include – individual car owners, taxi fleet operators, trucking companies, insurance companies, govt departments, automobile dealers & OEMs*

***Customers can be enterprises, households, ship owners etc.*

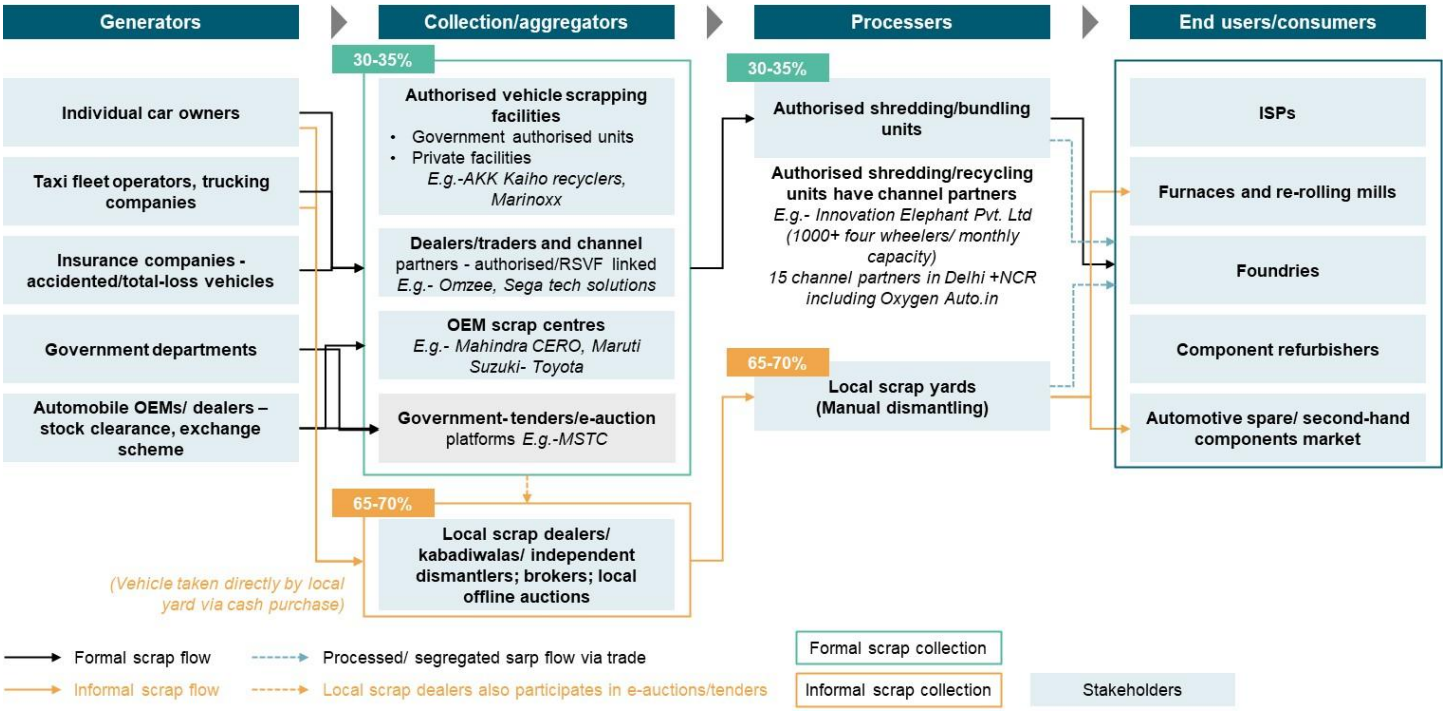
Processing is the stage where collected scrap is converted into tradable and usable grades. Depending on the source and quality of material, this can involve dismantling, segregation, cutting, shredding, bundling and separation of ferrous and non-ferrous content. This stage makes scrap suitable for onward sale either as re-melting scrap, re-rollable scrap or reusable material.

Consumption is the final stage of the value chain, where processed scrap reaches its end users. These include steel plants, furnaces, re-rolling mills, foundries and reuse markets. The destination depends on the form and quality of the scrap, with some material going into direct re-rolling or reuse and the rest moving into re-melting routes.

Automobile value chain

The automobile sector is, by both current volume and long-term potential, the most consequential segment within India's scrap ecosystem because it converts a fast-growing stock of vehicles into a relatively steady stream of recoverable ferrous and non-ferrous metals. In fiscal 2025, end-of-life vehicles (ELVs) accounted for 57% of all old scrap generated in India, up sharply from 30% in fiscal 2015. This rising share is expected to continue as three structural forces reinforce each other: expanding vehicle ownership (a larger "in-use" vehicle base inevitably produces a larger ELV stream over time), the gradual implementation and enforcement of vehicle scrappage and fitness-related policies (increasing the probability that old vehicles exit the system rather than being repaired indefinitely), and shorter replacement cycles driven by higher utilization, tighter emission/fitness expectations, changing consumer preferences, and faster depreciation in commercial applications.

Figure: Automobile scrap value chain: Key stakeholders and process overview

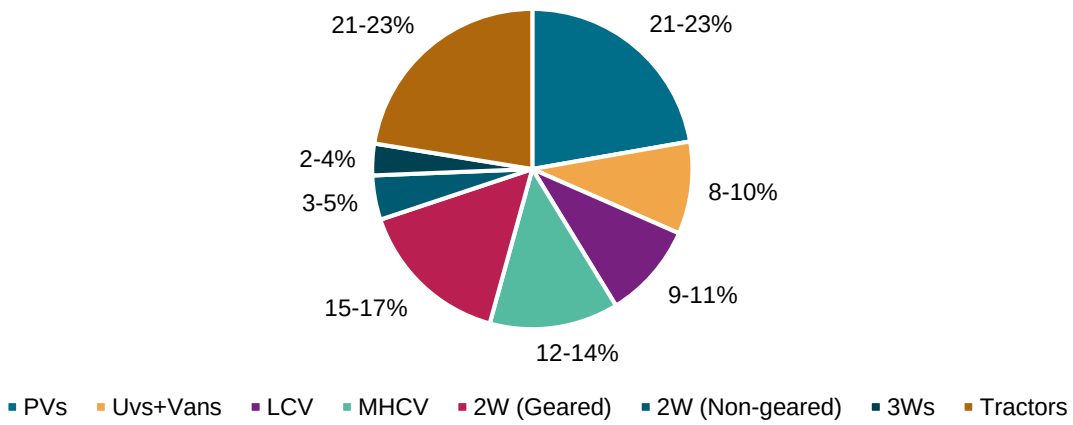


Source: Crisil Intelligence

Automobile scrap is generated through five primary streams ranging from individual car owners and commercial fleet operators to insurance auctions, government departments and exchange programmes of original equipment manufacturers (OEMs). However, whether these vehicles end up as scrap depends on whether the owners opt for formal or informal recycling.

The formal channel, characterised by authorised facilities on large plots using mechanised depollution and shredding, ensures legal deregistration and environmental compliance. In contrast, the informal sector operates in cramped yards using manual tools and offers higher cash prices to sellers but often bypasses safety norms and leaves vehicles legally active on government records even after they have been physically dismantled.

Figure: Auto Old Scrap generation by segments (FY25)



Source: Crisil Intelligence

Scrap generation is highly fragmented, with PVs and tractors emerging as the largest contributors (~21-23% each), followed by 2W (geared) (~15-17%), while remaining segments individually contribute <15%, indicating a diversified but two-wheeler and passenger vehicle-led scrap ecosystem.

Figure: Automobile scrap value chain- Process



Source: Crisil Intelligence

The automobile scrappage value chain comprises four key stages: generation, collection and aggregation, processing, and consumption, forming an integrated circular ecosystem.

- **Generation and sourcing**: The process begins when vehicle owners approach authorised channel partners or scrapyards. Vehicles undergo inspection, price discovery and deregistration at the Regional Transport Office (RTO), after which they are transported to collection centres.
- **Collection and aggregation**: Vehicles are depolluted and dismantled, with key components (e.g., gates, lights) removed. Reusable parts are extracted and routed to the second-hand auto components market, creating an early revenue stream.
- **Processing (scrapping facility/ scrap yard):** At authorised scrapping facilities, vehicles are systematically dismantled.

  Key steps include:

  - Segregation of components (ferrous vs non-ferrous materials).
  - Recovery of valuable parts (engine, chassis, wiring etc.).
  - Shredding and baling of metal scrap.
  - Routing of non-ferrous materials (aluminium, copper) to recyclers.
  - Disposal of non-recyclables via landfills or waste-to-energy plants.
  - A certificate of scrapping (CVS) is issued, completing the formal lifecycle

- **Consumption/ end use**: Processed scrap is utilised across:
  - Secondary markets (used auto parts).
  - Steel value chain (melting furnaces, re-rolling mills, foundries).

Sources of automobile scrap

Automobile scrap enters the system through five distinct channels:

- The **first** and largest is the individual car owner, who typically sells a vehicle that has reached end-of-life due to high mileage, poor condition, or age.
- The **second** channel is trucking companies and taxi fleet operators, where trucks are deregistered after 15-20 years or written off following a major accident. Fleet operators such as VRL Logistics routinely scrap old Ashok Leyland trucks from their fleet, whereas ride-hailing fleets such as Ola and Uber retire cars after 7-10 years or 3-4 lakh km of usage.
- The **third** channel is insurance companies, which auction total loss or accident-damaged vehicles as scrap through platforms such as Metal Scrap Trade Corporation (MSTC). ICICI Lombard, for instance, regularly auctions damaged cars through the MSTC portal.
- The **fourth** channel is government departments, which are required to mandatorily dispose of vehicles older than 15 years or those phased out due to policy changes. The Delhi Transport Corporation's scrapping of old diesel buses is one such example.
- The **fifth** channel is automobile OEMs and dealers, which send faulty or defective stock, unsold obsolete models, or cars received under exchange and vehicle scrappage programmes for recycling. The Maruti Suzuki-Toyota tie-up with Cero for scrapping exchanged vehicles is a case in point.

Table : Automobile scrap sources

Source	Description	Example
Individual car owners	Vehicles reaching end-of-life due to age, mileage, or condition	Any resident selling an old car
Trucking / fleet operators	Commercial vehicles deregistered after 15-20 years or written off after an accident	VRL Logistics scrapping old trucks; Ola/Uber retiring fleet cars
Insurance companies	Total loss or accident-damaged vehicles auctioned as scrap	ICICI Lombard auctioning cars on MSTC portal
Government departments	Mandatory disposal of old government vehicles after 15 years	Delhi Transport Corporation scrapping diesel buses
Auto OEMs / dealers	Defective stock, unsold models, or vehicles received under exchange schemes	Maruti Suzuki-Toyota tie-up with Cero

MSTC – Metal Scrap Trade Corporation

Collection and processing flow

Once a vehicle is identified for scrapping, its journey to the furnace depends on whether it goes through the formal (RVSF-based) channel or the informal route that still handles majority of the volume.

In the formal channel:

- The process begins when a vehicle owner contacts an authorised RVSF or its channel partner, who reaches the owner's doorstep to inspect the vehicle and starts the registration certificate (RC) de-registration process with the RTO. A certificate of deposit (CD) is generated post visual inspection and determination of the price.
- The vehicle is then towed or transported to the collection centre. At the RVSF, the vehicle goes through depollution and dismantling with mechanised equipment, where metals, plastics and hazardous wastes are separated systematically. Following this, the vehicle shell is shredded or undergoes baling using a standard process, typically depollution followed by shredding.
- A CVS is generated once the vehicle is fully processed, typically within 45 days. The resulting output includes ferrous scrap that is sent to steel plants, non-ferrous scrap such as aluminium and copper, which are sent to respective recyclers, and non-recyclables such as plastics, landfill material and rubber, which are ideally sent for waste-to-energy or proper disposal.

An authorised RVSF typically requires 3-4 acres of land (~12 *bighas*) to operate.

In the informal channel, the picture is very different. There are no channel partners:

- Vehicles are purchased directly by local yards through cash, with the price higher by Rs 5,000-10,000 acting as a strong pull for sellers.
- Herein, the RC is not deregistered. Only the chassis is removed, and the vehicle may still appear active on the government portal. No CD or CVS is issued; instead, the buyer may provide an Aadhaar copy, a Rs 10 stamp paper, or hand over the chassis number post-removal. Sometimes a video is shared as proof of scrapping.
- Dismantling is done by small units using manual tools, with no standard process or depollution procedure. Fluids are typically dumped rather than collected, and parts and components are sold separately to second-hand markets.
- Only rare mechanical and non-mechanical parts make it to end-customers. For e.g., car tyres are usually sold to retreading companies, but plastics are burned, sold, or dumped.

These informal units can operate in spaces as small as 30 x 60 sq. ft.

Figure : Formal vs informal automobile scrap value chain





- **RC is deregistered only by authorized player**
- Deregistration copy is provided for RTO cancellation (Proof of scrapping)

- **RC not deregistered; only chassis removed**
- Vehicle may still appear active on portal

- **Keeps local authorized dealers, channel partners**
- Companies which are authorized which helps in scrap supply to the main yard

- **No channel partners**

- **CD & CVS issued with engine/chassis/registration/owner details**
- Provided on authorized company GST letterhead with sign

- No CD/CVS issued
- **May give Aadhaar, Rs 10 stamp paper, give chassis post removing from vehicle**
- Sometimes share a video as a

- Licensed facilities with mechanized dismantling
- Segregation of metals, plastics, hazardous wastes
- Uniform process across all RVSFs
- Typical process: Depollution & shredding

- Small dismantling units with manual tools
- No uniform process/ procedure at place
- No depollution, fluids dumped, Parts/components sold separately

- Only non mechanical parts can be sold as per govt guidelines
- E.g.- car door, usually sold by channel partner company

- Mechanical + Non mechanical parts of the vehicles is being sold
- Plastics- burnt/sell/dumped

^CD – Certificate of deposit

**CVS – Certificate of vehicle scrapping*

Source: Crisil Intelligence

Table: Formal vs Informal Automobile Scrap Comparison

Step/process stage	Formal (RVSF)	Informal
RC de-registration	De-registered only via authorised steps; de-registration copy provided for RTO cancellation (proof of scrapping)	RC not deregistered; only chassis removed; vehicle may still appear active on the portal
Documentation	CD and CVS issued with engine/chassis/registration/date/owner details; provided on authorised company GST letterhead with signature	No CD/CVS issued; may provide Aadhaar, Rs 10 stamp paper and chassis post removal; sometimes share a video as proof
Dismantling	Licenced facilities with mechanised dismantling; segregation of metals, plastics, hazardous wastes	Small dismantling units with manual tools
Shredding/ processing	Uniform process across all RVSFs; typical process: depollution and shredding	No uniform process/procedure; no depollution; fluids are dumped
Output handling	Only rare mechanical/non-mechanical parts go to end-customers (e.g., car tyres usually sold to retreading companies)	Mechanical + non-mechanical parts of the vehicle are sold; plastics burnt/sold/dumped
Facility size	3-4 acres per scrapping facility (~12 bighas)	Can work in small spaces (e.g., 30×60 sq. ft)
Current share	30-35% of volume	65-70% of volume

Source: Crisil Intelligence

Technologies used in automobile scrap recycling

The gap between formal and informal automobile recycling shows up most clearly in the equipment and methods used at each scrapping stage, from depollution through to baling.

At the formal end, authorised shredding and recycling units use advanced equipment. For e.g., Innovation Elephant Pvt Ltd operates a shredding capacity for over 1,000 four-wheelers per month and has 15 channel partners in the Delhi-National Capital Region. It uses car body shredders, i.e. large machines with rapidly spinning hammers that break the vehicle shell into fist-sized metal fragments, and magnetic separators, i.e. conveyor systems with strong magnets that pull-out iron and steel from the mixed shredded output, leaving behind non-ferrous metals and plastics, to produce clean, dense, furnace-ready scrap.

In the informal space, small operators work with gas cutters and manual tools in compact spaces, producing scrap of lower quality with higher contamination.

Table : Auto-recycling scrap – technologies employed

Process stage	Technology used	Output	Obsolete vs advanced
Depollution (fluids, battery, airbags)	Fluid extractors, refrigerant recovery units, battery testers; manual extraction with wrenches and hammers	Hazardous materials removed; machinery can detect quality of oil for reuse /recycling/disposal	• Obsolete: Manual tools (wrenches and hammers) • Advanced: Fluid extractors
Dismantling (gates, tyres, lights, seats, bumpers)	Hand and pneumatic tools; electrically operated cutters; hydraulic dismantling rigs	Reusable parts salvaged; components separated	• Obsolete: Manual tools • Advanced: Electrically operated cutters, hydraulic dismantling rigs
Shredding	Car body shredders (hammermill type); mostly formal/large facilities use shredders	Vehicle shell reduced to small fragments for sorting	• Semi-advanced: Car body shredder (hammer mill)
Sorting and separation	Magnetic separators	Ferrous, non-ferrous, plastics separated	• Advanced: Magnetic separators
Baling/shearing (body shell, metal sheets)	Metal balers; hydraulic shears	Compact metal bundles	• Advanced: Metal balers, hydraulic shears

Source: Crisil Intelligence

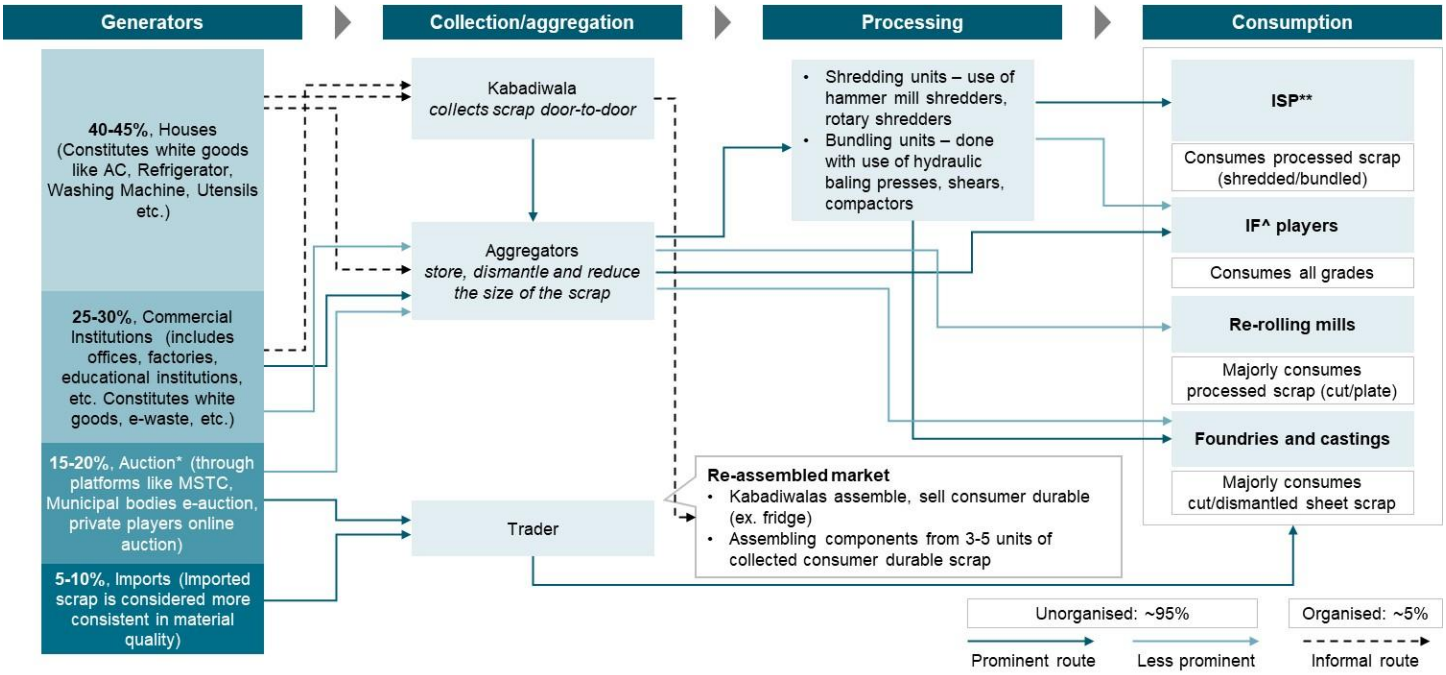
A key observation from the technology employed is the concentration of advanced equipment in the formal sector. Hammer-mill shredders and magnetic separators, which are essential for producing clean, dense, furnace-ready scrap, are almost exclusively installed at authorised facilities.

The informal sector relies on gas cutters and manual tools, which not only produce lower-quality scrap but also pose significant occupational health and environmental risks.

Consumer durables value chain

Scrap generated from consumer durables such as old refrigerators, washing machines, air conditioners, utensils, and other white goods follows a value chain that is quite distinct from automobiles. This difference is primarily due to the characteristics of these items: they are typically lower in value, owned by many dispersed households, and are often disposed of informally. Additionally, these products are lighter, contain less steel per unit, and have a higher proportion of materials like plastics, copper, and aluminium. The economics of collection are also challenging, as transporting small quantities can be costly unless materials are aggregated. Consequently, the scrap from consumer durables is generally more decentralized, involves more intermediaries, and requires significant processing before it is suitable for use in steel furnaces.

Figure: Consumer durable scrap – value chain (stakeholders)



**Among consumer durables, e-waste such as computers, laptops, monitors, etc. are majorly auctioned*
*** Integrated steel players, ^ induction furnace*
Source: Crisil Intelligence

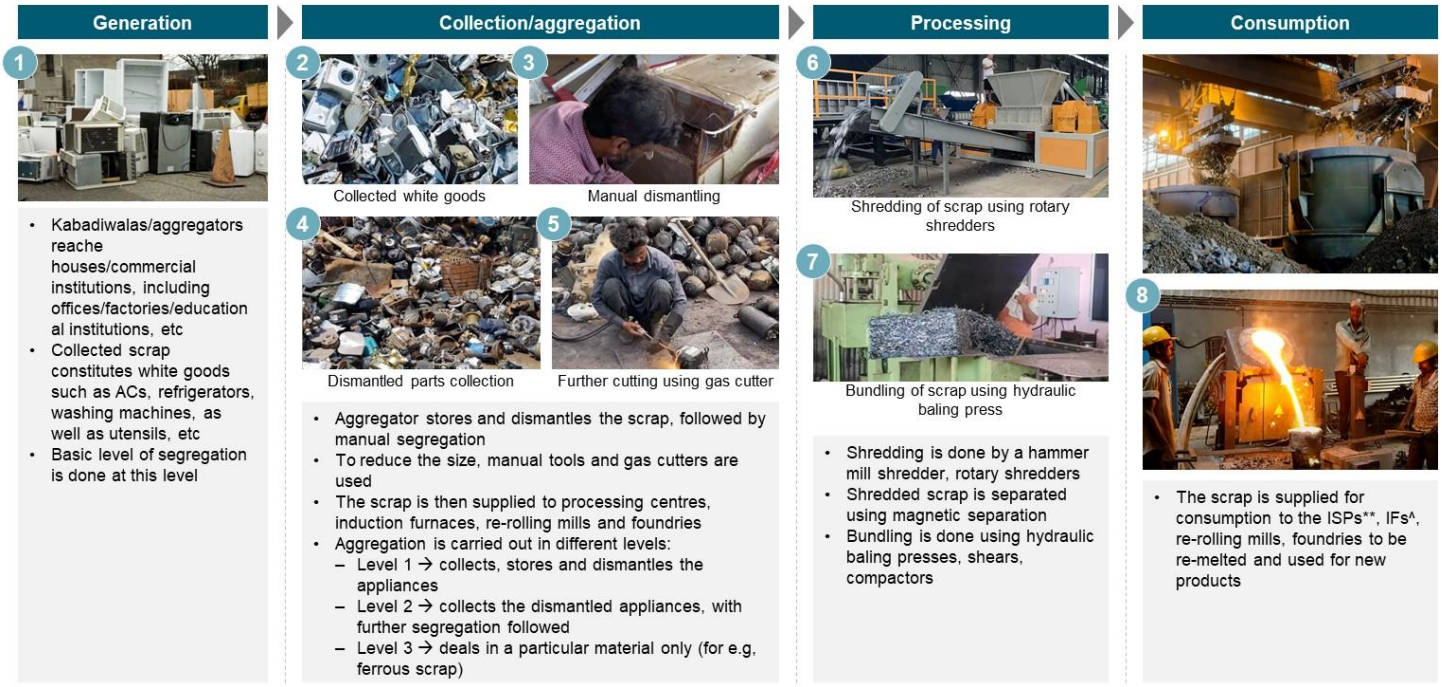
Generation and collection of consumer durables

White goods and household steel items are generated by a considerable number of households and commercial establishments, making collection the single biggest challenge in this segment.

- The generation of consumer durable scrap is spread across a broad base of households and institutions. 40-45% of this scrap is from houses, and includes ACs, refrigerators and washing machines, alongside general utensils.
- 25-30% is from commercial institutions, including offices, factories and educational establishments, with the products to scrap comprising white goods as well as e-waste such as laptops and monitors.
- 15-30% is through auctions on platforms such as MSTC, municipal tenders, e-auction sites and private players' online auctions.

The remaining 5-10% is from imported scrap, which is considered more consistent in quality by some recyclers.

Figure: Scrapping process of consumer durables



Source: Crisil Intelligence

The collection process begins at the doorstep.

Kabadiwalas, i.e. neighbourhood scrap collectors, who go door-to-door buying old items, and aggregators reach the houses and commercial institutions to collect the scrap. The collected material typically includes ACs, refrigerators and washing machines, alongside general utensils and e-waste. A basic level of sorting is done at this stage.

The aggregation stage is where bulk of the value extraction takes place. It is carried out at different levels:

- At level 1, the aggregators collect, store and dismantle the appliance.
- At level 2, the collectors gather the dismantled appliances for further sorting.
- At level 3, the dealers deal in specific materials only; for instance, exclusively ferrous scrap. To reduce the size of the material, manual tools and gas cutters (handheld torches that use a gas flame to slice through metal) are used at the aggregation stage. The scrap is then sent to processing centres, induction furnaces, re-rolling mills and foundries.

One notable feature of this chain is the reassembled market. *Kabadiwalas* assemble consumer durables such as ACs and refrigerators from the components gathered from 3-5 units of collected consumer durable scrap and sell those reassembled products to lower-income households. This practice, while providing affordable goods to a segment of the population, also pulls material away from proper recycling channels.

Once collected and aggregated, the consumer durable scrap needs to be converted into furnace-ready material through shredding, magnetic separation and bundling before it can reach steel mills and foundries.

The processing of consumer durable scrap involves three main steps:

- First, the collected and dismantled material is shredded, i.e., broken down into small, roughly uniform metal fragments. This is done by hammer mill shredders (machines with rapidly spinning hammers inside a heavy steel chamber that smash appliance bodies and sheet metal into pieces a few inches across) and rotary shredders (machines with rotating blades that cut and tear the material into fragments). The purpose of shredding is to reduce the size of the scrap so that it can be easily sorted, handled and fed into a furnace.

- Second, the shredded material goes through magnetic separation. At this stage, the mixed fragments, which include iron, steel, copper wire, aluminium, plastic and other materials, pass along a conveyor belt over or under strong magnets. The magnets pull out the iron and steel pieces from the stream, while the non-ferrous metals, plastics and other non-magnetic materials fall away. This step is what separates the ferrous scrap (the material steel mills need) from everything else.
- Third, the separated ferrous scrap is bundled using hydraulic baling presses (machines that use hydraulic force to compress loose scrap into tight, dense rectangular blocks called bales), shears (cutting machines that trim oversized pieces) and compactors. Bundling makes the scrap easier to load onto trucks, reduces transport costs and allows furnaces to charge the material more efficiently.

The processed scrap then goes to ISPs, IFs, re-rolling mills and foundries, where it is re-melted and used for new products.

Table: Consumer durable scrap generation split

Generator segments	Share of generation
Houses (ACs, refrigerators, washing machines, Utensils)	40–45%
Commercial institutions (offices, factories, educational institutions; white goods + e-waste)	25–30%
Auctions (MSTC, municipal tenders, e-auction platforms, private players)	15–30%
Imports (considered more consistent in quality)	5–10%

Source: Crisil Intelligence

Table : Consumer durable scrap consumption destinations

Consumption destinations	Description
ISPs	Source processed scrap (shredded/bundled)
IF players	Source all grades
Re-rolling mills	Mostly source processed scrap (cut/plate)
Foundries and castings	Mostly source dismantled sheet scrap
Re-assembled market	Kabadiwalas assemble and sell refurbished appliances

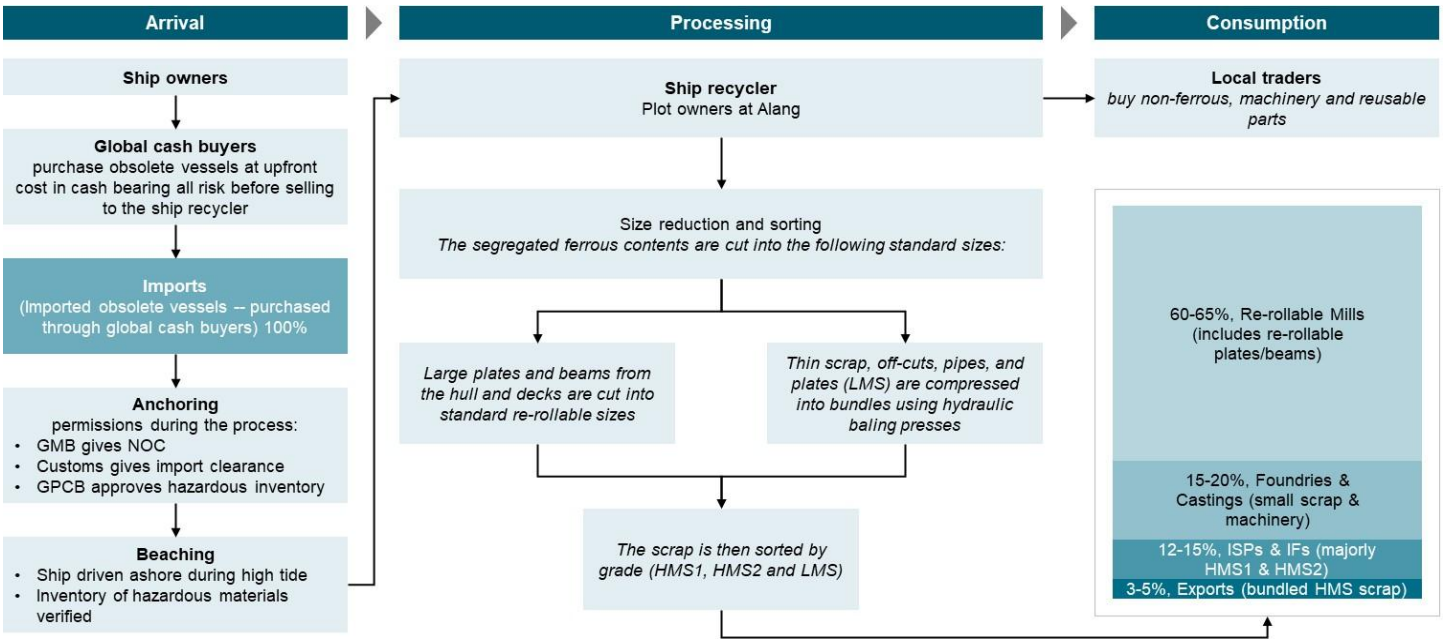
Source: Crisil Intelligence

The unorganised sector handles ~95% of the consumer durable scrap flow, with the organised sector accounting for the remainder. This extreme skew toward the informal sector is one of the challenges of this segment.

Ship recycling value chain

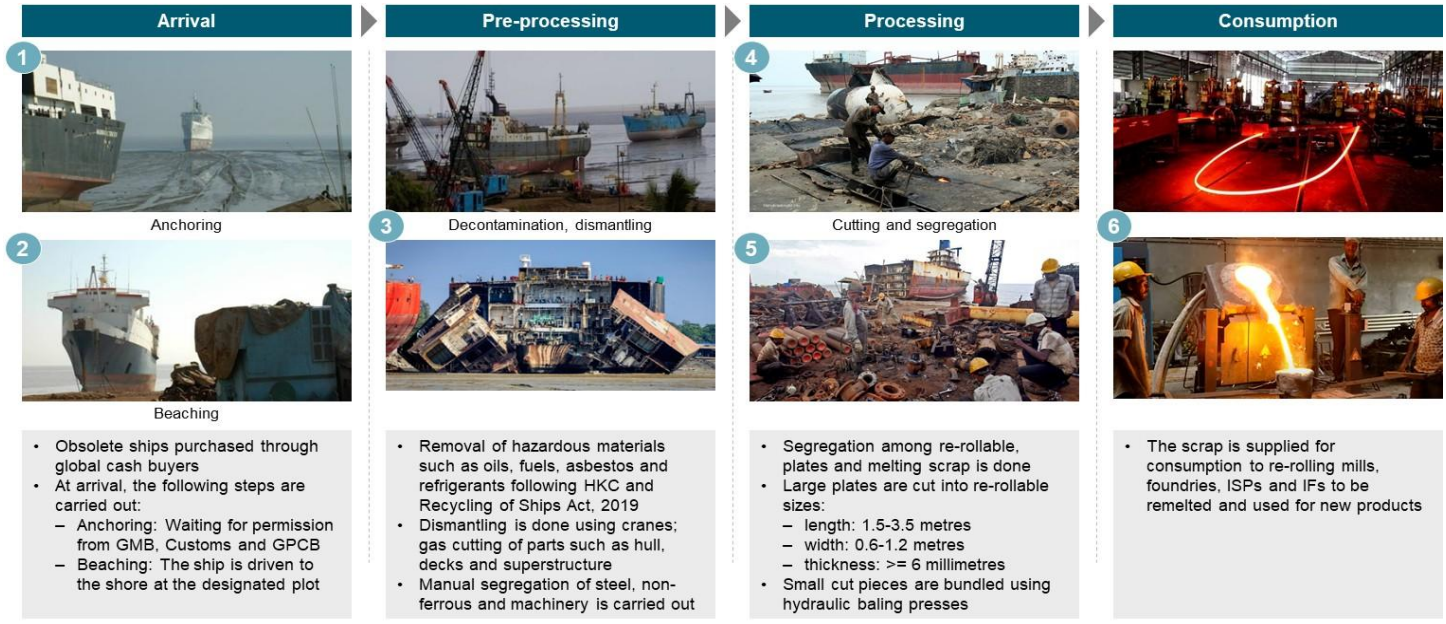
India is the world's largest ship-recycling country, with its Alang-Sosiya ship recycling yard in Gujarat's Bhavnagar district being at the centre of this activity. The ship-recycling value chain is different from the other segments in several ways: (1) It manages imported raw materials (obsolete vessels purchased from global ship owners). (2) It produces a high proportion of re-rollable scraps. (3) And it operates under an increasingly strict regulatory setup aligned with the Hong Kong International Convention (HKC).

Figure: Ship recycling process



GMB: Gujarat Maritime Board; GPCB: Gujarat Pollution Control Board; HKC: Hong Kong Convention; ISP: Integrated steel plant; IF: Induction furnace
Source: Crisil Intelligence

Figure: Ship recycling scrap – process



GMB: Gujarat Maritime Board; GPCB: Gujarat Pollution Control Board; HKC: Hong Kong Convention; ISP: Integrated steel plant; IF: Induction furnace
Source: Crisil Intelligence

Arrival and beaching

Arrival and beaching—is the first stage of the ship-recycling process, where a vessel is deliberately driven at high tide onto a tidal mudflat for dismantling. Upon arrival, the ship undergoes customs inspection, it is then checked for hazardous materials (IHM) and finally receives permission for beaching from local authorities.

Before a vessel can be dismantled at Alang, it must be purchased from the global market by a cash buyer, cleared through multiple Indian regulatory bodies and physically driven ashore at the designated recycling plot.

Obsolete ships are purchased through global cash buyers, who acquire vessels for an upfront cost, bearing all risks, before selling them on to the ship recycler (the plot owner at Alang). All imported obsolete vessels are purchased through these global cash buyers. Therefore, 100% of the input is, by definition, imported.

On arrival, a series of permissions must be obtained. The Gujarat Maritime Board (GMB) grants a No Objection Certificate (NOC). Customs provides import clearance. The Gujarat Pollution Control Board (GPCB) approves the inventory of hazardous materials. Once these clearances are in order, the ship is beached, meaning it is driven ashore during high tide at the designated plot for recycling.

Processing

Once beached, a vessel goes through a set sequence of hazardous material removal, structural dismantling and steel cutting before the recovered ferrous content is sorted into standard scrap grades for sale.

The processing of a beached vessel follows a set sequence:

- During the pre-processing phase, hazardous materials such as oils, fuels, asbestos and refrigerants are removed, following the procedures laid down by the HKC and the Recycling of Ships Act, 2019. Dismantling is done using cranes and gas-cutting torches (handheld torches that burn a mix of oxygen and acetylene gas to produce a flame hot enough to cut through thick steel hull plates) to separate parts of the hull, decks and superstructure.
- Manual sorting of steel, non-ferrous metals and machinery is carried out.
- During the processing phase, the sorted ferrous content is cut into standard sizes. Large plates and beams from the hull and decks are cut into standard re-rollable sizes, typically 1.5-3.5 metres in length, 0.5-1.2 metres in width and 6 millimetres or more in thickness.
- Thin scrap, off-cuts, pipes and smaller plates (classified as LMS) are compressed into bundles using hydraulic baling presses (machines that use hydraulic force to squeeze loose scrap into dense, compact blocks). The scrap is then sorted by grade: HMS 1, HMS 2 and LMS.

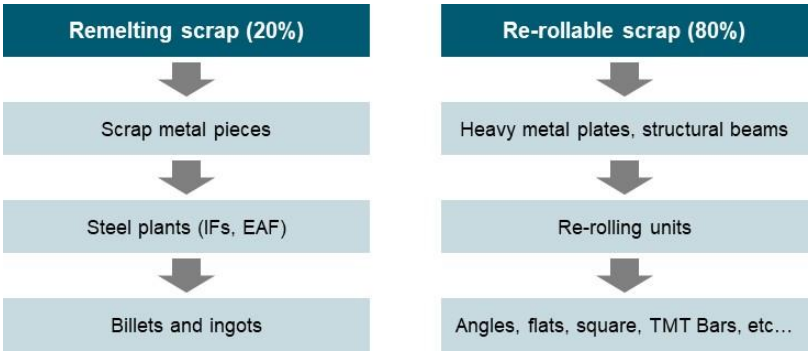
Output and consumption

Ship recycling produces a mix of re-rollable plates, remelting scrap and resaleable non-steel items, with the bulk of the recovered steel going to re-rolling mills clustered near Alang.

Roughly 88% of the recoverable steel is re-rollable scrap, meaning heavy metal plates and structural beams that are sold to re-rolling units near Alang-Bhavnagar (Sihor) and Sundar Nagar, Gujarat. Key re-rollers in this cluster include Aadinath Rolling Mills, Sachdeva Steel Products and Omega Re-rolling Mills. These plates are pre-processed through cutting (shearing using shearing machines and gas cutters, to a common size of 5-6 feet in length) before being fed into re-heating furnaces. The re-rollers produce mild steel angles (15%), flats, squares and round bars (85%), which are sold to downstream steel fabricators, tower and structure-making industries, infrastructure projects and the retail market. Raw-material costs for MS steel produced from ship plates are cheaper by a minimum of Rs 5-10 per kilogram, compared with steel produced from virgin inputs.

The remaining 12% of ship-derived steel is remelting scrap, that is, smaller scrap metal pieces that are sent to steel plants (IFs and EAFs), where they are melted into billets and ingots. Beyond steel, ships yield a variety of resaleable items.

Figure: Ship recycling, resaleable items and end-uses



Source: Crisil Intelligence

Table: Ship recycling resaleable items and end uses

Ship recycling – general resaleable items		
Category	**Items**	**End use**
Machinery and equipment	Pumps, engines, generators and compressors	Marine resale market and industrial refurbishment
Pipes and tubes	MS pipes, GI pipes and hydraulic lines	Construction, fabrication shops and irrigation
Ship fittings	Brackets, ladders, manholes and railings	Workshops and industrial fabrication
FFE (furniture, fittings and fixtures)	Cabinets, doors and lights	Secondary sales market and ship reuse stores
Plates and structural steel	Hull plates, deck sheets, ribs and stiffeners	Low-rise construction and fabrication sheds

Source: Crisil Intelligence

The consumption pattern of ship-recycling scrap shows that 60-65% goes to re-rollable mills, 15-20% to foundries and castings (small scrap), 12-15% to ISPs and IFs (mainly melting scrap) and 3-5% is exported as bundled HMS.

Ship recycling scrap – technologies used

Table: Ship recycling scrap – technologies used

Process/stage	Machine/technology used
Decontamination (oil and fuels)	Manual extraction
Structural dismantling	Gas cutting torches (cutting of hull); hydraulic shears; cranes and excavators
Segregation	Magnetic lifters, forklifts; mobile cranes and cutting torches (LPG and oxyacetylene)

Source: Crisil Intelligence

Table: Advanced ship recycling technologies

Technology used	Objective
Heavy-lift cranes and winches	Removal of large ship sections and heavy equipment for further dismantling
Oxy-acetylene gas torches	Cutting steel structures and separating ship components into manageable sizes
Dustless/Dry blasting equipment	Removal of toxic paint, cleaning of metals and preparation for resale/recycling
Electric shears and hydraulic cutters	Precise cutting of ferrous and non-ferrous materials, size reduction

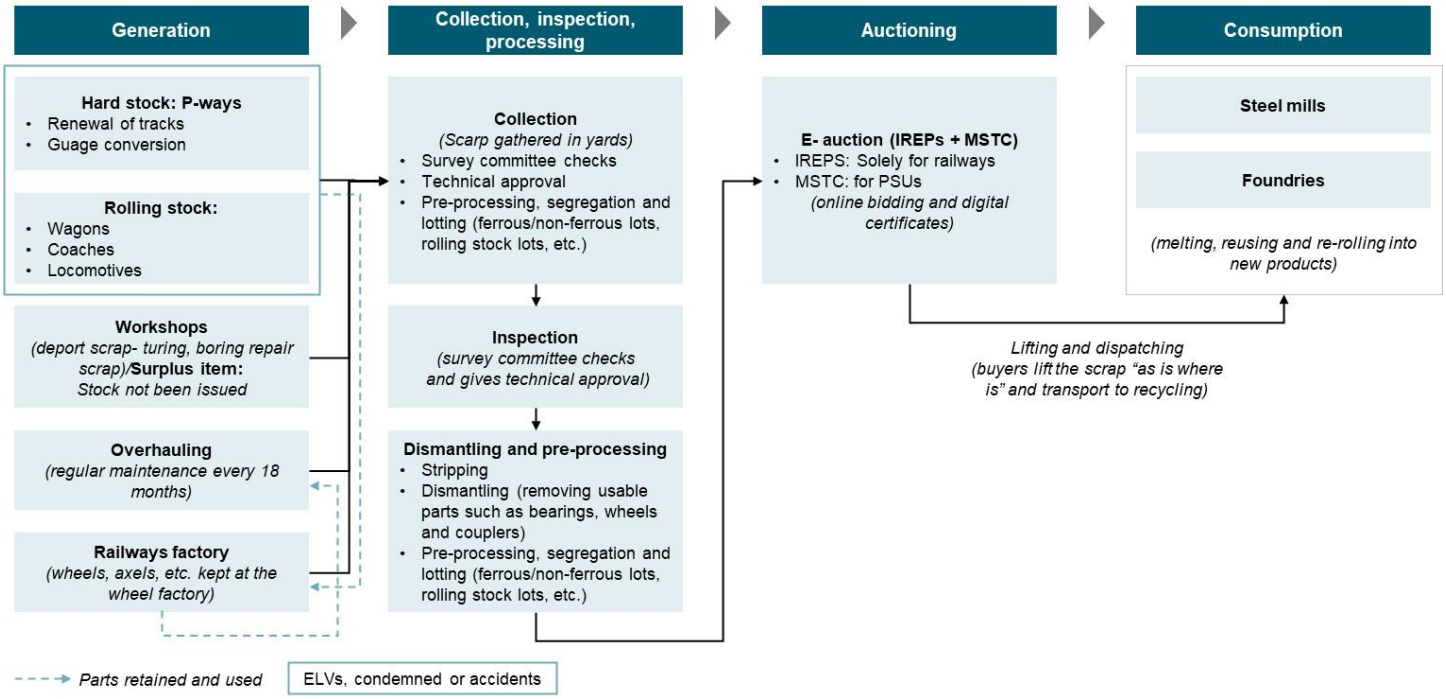
Technology used	Objective
Tractor-trailers and forklifts	Transporting the dismantled parts of the ship within the yard for sorting and onward dispatch

Source: Crisil Intelligence

Railways scrap – value chain

Indian Railways operates one of the most organised scrap-disposal systems in the country. This is very different from the informality that marks most other segments. The generation, collection, processing, auctioning and consumption of railway scrap follows a well-defined institutional setup.

Figure: Railway scrap – value chain



IREPs – Indian Railways E-Procurement System, MSTC – Metal Scrap Trade Corporation, PSUs – Public sector undertakings
Source: Crisil Intelligence

Generation

Railway scrap comes from two primary sources, both generated through planned maintenance and renewal cycles rather than unplanned discard.

- The first is hard stock/permanent Way (P-way), which includes material that comes from the renewal of tracks and gauge conversion. Track renewal generates large quantities of used rails, which are among the most valued forms of re-rollable scrap in India due to their high steel content (100% steel intensity) and known metallurgy.
- The second source is rolling stock, covering condemned wagons, coaches and locomotives declared unfit for service due to age, damage and/or technological obsolescence. Workshop and depot scrap also contributes to the overall pool, including turning, boring and repair scrap from regular overhauling (conducted every 18 months), surplus items and material from railway factories producing wheels, axles and other components.

Collection, inspection and processing

- Once declared surplus or condemned, railway scrap is gathered in yards, inspected by survey committees, sorted into lots and prepared for disposal through a formal institutional process.
- Scrap is gathered in railway yards, where a survey committee conducts checks and grants technical approval.
- The material then goes through pre-processing, sorting and lotting into ferrous and non-ferrous lots, as well as rolling stock lots. Dismantling and pre-processing involves stripping of vehicles and removal of usable parts such as bearings, wheels and couplers.

Auctioning

- Unlike most other segments where scrap changes hands through informal cash deals, Indian Railways sells all its scrap through digital auction platforms, ensuring price transparency and competitive bidding.
- Disposal is done only through e-auction platforms: Indian Railways E-Procurement System (IREPS) used solely for railways and MSTC (used for public sector undertakings).
- The process involves online bidding and digital certificates, ensuring transparency and competitive price discovery.
- Buyers lift the scrap "as is where is" and transport it to their recycling facilities.

Consumption

- The buyers of railway scrap are typically steel mills, re-rolling units and foundries, who use the material for melting, direct re-rolling and/or manufacturing new steel products.
- The end-consumers of railway scrap are steel mills and foundries, where the material is used for melting, reuse, re-rolling and the manufacture of new products.

Railways scrap recycling Technologies used

Table: Railways scrap recycling – technologies used

Process/stage	Technology used	Output	Primitive vs. advanced
Depollution (fluids, batteries and coolants)	Fluid extractors, vacuum pumps, refrigerant recovery units, battery testers and manual draining tools	Hazardous fluids removed; batteries isolated; scrap safe for processing	Primitive: Manual draining, hand tools. Advanced: Fluid extractors, vacuum pumps and refrigerant units
Dismantling (seats, panels, lights, electricals and accessories)	Hand and pneumatic tools; electrically operated cutters and hydraulic dismantling rigs	Reusable parts removed and scrap segregated	Primitive: Hand tools. Advanced: Pneumatic tools, electric cutters and hydraulic rigs
Cutting/Sectioning (rails, wheelsets, bogies and coach bodies)	Oxy-fuel cutting torches, plasma cutters, mobile hydraulic shears and rail-cutting saws	Large components cut into manageable pieces	Primitive: Oxy fuel/gas cutting. Advanced: Plasma cutting and hydraulic shears
Pre-processing and cleaning	High-pressure washers, degreasing tanks and magnetic sweepers	Scrap cleaned; oils/grease reduced and contaminants removed	Primitive: Manual cleaning. Advanced: Degreasing tanks and pressure washing systems
Shredding (coach shells and structural parts)	Hammer-mill shredders, industrial shredders and mobile shredders	Scrap reduced into uniform fragments for sorting	Primitive: Manual cutting only. Advanced: Hammer-mill shredders and industrial shredders
Sorting and separation (ferrous and non-ferrous and plastics)	Magnetic separators, drum magnets, eddy-current separators and air/optical sorters	Ferrous, non-ferrous and plastics separated for purity	Primitive: Manual sorting. Advanced: Magnetic and eddy-current separators and optical sorters
Baling/Shearing (sheets, body shell and plates)	Metal balers, hydraulic shears and briquetting presses	Compacted metal bundles and lower transportation cost	Primitive: Manual cutting. Advanced: Hydraulic shears and metal balers

Source: Crisil Intelligence

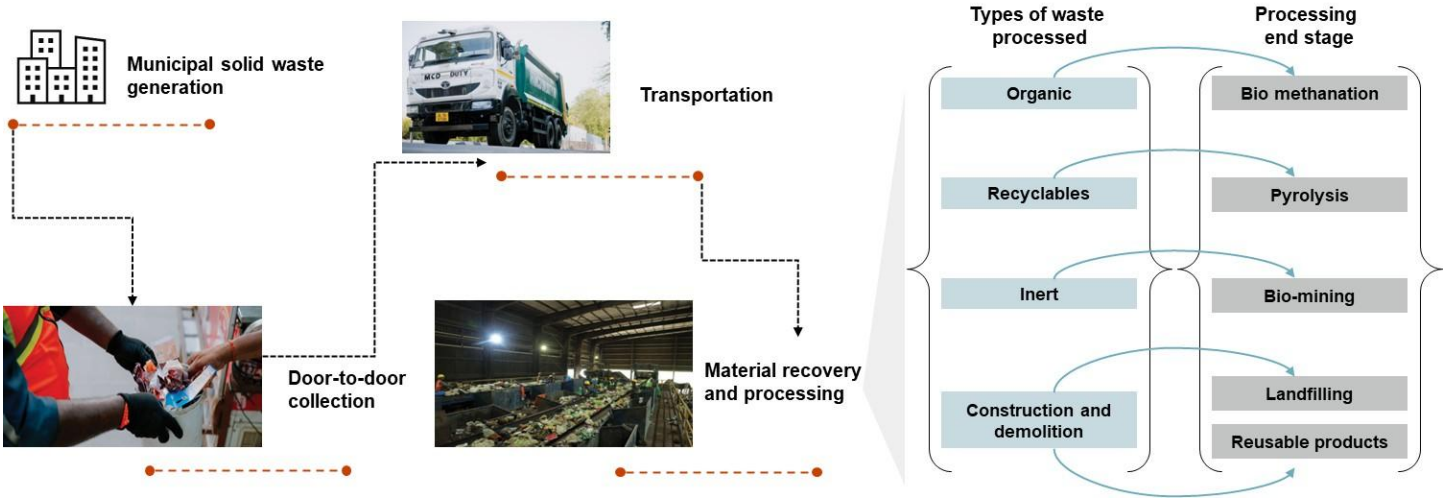
- Permanent way (P-way) scrap, which has 100% steel intensity and hardly any wastage during dismantling, is 90% re-rolled and reused, with just 10% going for remelting.
- Abandoned P-ways account for 65% of the overall scrap generated by railways. Scrap traders and mills purchase this material through bidding in auctions on the IREPS platform, take delivery from depots and workshop yards, and re-roll the steel into new products for downstream fabricators, towers and structure manufacturers.

Construction and demolition value chain

Construction and demolition (C&D) waste recycling represents one of the less mature but rapidly evolving segments of India's resource recovery landscape. Before narrowing our focus to steel scrap specifically, it is important to understand the broader C&D waste management ecosystem within which steel recovery operates.

Broader C&D recycling ecosystem

Figure: Construction and demolition process stages



Source: Crisil Intelligence

As defined by the Central Pollution Control Board (CPCB, 2016), construction and demolition waste recycling is the recovery of materials from waste consisting of building materials, debris and rubble resulting from the construction, re-modelling, repair and demolition of any civil structures.

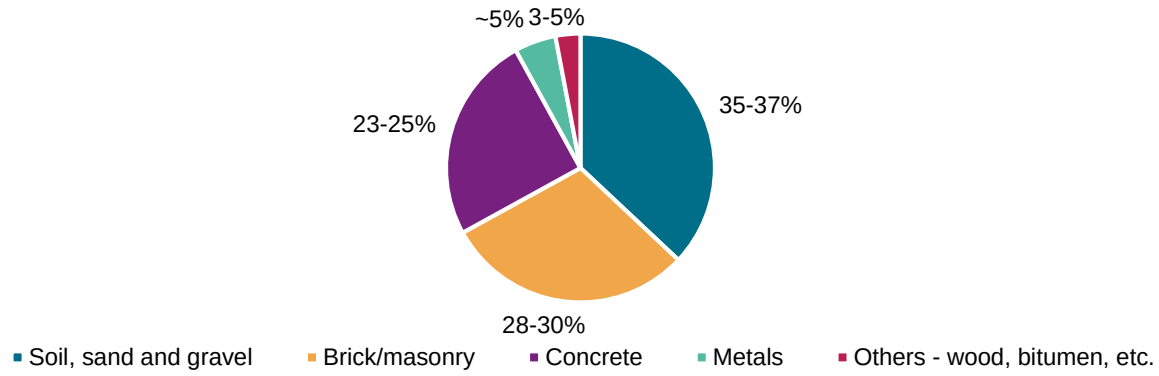
The waste stream is enormous. India generates an estimated 150-500 million tonne of C&D waste annually, but the processing infrastructure remains limited. Only larger cities such as Delhi, Pune, Gurugram, Noida, Pimpri-Chinchwad, Thane, Ghaziabad, Kolkata and Hyderabad have established their recycling plants through private investments. Smaller cities struggle to find bidders for establishing C&D recycling plants due to the lesser quantum of waste generated though cities such as Surat, Lucknow, Alwar, Moradabad, Bareilly and Rewari have established or are in the process of setting up plants with support from schemes such as the Swachh Bharat Mission (SBM) 2.0, NCAP, and the 15th Finance Commission (XV-FC).

The C&D waste processing flow begins with generation at construction or demolition sites, whether municipal solid waste generation or through door-to-door collection. The material is then transported to a material recovery and processing facility, where it is sorted into four categories. Organic waste is sent for bio-methanation. Recyclables are sent for pyrolysis. Inert material is sent for bio-mining and construction & demolition waste is sent for landfilling or conversion into reusable products.

C&D waste material composition

The composition of C&D waste in India is heavily dominated by non-metallic materials.

Figure: C&D waste material composition

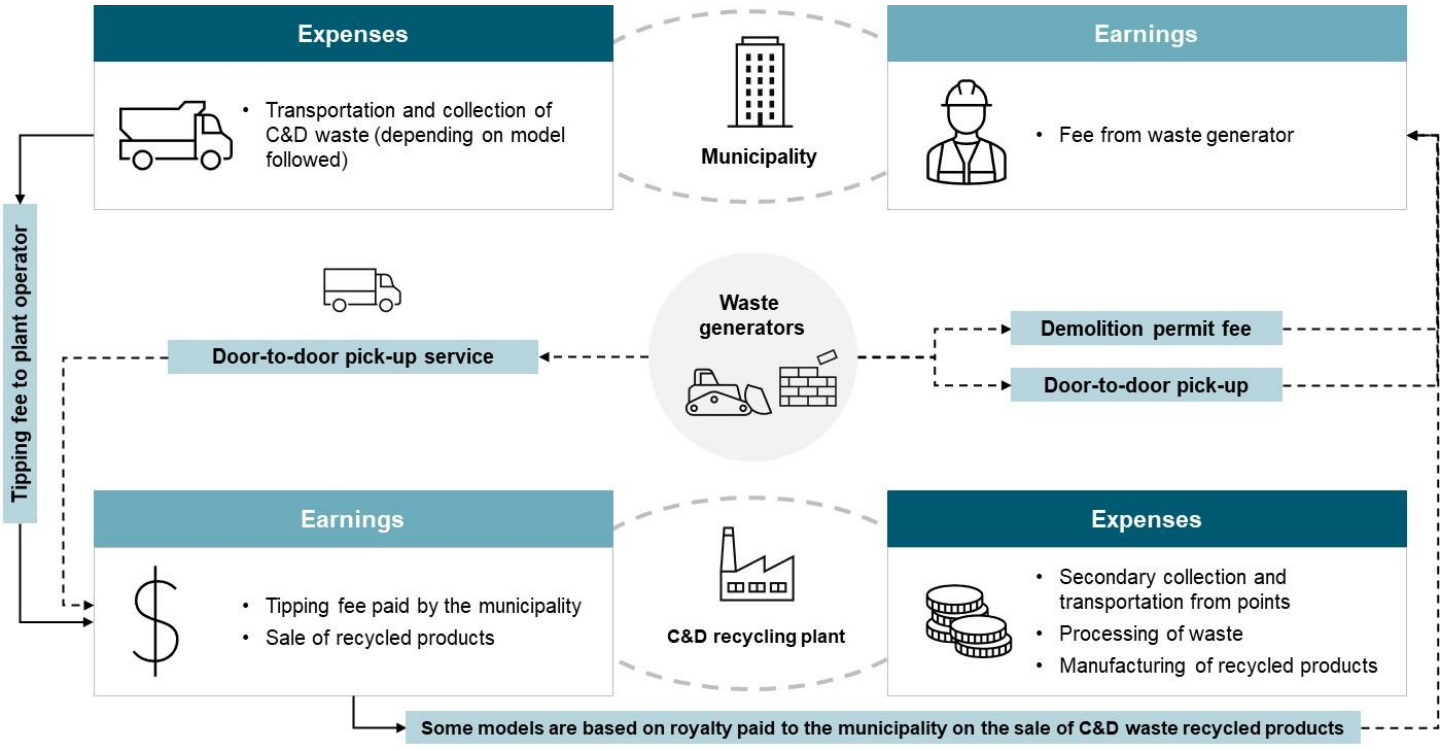


Source: Crisil Intelligence

Soil, sand, gravel, brick, masonry and concrete are the largest contributors to C&D waste, together accounting for 90–92% of the total. Metals account for ~5% of the overall C&D waste generated, typically coming from beams and columns, sheet metal from roofing and ductwork, reinforcement bars and structural steel sections.

Municipality and recycler structure

The processing of C&D waste in India is done through an interplay between municipalities and private recyclers. Municipalities earn revenue through fees charged from waste generators and demolition permit fees. Their expenses include the transportation and collection of C&D waste, depending on the model followed. Some municipalities also offer door-to-door pickup services for waste generators. , **Figure: C&D municipality – Recycler structure**



Source: Crisil Intelligence

On the other hand, the C&D recycling plant, earns revenue through the tipping fee paid by the municipality and through the sale of recycled products (aggregates, bricks, processed metals). Its expenses include secondary collection and transportation from collection points, processing of waste, and manufacturing of recycled products. Some models are based on royalty paid to the municipality for the sale of C&D waste recycled products.

Table: Municipality vs Recycling Plant Economics

Entity	Earnings	Expenses
Municipality	Fee from waste generators; demolition permit fees	Transportation and collection of C&D waste (depending on model); door-to-door pick-up service
C&D recycling plant	Tipping fee paid by the municipality; sale of recycled products	Secondary collection and transportation from points; processing of waste; manufacturing of recycled products

Source: Crisil Intelligence

Narrowing down: Steel scrap from C&D

Table: Segment-wise C&D waste/debris generation and percentage of steel recovered from C&D waste

C&D segment	Segment details	C&D waste -debris (% share) (Out of 100%)	Steel recovered from C&D waste-debris (% share)
Residential	Single-family homes, apartments, condominiums, townhouses, residential buildings	45-50%	~5%
Commercial	Office buildings, malls, hotels and entertainment venues	>5%	6–8%
Industrial	Factories, warehouses, refineries and logistics hubs	20-30%	4–7%
Infrastructure	Roads, bridges, etc.	25-30%	~2–5%
Infrastructure – Roads	Highways, local roads, interchanges and associated drainage	25-28%	~1%
Infrastructure – Bridges	Road, rail and pedestrian bridges	2-3%	7–9%

Note: Column "C&D waste-debris (% share)" sums to 100% of total C&D waste generated, the estimates are based on primary interactions with various contractors, ranging from large firms like Tata Projects, Afcons, and Godrej, to medium and small contractors such as Sahi Construction, A1 Demolition, Om Sai etc.

Source: Crisil Intelligence

Residential structures generate the most C&D waste/debris (45-50% of the total) and have a relatively low steel recovery rate (~5%) as most of the residential construction in India historically relied on load-bearing masonry with limited steel reinforcement.

Industrial structures, by contrast, produce only 20-30% of the total C&D waste but have a much higher steel recovery rate (4-7%), reflecting the increased use of structural steel in factory buildings, warehouses and refineries. Though bridges contribute just 2-3% of the total C&D waste, they yield a disproportionately high steel recovery of 7-9% due to their steel-intensive construction.

Table: Segment-wise share in total C&D steel scrap generated (%)

C&D segment	Segment-wise share in total C&D steel scrap generated (%)
Residential	53-55%
Commercial	4-5%
Industrial	30-35%
Infrastructure	9-11%
Infrastructure – Roads	5-6%

C&D segment	Segment-wise share in total C&D steel scrap generated (%)
Infrastructure – Bridges	4-5%

Source: Crisil Intelligence

Because of the sheer volume of residential demolition, this segment still accounts for the largest share of C&D steel scrap at 53-55%.

C&D recycling technologies

C&D waste can be processed using dry methods (mechanical sorting and screening without water) or wet methods (washing and rinsing to remove fine contaminants), and the choice affects the cost, output quality and determines which materials can be separated.

Table: Dry vs wet processing comparison

Parameter	Dry processing	Wet processing
Method of Separation	Without using water; dry	Using water to clean and separate materials
Techniques	Mechanical sorting, screening, air classification, magnetic separation, manual picking	Washing, rinsing processes
Materials sorted	Concrete, wood, metals and plastics	Concrete and masonry
Cost	More economical; less expensive than wet processing	10–12% more expensive than dry processing
Recyclability advantage	Effectively separates wood, metals and plastics from concrete and sand	Effectively removes contaminants, dirt, dust, and other impurities; smaller particles of silt (under 75 microns) get washed away

Source: Crisil Intelligence

Within the broader C&D recycling process, the magnetic separator is the key piece of equipment for pulling out ferrous material from the crushed concrete and debris stream.

Modular wet processing systems for waste recycling represent the more advanced end of the technology spectrum. These systems use advanced machinery for C&D waste recycling, can recycle waste directly at the site, reduce the environmental impact and optimise coordination. However, the higher cost (10–12% premium over dry processing) means that their adoption is still limited to larger, well-funded operations.

Table: C&D recycling scrap - detailed technology landscape

Process stage	Technology used	Output	Technology level
Collection	Vehicles and earth-moving equipment	Transports materials within the facility	Primitive (basic mechanical handling)
Sorting and segregation	Grizzly feeder	Separation of over-size materials	Primitive
Sorting and segregation	Hopper	Feeding mechanism	Primitive
Crushing	Primary crushers (jaw crushers); secondary and tertiary crushers (cone crushers, granulator, roller crusher, vertical shaft impactor)	Crushes stones to smaller and finer sizes of aggregates	Advanced (higher efficiency, better control over particle size)
Screening	Multi-tiered screens	Sorting materials by size (e.g., separating pebbles from gravel)	Semi-advanced (common but effective)
Material separation	Magnetic separator	Separation of metal from sand, silt, etc.	Advanced (specialised separation technology)

Process stage	Technology used	Output	Technology level
Material separation	Hydro cyclones, thickening tank, sludge tank, filter press	Separates out sand and silt	Advanced (wet processing, high efficiency)
Material separation	Log washer	Separates light-weight plastic and organic matter	Advanced (specialised washing equipment)
In-house transportation	Conveyor belts	Transportation of material	Semi-advanced (standard industrial automation)
Recycled products production	Shaking table, moulds, concrete mixers, brick-making machines	Produce recycled products	Primitive (moulds) to semi-advanced (mixers/brick machines)

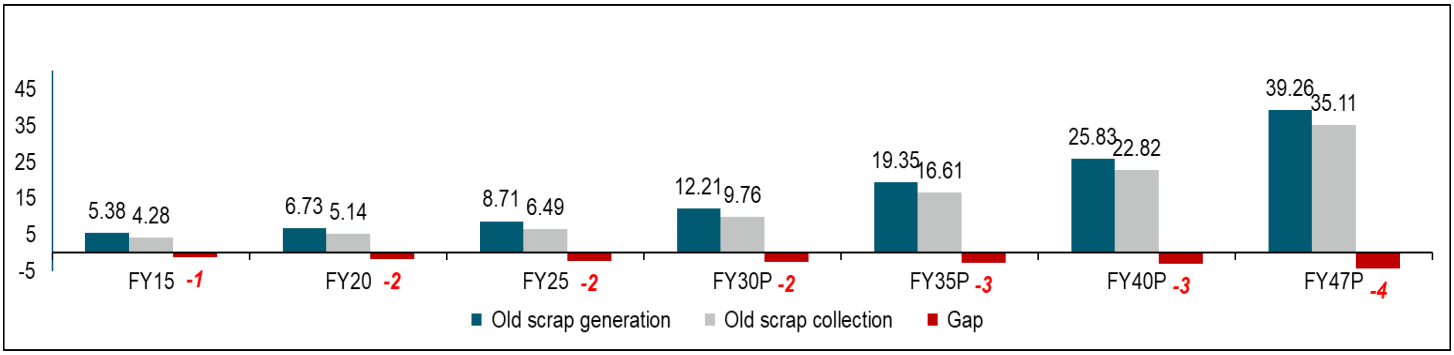
Source: Crisil Intelligence

The magnetic separator is the critical technology used to recover steel. Placed after the crushing stage, magnetic separators pull out embedded reinforcement bars and other ferrous materials from the crushed concrete stream. The recovered steel, rebar and structural offcuts are sheared to size and sold to re-rolling mills or IF units.

With all five value chains now covered, the report turns to the aggregate numbers on scrap generation across all segments.

Old scrap collection gap

Figure: Collection gap



Volume in Million Tonnes (Mn T)
Source: Crisil Intelligence

- India's old/obsolete steel scrap collection efficiency stood at 75% in fiscal 2025, this collection gap is largely due to inefficiencies in scrap collection from Automobile, Consumers durables as well as construction and demolition segments.
- India's old steel scrap collection efficiency is projected to climb to 80% by fiscal 2030, 86% by fiscal 2035 and 89% by fiscal 2047, reflecting stronger policy push and formalization & improvement in traceability across the value chain.

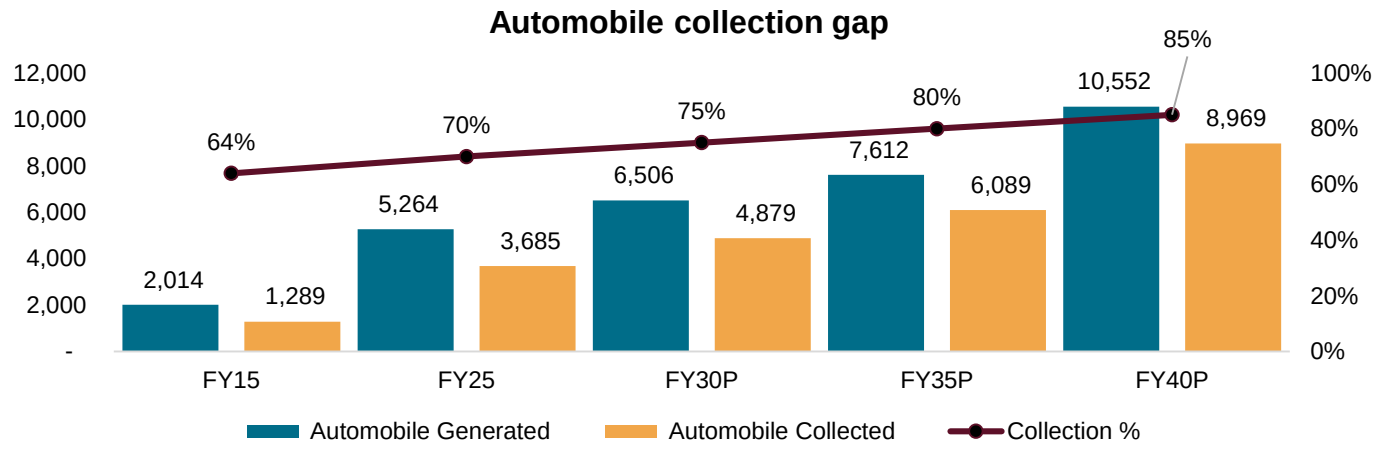
Table: Segment-wise Collection Efficiency

Segment-wise collection efficiency (%)							*Factors contributing to inefficiencies*
Year	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY40P**	
Automobile	64%	69%	70%	75%	80%	85%	Low RVSF penetration across India, limited consumer awareness of diligent scrappage mechanisms, and nascent processing technologies. Data on ELVs lying at police stations across India is not publicly available.
Construction & demolition	60%	65%	70%	73%	75%	80%	Planned C&D facilities are not fully in place versus actual requirement; processing technologies remain nascent.
Consumer durables	60%	62%	65%	70%	75%	80%	Low collection efficiency due to the high presence of kabadiwalas and leakage into the second-hand market.

Source: Crisil Intelligence

Automobile old scrap collection gap

Figure: Collection gap in automobile sector

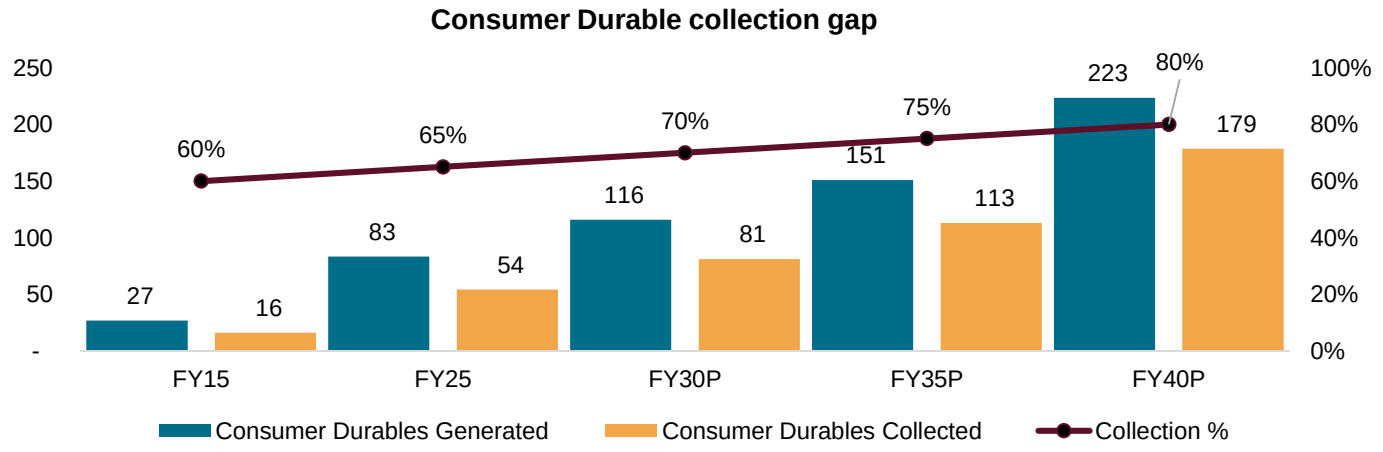


Volume in Kilo Tonnes (KT)
Source: Crisil Intelligence

- Automobile scrap collection efficiency is expected to rise from ~60% in FY15 to over 85% by FY40, supported by organized scrappage centres (RVSFs) and policy-led vehicle retirement.

Consumer durable old scrap collection gap

Figure: Collection gap in consumer durables scrap

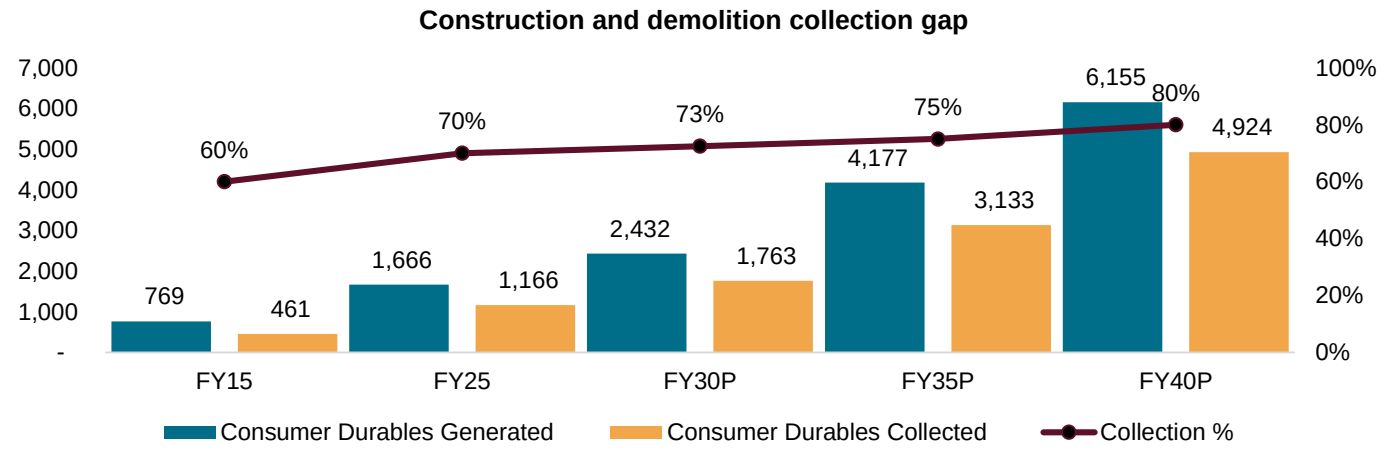


Volume in Kilo Tonnes (KT)
Source: Crisil Intelligence

- Consumer durables scrap collection to grow steadily from 60% in FY15 to nearly 80% by FY40, driven by higher product turnover and stronger EPR-led recovery mechanisms.

C&D old scrap collection gap

Figure: Collection gap in C&D scrap



Volume in Kilo Tonnes (KT)
Source: Crisil Intelligence

- C&D scrap collection is projected to improve from ~60% in FY15 to ~80% by FY40 as formal waste-handling systems and construction and demolition waste recycling infrastructure expand.

Unaccounted steel scrap

A significant portion of end-of-life steel remains outside the formal recycling ecosystem despite being technically recoverable. This unaccounted steel scrap comprises steel-bearing assets that are stranded due to legal disputes, ownership complexities, delayed asset liquidation, abandoned projects, or inadequate recovery mechanisms. Consequently, these materials do not enter the organized scrap collection network in a timely manner, resulting in lower domestic scrap availability and reduced material circularity. Improving the identification and recovery of such scrap reservoirs can enhance collection efficiency and support the growing demand for ferrous scrap.

Table: Sources of Unaccounted steel scrap

Source of steel scrap	Why it remains outside the formal scrap flows
Impound & Accident Vehicles (Police Stations, RTO Yards, Courts)	Prolonged legal retention, fragmented ownership, delayed disposal processes
Stalled Real Estate Projects (Abandoned Construction Sites)	Steel remains locked within incomplete structures for extended periods
Disputed Industrial Assets (Closed Factories, Mills, Power Plants) Insolvency-Affected Industrial Assets	Delays in liquidation and asset disposition postpone material recovery
Idle Mining & Quarry Equipment	Equipment remains stranded due to remote locations and ownership complexities
Infrastructure Renewal & Replacement Projects	Significant steel becomes available during upgrades, but recovery visibility is limited

Source: Crisil Intelligence

The major sources of unaccounted steel scrap span multiple sectors, including impounded and accident vehicles, stalled real estate projects, insolvency-affected industrial assets, idle mining and quarry equipment, and infrastructure renewal projects. While these assets contain significant quantities of recoverable steel, prolonged legal proceedings, fragmented ownership, remote locations, and limited visibility of recovery opportunities often delay or prevent their integration into formal scrap flows. Addressing these structural bottlenecks through streamlined disposal processes, improved asset tracking, and greater participation of organized recyclers can unlock an important secondary source of steel scrap for the domestic market.

Scrap generation: Overview and outlook

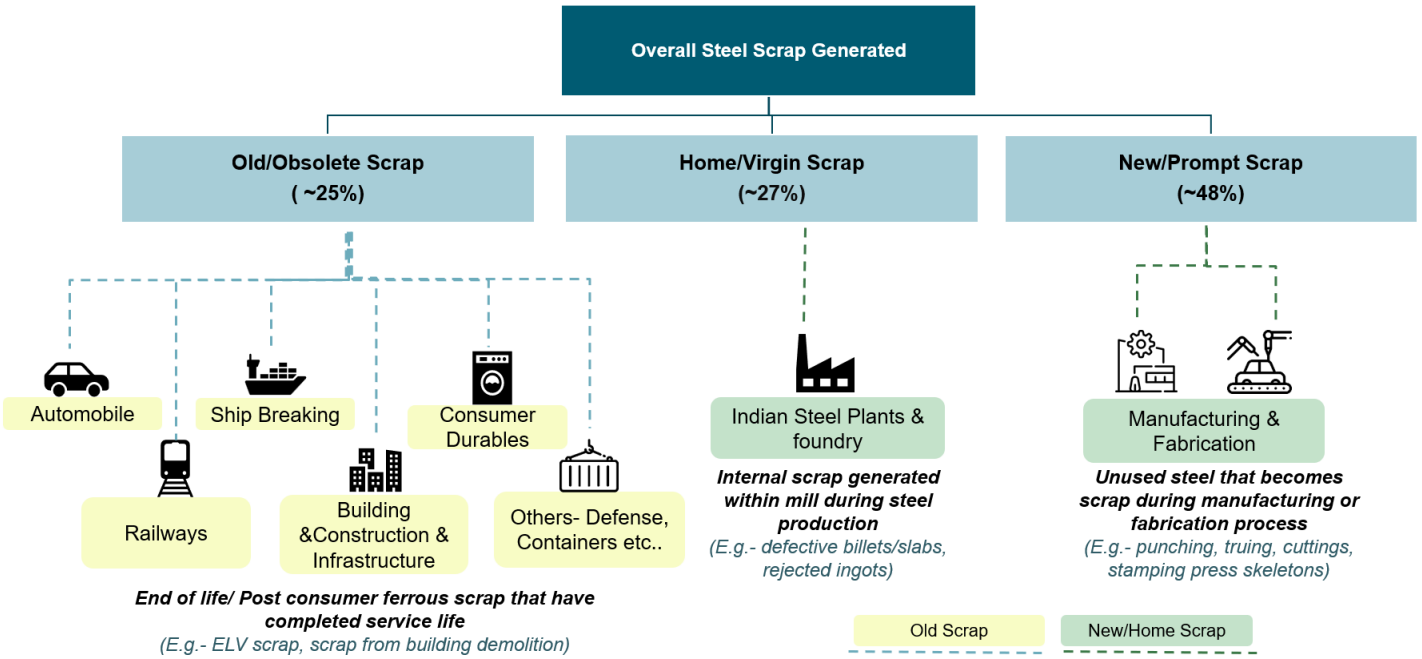
All domestic ferrous scrap falls into one of three categories based on where in the steel lifecycle it originates and each category has a different growth drive, quality profile and challenges in collection.

India's domestic ferrous scrap generation comes from three distinct streams, each driven by different economic and demographic forces.

Ferrous scrap generation

Overall steel scrap generated in India falls into three broad categories

Figure: Types of scrap generated



Source: Crisil Intelligence

Steel scrap generation is structurally diversified across three key streams, with new/prompt scrap forming the largest share (~48%), followed by home/virgin scrap (~27%) and old/obsolete scrap (~25%).

- **New/prompt scrap (largest contributor):** Generated during the manufacturing and fabrication processes (e.g., punching, cutting, stamping), this stream is highly traceable, consistent in quality, and largely recycled within industrial ecosystems.
- **Home/virgin scrap**: Produced internally within steel plants and foundries during production (e.g., defective billets, rejected ingots). This is typically re-melted in-house, ensuring minimal external circulation.
- **Old/obsolete scrap (end-of-life**): Originates from post-consumer sources such as automobiles (ELVs), ship breaking, construction and infrastructure demolition, railways and consumer durables. Through it accounts for a smaller share, this segment is critical for long-term scrap availability but is more fragmented and collection intensive.

The scrap ecosystem is currently dominated by industrial (new + home) scrap (75-80%), indicating strong backward integration and process efficiency, while scaling up organized collection and processing of obsolete scrap remains a key opportunity area for improving circularity.

Total generation trajectory

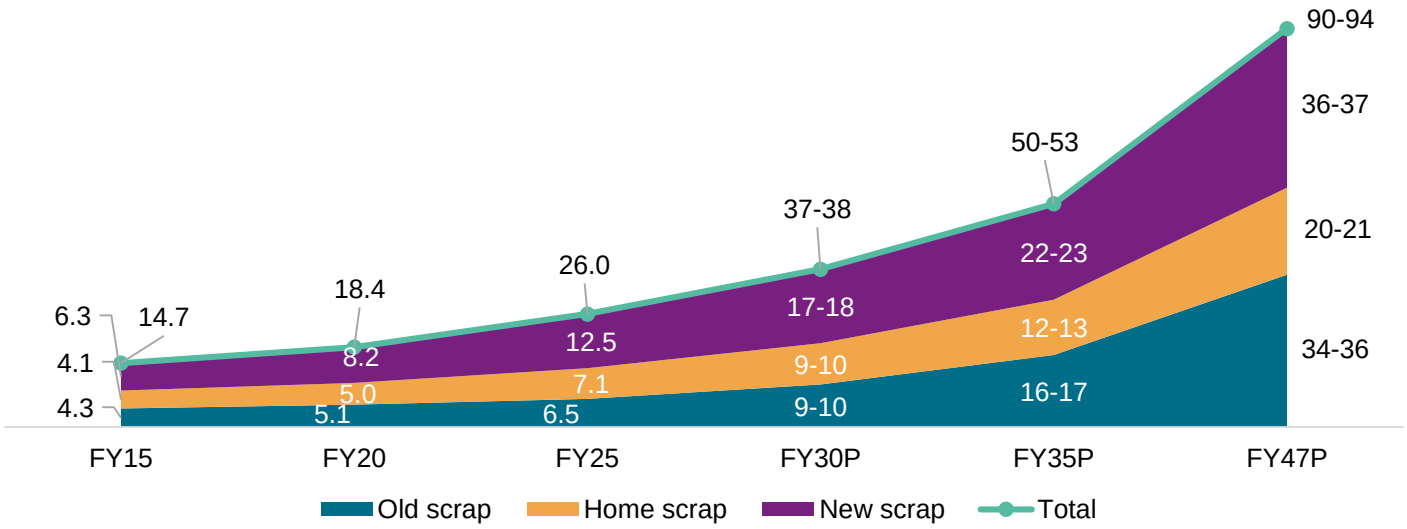
India's total domestic scrap generation has grown steadily over the past decade, and the pace is expected to pick up further as the country's steel stock matures and manufacturing activity expands.

India's total domestic scrap generation stood at 26.0 MT in fiscal 2025, having grown from 14.7 MT in fiscal 2015 and 18.4 MT in fiscal 2020.

New/prompt scrap contributed 48% of the total scrap in fiscal 2025, up from 43% in fiscal 2015, driven by expansion in steel-intensive manufacturing. Its share is expected to remain the largest, ranging between 40% and 48% from fiscal 2025 to fiscal 2047, pointing to sustained growth in secondary steel feedstock from domestic manufacturing activity.

Figure: Scrap generation overview (fiscals 2015-2047P)

Volume (MT)



Source: Crisil Intelligence

Table: Scrap generation growth rates

CAGR period	Growth rate
FY20–FY25	7.2%
FY25–FY30P	6.5–7.5%
FY30P–FY35P	7.0–8.0%
FY35P–FY47P	5.0–6.0%

Source: Crisil Intelligence

Table: Scrap type share (%) over time

Fiscal	New scrap	Home scrap	Old scrap
FY15	43%	28%	29%
FY20	45%	27%	28%
FY25	48%	27%	25%
FY30P	46–48%	26–28%	25–27%
FY35P	42–44%	25–27%	30–32%
FY47P	39–41%	21–23%	37–39%

Source: Crisil Intelligence

At the same time, the share of old scrap is set to increase from 25% in fiscal 2025 to 37-39% by fiscal 2047, reflecting a maturing steel economy with more end-of-life buildings, vehicles, machinery and consumer durables entering the scrap stream.

New scrap

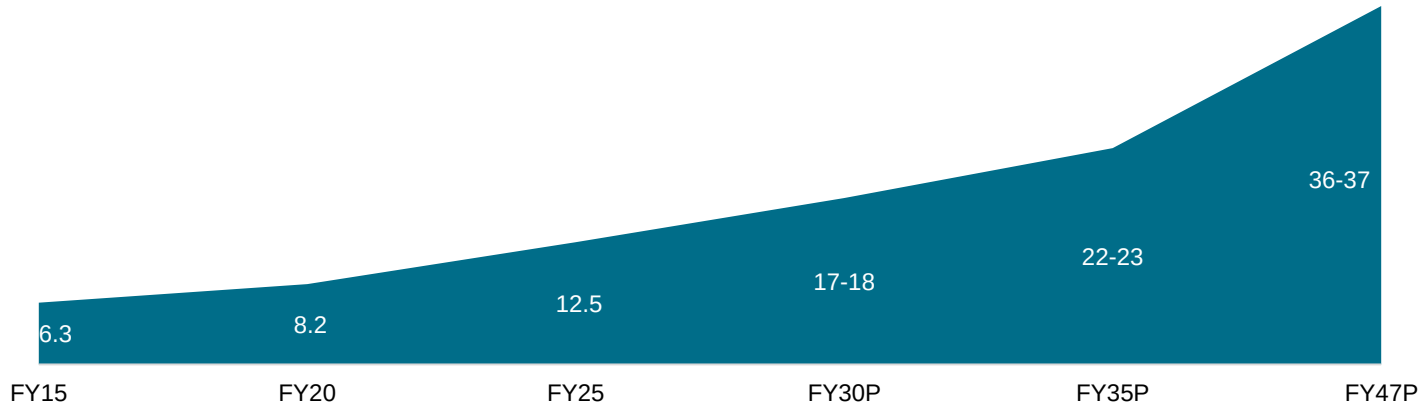
New scrap refers to steel that becomes waste during the manufacturing and fabrication process, prior to the finished product reaching the end user. This type of scrap is generated by activities such as stamping automotive body panels, cutting structural beams and punching sheet metal for consumer goods.

New scrap increased from 8.2 MT in fiscal 2020 to 12.5 MT in fiscal 2025 at a CAGR of 8.7% and is projected to reach 36-37 MT by fiscal 2047.

In fiscal 2025, 90% of new scraps were re-melting grade. This high purity and low-contaminant scrap offered one of the most efficient furnace feedstocks available. Among industries, automobiles (19%) and general engineering/consumer durables (10%) are the largest contributors of scrap by percentage, resulting in a weighted new scrap generation factor of 7.8%.

Figure: New scrap generation trend

Volume (MT)



Source: Crisil Intelligence

Table: New scrap generation norm calculation

End-use industry	Share of business	New scrap generated (%)
Automobiles	10%	19%
Building and construction	65%	5%
General engineering, consumer durables and others	25%	10%
Weighted average		**7.8%**

Source: Crisil Intelligence

Table: New Scrap growth rates

CAGR period	Growth rate
FY20–FY25	8.7%
FY25–FY30P	6.0-7.0%

CAGR period	Growth rate
FY30P–FY35P	5.0-6.0%
FY35P–FY47P	4.0-5.0%

Source: Crisil Intelligence

This steady rise is driven by sustained growth in fabrication-heavy sectors such as automobiles, construction steel, and engineering goods, indicating a strong link between India's manufacturing activity and prompt scrap availability.

Looking ahead, the new scrap norm and end-use industry-wise share in business are projected to evolve as follows: the automobile share stays ~10% through fiscal 2047, while the building and construction share rises from 65% in fiscal 2025 to 68-70% in fiscals 2035-2047.

The general engineering, consumer durables and others segment decrease from 25% to 20-22%. The overall weighted new scrap generation factor decreases slightly from 7.8% in fiscal 2025 to 7.6% in fiscal 2030P and beyond, reflecting marginal improvements in manufacturing efficiency.

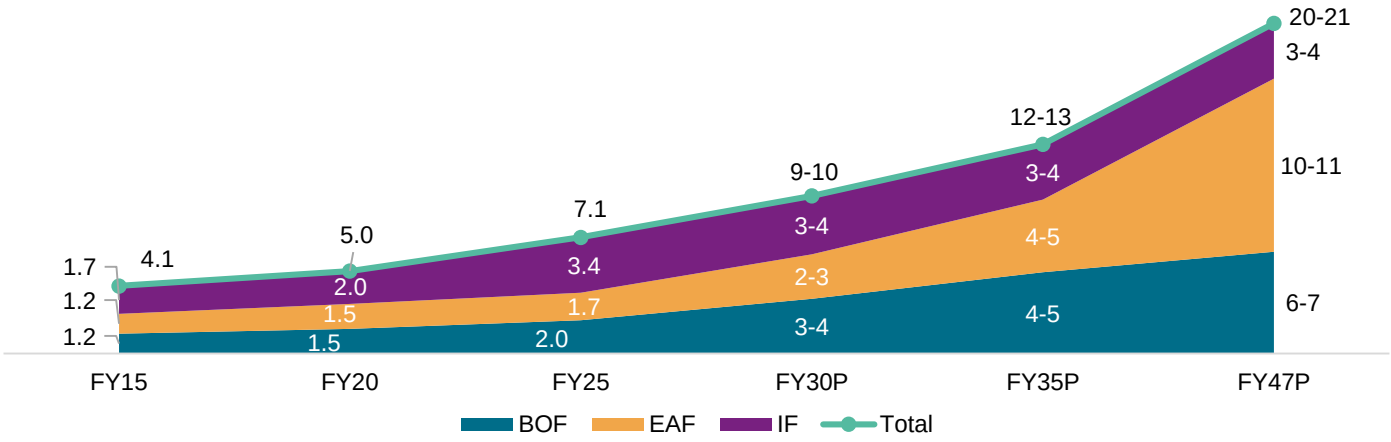
Home scrap

Home scrap is generated inside steel mills as a by-product of the production process, and its volume is directly tied to how much steel India produces and through which route (BOF, EAF or IF).

Home scrap grew from 4.1 MT in fiscal 2015 to 7.1 MT in fiscal 2025 and is projected to reach 20 to 21 MT by fiscal 2047. Since home scrap is generated internally within steel plants, its growth directly mirrors expansion in domestic capacity.

Figure: Home scrap generation trend by routes

Volume (MT)



Source: JPC, Industry, Crisil Intelligence

Table: Home scrap growth rates

CAGR period	Growth rate
FY20–FY25	7.0%
FY25–FY30P	6.0-7.0%
FY30P–FY35P	5.5-6.5%
FY35P–FY47P	4.0-4.5%

Source: Crisil Intelligence

Home scrap is generated at ~3% in the BOF route, 5% in the EAF route, and 6% in the IF route. The weighted average home scrap generation factor stays ~4.5% in fiscal 2025.

Table: Home scrap generation norm calculation

Route	Home scrap generated (%)	Finished steel production FY25 (MT)	FY30P (MT)	FY35P (MT)	FY47P (MT)
BOF	3%	66	108	160	201
EAF	5%	33	53	86	205
IF	6%	55	58	55	55
Weighted average		4.5%	4.3%	4.1%	4.2%

Source: Crisil Intelligence

This factor is expected to decrease to 4.2% over time as the share of BOF and EAF increases in the steel-making route and the share of home scrap from the EAF route is expected to increase from 1.7 in fiscal 2025 to 10-11 MT by fiscal 2047 as per planned capacity expansions.

Note: Home scrap generated goes 100% into remelting.

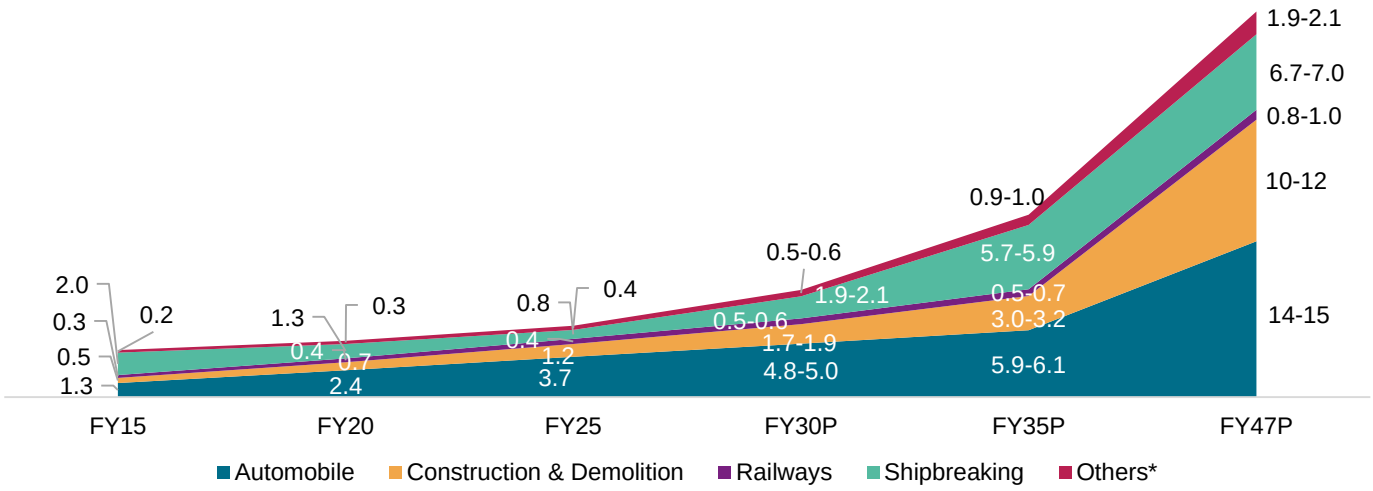
Old scrap

Old scrap is the steel recovered from products that have completed their useful life, and it is the fastest-growing category of domestic scrap, driven by the ageing of India's vehicle fleet, building stock and industrial infrastructure.

Old scrap is the growth engine of India's future scrap supply. While it accounted for only 6.5 MT in fiscal 2025 (25% of total), it is projected to grow at the fastest rate among all categories, reaching 34 to 36 MT (37 to 39% of total) by fiscal 2047.

Figure: Segment-wise old scrap generation (fiscals 2015-2047P)

Volume (MT)



*Note: *Others include consumer durables, cans, packaging, defence and containers*
Source: Crisil Intelligence

Table: Old scrap growth rates

CAGR period	Growth rate
FY20–FY25	4.8%
FY25–FY30P	8.0-9.0%

CAGR period	Growth rate
FY30P–FY35P	11-12%
FY35P–FY47P	6.0-7.0%

Source: Crisil Intelligence

Table: Old scrap segment-wise share (%)

Segment	FY15	FY20	FY25	FY30P	FY35P	FY47P
Automobile	30%	48%	57%	49-51%	36-39%	39-40%
Construction and demolition	11%	14%	18%	17-19%	18-20%	30-31%
Railways	7%	7%	7%	5-6%	3-4%	3-4%
Ship recycling	47%	26%	13%	20-22%	34-36%	19-21%
Others	~5-6%	~5-6%	~5-6%	~5-6%	~5-6%	~5-6%

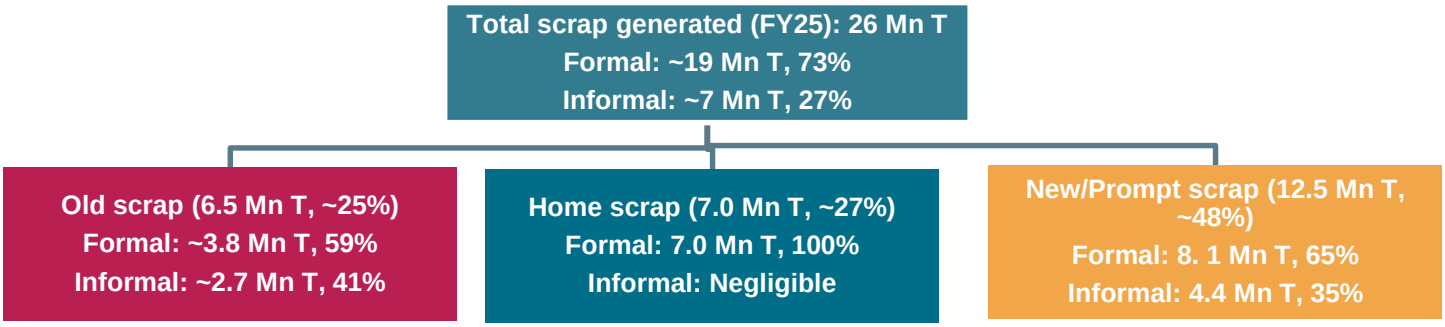
Source: Crisil Intelligence

Two major structural shifts are underway. Automobile end-of-life vehicles (ELVs) contribute 57% of old scrap in fiscal 2025, up from 30% in fiscal 2015. This is driven by expanding vehicle ownership, scrappage policy adoption, and shorter replacement cycles.

Ship recycling scrap falls from 47% in fiscal 2015 to 13% in fiscal 2025, stabilising at 19-21% by fiscal 2047. Building and construction steadily rise to 30 to 31% by fiscal 2047, reflecting India’s growing stock of aging infrastructure.

Formal Vs Informal steel scrap

Figure: Formal Vs informal steel scrap segmentation



Particulars	Old scrap						Home scrap	New/prompt scrap		
Sub segments	Automobile	Ship Breaking	Railways	Consumer Durables	B&C	Others*	Home	B&C	Automobile	General Eng. & others
Overall scrap volumes	3.7 Mn T	0.8 Mn T	0.4 Mn T	0.05 Mn T	1.2 Mn T	~0.3 Mn T	7.0 Mn T	12.5 Mn T		
Formal scrap volumes	~1.2 Mn T	0.8 Mn T	0.4 Mn T	~0.01 Mn T	1.2 Mn T	~0.15 Mn T	7.0 Mn T	8.1 Mn T		
Formal scrap %	30-35%	100%	100%	20-25%	100%	50%	100%	65%		
Informal scrap volumes	~2.5 Mn T	-	-	~0.04 Mn T	-	~0.15 Mn T	-	4.4 Mn T		
Informal scrap %	65-70%	0%	0%	75-80%	0%	~50%	0%	35%		

Source: Crisil Intelligence

India is estimated to generate 26 million tonnes of steel scrap in FY25, of which approximately 73% (19 Mn T) originates from the formal sector, while the remaining 27% (7 Mn T) is generated through informal channels. Home scrap is entirely formal in nature as it is generated and consumed within steel manufacturing facilities. In contrast, old scrap exhibits the highest level of informality, with nearly 41% (2.7 Mn T) flowing through unorganized collection and processing networks. The automotive sector is the largest contributor to old scrap generation, although a significant portion continues to remain outside formal recycling channels.

The degree of formalization varies considerably across end-use sectors. Scrap generated from ship breaking, railways, building & construction (B&C), and home scrap is largely formal due to established regulatory frameworks, organized disposal mechanisms, and centralized reporting systems. On the other hand, sectors such as consumer durables, automobiles, and certain industrial applications continue to exhibit substantial informal participation owing to fragmented

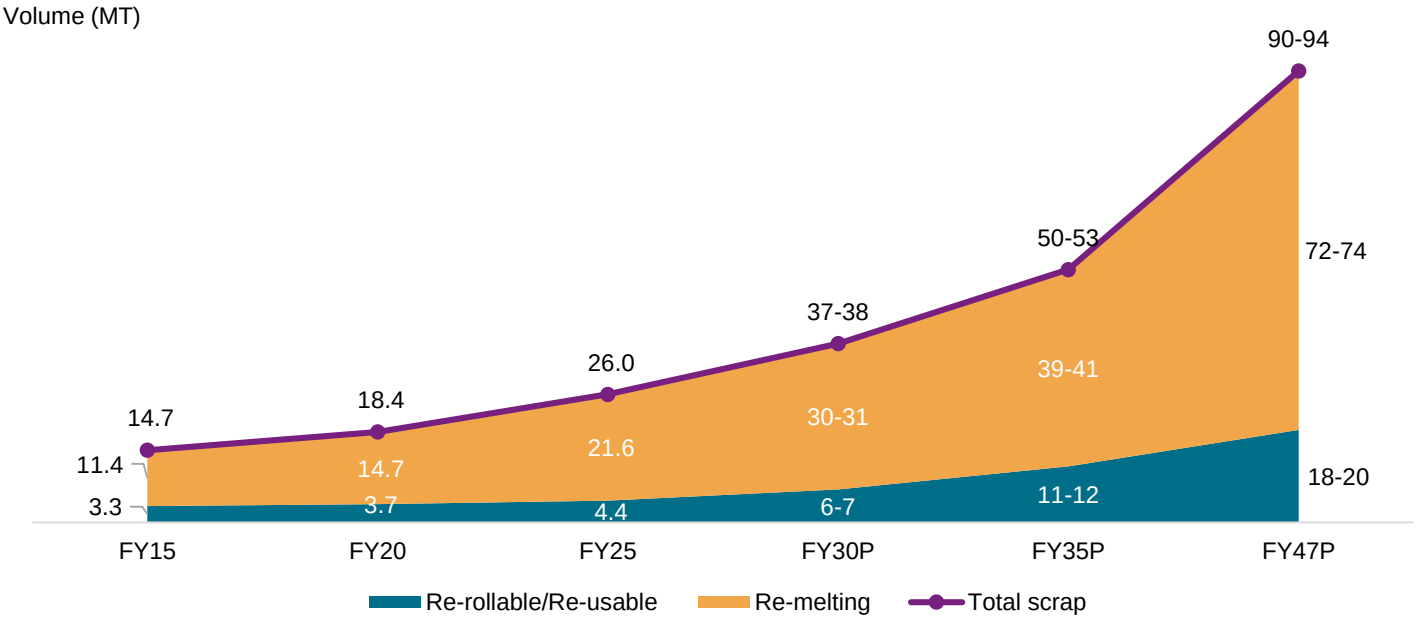
collection networks, buyback schemes, and the involvement of local scrap dealers. Within prompt scrap generation, approximately 65% (8.1 Mn T) is formal, supported by organized manufacturing processes and traceable supply chains, while the remaining 35% (4.4 Mn T) remains informal. The analysis highlights significant opportunities for policy intervention, digital traceability, and organized collection infrastructure to further formalize India's steel scrap ecosystem and improve material recovery efficiency.

Re-rollable / re-usable vs re-melting scrap

Not all scraps go through a furnace. Some of it, particularly heavy plates from ships, used rails from railways and reusable auto components, can be directly re-rolled or reused without melting, and this split determines who the buyer is and what the final product looks like.

Re-melting accounted for 83% (~21.6 MT) of overall scrap in fiscal 2025, while the remaining 17% (~4.4 MT) was reused or re-rolled. By fiscal 2047, the re-melting share is expected to be at 78 to 80%.

Figure: Re-rollable / re-usable vs re-melting trajectory

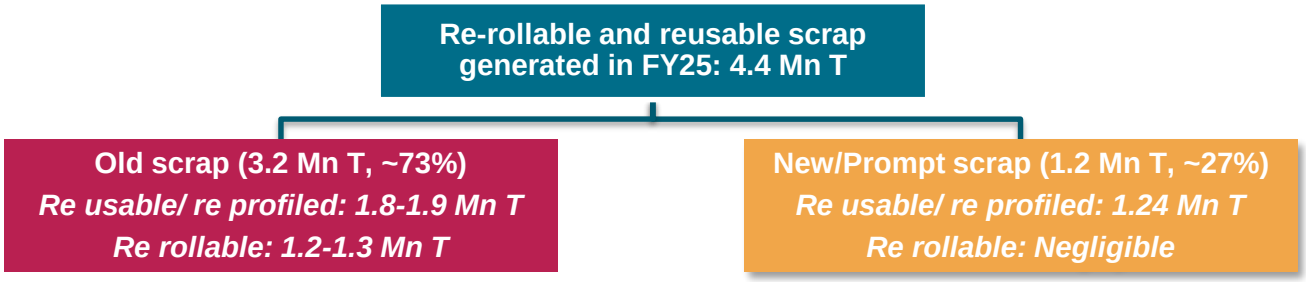


Source: Crisil Intelligence

Re-rollable / reusable scrap breakdown for fiscal 2025

Re-rollable scrap accounted for 17% (~4.4 MT) of overall scrap in fiscal 2025, with old scrap being the major contributor (3.23 MT).

Figure: Re-rollable / reusable scrap



Particulars	Old scrap				New/prompt scrap		
Sub segments	Automobile	Ship Breaking	Railways	Consumer Durables	B&C	Automobile	General Eng. & others
% share in segment	67-70%	21-23%	8-10%	~0.5%	50-55%	40-45%	0-3%
Re-usable/ re-profiled scrap volume	1.7-1.8 Mn T	0.05-0.10 Mn T	Negligible	~0.02 Mn T	0.6-0.7 Mn T	0.5-0.6 Mn T	~0.04 Mn T
Key re-usable scrap	Second hand auto components	Doors, hatches, tanks, staircase, anchor etc.	-	Second hand auto components	TMT End cut pieces (>1 feet), Trims from Roof cladding etc.	Blanking skeletons, stamping/punching scrap	Scrap from fabrication
Re-rollable scrap volume	0.3-0.4 Mn T	0.6-0.7 Mn T	~0.3 Mn T	Negligible	Prompt scrap from the automotive and general engineering sectors is generally characterized as reusable/reprofiled scrap. Due to its superior quality and dimensional integrity, it is commonly reused or reprofiled for further applications rather than being rerolled		
Key re-rollable scrap	Heavy gauge sheet off cuts from chassis	Deck/Hull Plates and other structural components	P-ways scrap	-			

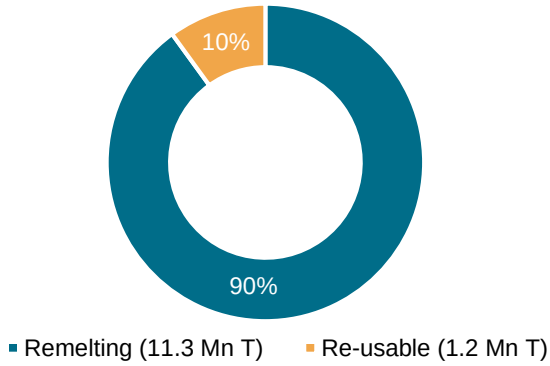
Note: Refer to annexures for subsegment-wise details and insights
Source: Crisil Intelligence

In FY25, India generated approximately 4.4 million tonnes of re-rollable and reusable/re-profiled steel scrap, with old scrap accounting for nearly 73% (3.2 Mn T) of the total. Old scrap remains the primary source of re-rollable material, contributing around 1.2–1.3 million tonnes, while also generating 1.8–1.9 million tonnes of reusable/re-profiled scrap. The automobile sector emerged as the largest contributor within old scrap, accounting for nearly 67–70% of the segment, followed by ship breaking (21–23%) and railways (8–10%). Re-rollable scrap from these sectors primarily consists of heavy-gauge steel sheets, ship hull plates, and railway track materials, highlighting their importance in supplying feedstock for secondary steel production.

In contrast, new/prompt scrap contributed around 1.2 million tonnes (27%), almost entirely in the form of reusable or re-profiled material (1.24 Mn T), with negligible re-rollable potential due to its superior quality and dimensional integrity. The building & construction sector accounted for the largest share of prompt scrap (50–55%), followed by automobiles (40–45%), while general engineering and other industries contributed a marginal share. Common sources include TMT end-cuts, roof cladding trims, blanking skeletons, and fabrication scrap, which are typically reused directly in downstream

applications rather than undergoing re-rolling. This highlights a clear distinction between old and prompt scrap streams, with old scrap serving as the key source of re-rollable material and prompt scrap predominantly supporting circularity through direct reuse and re-profiling.

Figure: New scrap: Reusable vs remelting (FY25)



Source: Crisil Intelligence

Within the re-melting and re-rollable split, the behaviour is quite different by scrap type. New scrap is overwhelmingly re-melting grade of the 12.5 MT of new scrap in fiscal 2025, 90% (11.3 MT) was re-melting and only 10% (1.2 MT) was re-rollable. Home scrap generated goes 100% into remelting by nature. Obsolete scrap has a mix of re-melting and re-rollable/re-usable scrap, with the split varying by source sector.

Figure: Old scrap re-rollable/re-usable vs re-melting by sector (%)



Note: Scrap generation volume inclusive of reusable as well as remelting scrap
Source: Crisil Intelligence

The share of re-rollable output varies sharply across old scrap sectors, with ship recycling yielding the highest proportion of directly re-rollable material and construction scrap going entirely into remelting.

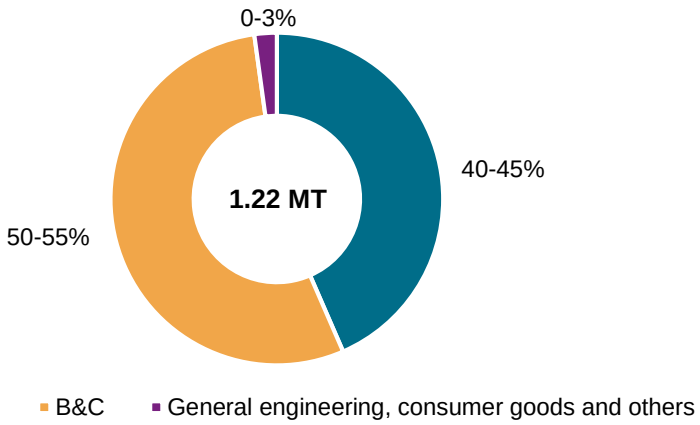
Automobiles have a 60% share of re-rollable, where only 35-45% of cars reaching scrap yards are fully dismantled and scrapped, while components from ~60% of cars coming for scrapping are reused for reassembly. Ship recycling has the highest re-rollable share at 88%, with its plates and structural components ideally suited for direct re-rolling. Railways follow at 65% re-rollable. In contrast, building and construction scrap goes 100% into remelting and is not considered fit for re-rolling purposes.

Re-usable new scrap

Of the total re-usable new scrap (1.22 MT, ~10% of overall new scrap) in fiscal 2025, 50-55% came from the B&C segment, followed by automobile (40-45%). The share of general engineering, consumer goods and other segments remained low (almost negligible), as scrap from these sources is mostly sent for remelting.

The primary buyers of re-usable scrap are micro, small and medium enterprise (MSME) secondary steel processors, downstream steel fabricators and light engineering units, which convert the scrap into value-added fabricated products.

Figure: Re-usable new scrap break-up by segment (fiscal 2025)



Source: Crisil Intelligence

Re-rollable/re-usable old scrap

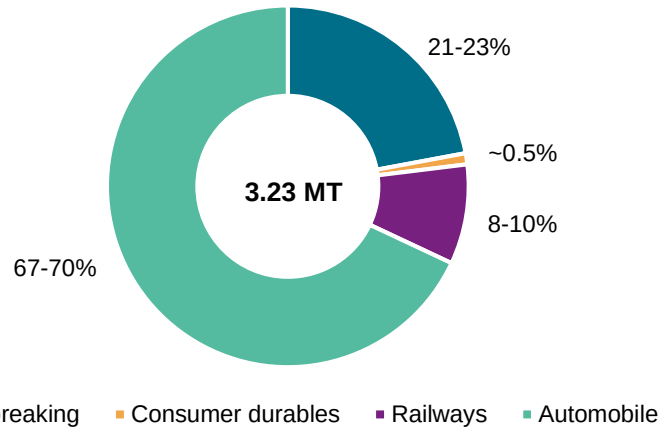
Unlike home scrap which entirely goes into remelting and new scrap of which only ~10% is suitable for re-rolling re-rollable old scrap accounted for ~50% of the total old scrap generated in fiscal 2025.

The automobile segment accounted for 67-70% of the total re-rollable old scrap (3.23 MT) in fiscal 2025, followed by ship-breaking (21-23%) and railways (8-10%).

The share of consumers durables was negligible (~0.5%) due to the lower contribution of consumer durables scrap in total old scrap.

Construction and demolition scrap mostly goes into remelting and is not considered fit for re-rolling purposes.

Figure: Re-rollable/reusable old scrap break-up by segment (fiscal 2025)



Source: Crisil Intelligence

Table: Segment-wise re-rollable/re-usable old scrap

Old scrap segment	Key scrap-generating areas	Percentage of scrap re-rolled/reused out of the total scrap generated by the sector	Who buys it?	Where is it sold?	Key process	End-products and end-users
Consumer durables	Approximately one out of every six discarded appliances (refrigerators, washing machines, etc.) is reassembled by ragpickers/kabadiwalas	17% (~0.02 MT)	• Level 1 scrap collectors (local ragpickers) • Level 2 scrap collectors (specifically handling consumer durables scrap)	• L2 scrap collectors • Households	• Manual dismantling using hand tools (hammers, screwdrivers, etc.) • Reassembly of usable parts	• Refurbished appliances or parts sold to household consumers
Automobile	Only 35-45% of cars reaching scrap yards are fully dismantled and scrapped; components from about 60% of cars coming for scrapping are reused for reassembly	60% (2.2-2.3 MT)	• Second-hand component dealers, local scrap dealers, component salvagers	• Auto parts/components markets and clusters (e.g., Mayapuri in Delhi, Pune and Chennai) • Informal set-ups in small towns and villages	• Manual removal of parts (wheels, doors, seat frames) with cutters • Engines rebuilt and resold, wrenches, hoists, inspection tools • Transmissions sold again by the second-hand components market	• Reused auto components for households, car repair workshops, and vehicle reassembly
Railways	Permanent ways (P-ways) (100% of steel intensity, hardly any wastages during dismantling) are 90% re-rolled/reused, just 10% goes for remelting	65%* (~0.3 MT)	• Scrap traders and mills (via bidding in auctions on IRePS)	• Depots and workshop yards – buyers collect (take delivery) post sale	• Re-rolling of steel into new products	• Steel products for downstream fabricators, and tower and structure manufacturers
Ship-breaking/ recycling	Plates and other structural components	88% (0.7-0.8 MT)	• Re-rolling mills near Alang (Bhavnagar), Sundar Nagar	-	-	• Downstream steel fabricators, tower/structure -making

Old scrap segment	Key scrap-generating areas	Percentage of scrap re-rolled/reused out of the total scrap generated by the sector	Who buys it?	Where is it sold?	Key process	End-products and end-users
						industries, infrastructure projects, and the retail market

**Abandoned P-ways make up 65% of the overall scrap generated by railways*

Source: Crisil Intelligence

Cluster-wise old scrap generation

The assessment maps approximately 3.69 MnT of old scrap generation annually, representing around 60% of the estimated overall old scrap generation in India, across key scrap-generating clusters. The assessment covers major clusters across the East, North, South and West regions, with regional coverage of approximately 35%, 62%, 59% and 60%, respectively.

Figure: Key Clusters generating old scrap (FY25)

Source: Crisil Intelligence

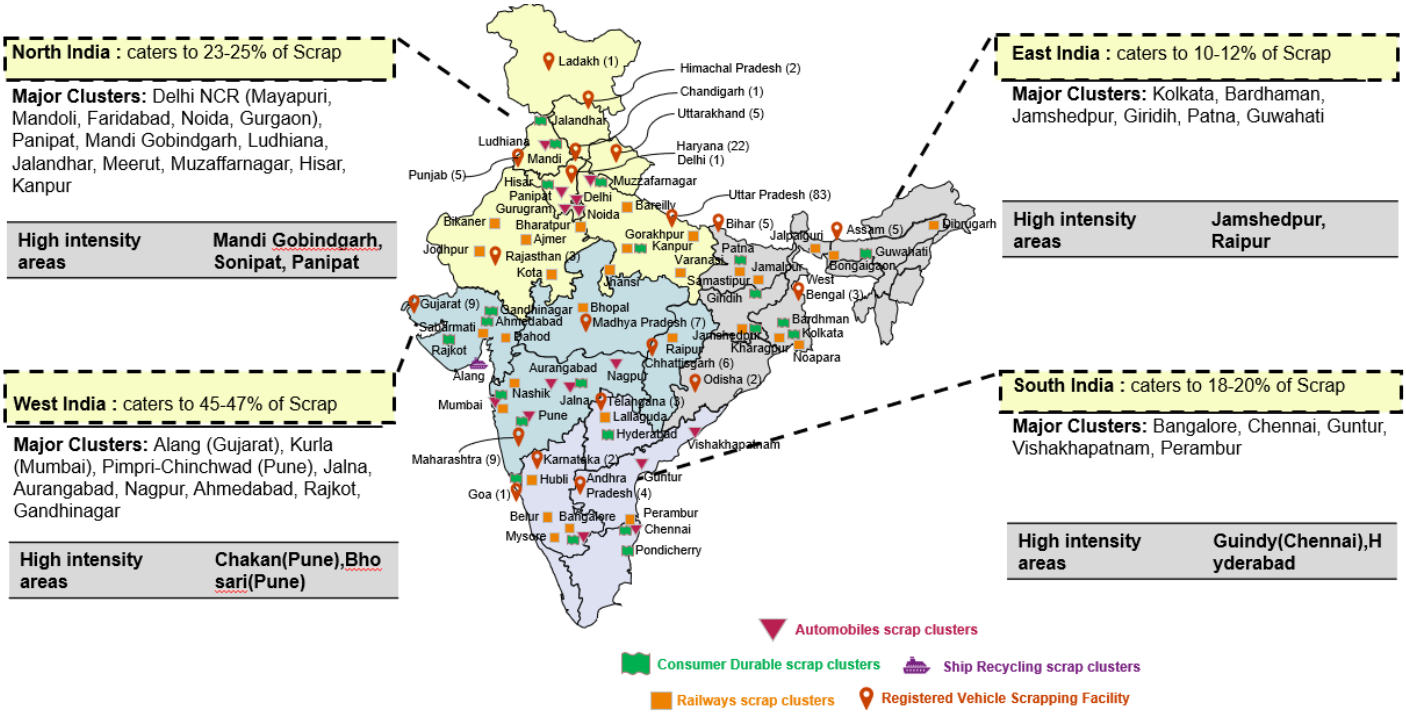


Table: Key States generating old scrap (FY25)

Zone	Cluster	State	Estimated Dealers	Estimated Scrap Volume / Year (Tons)
East			**322**	**309,600**
	Jamshedpur	Jharkhand	145	222,000
	Patna	Bihar	177	87,600
North			**1,767**	**1,060,800**
	Delhi	Delhi (NCT)	137	73,200
	Jalandhar	Punjab	120	141,600
	Lucknow	Uttar Pradesh	40	28,800
	Mandi Gobindgarh	Punjab	600	432,000
	Meerut	Uttar Pradesh	200	72,000
	Panipat	Haryana	200	94,800
	Sonipat	Haryana	470	218,400
South			**2,899**	**855,328.80**
	Bangalore	Karnataka	190	78,000
	Calicut	Kerala	41	2,100
	Chennai	Tamil Nadu	862	218,656
	Coimbatore	Tamil Nadu	400	64,800

Zone	Cluster	State	Estimated Dealers	Estimated Scrap Volume / Year (Tons)
	Hyderabad	Telangana	300	216,000
	Kochi	Kerala	340	94,200
	Palakkad	Kerala	715	156,720
	Pondicherry	Puducherry (UT)	11	852
	Vizag	Andhra Pradesh	40	24,000
West			**1,400**	**1,468,695**
	Aurangabad	Maharashtra	130	12,900
	Jaalna	Maharashtra	110	17,100
	Mumbai	Maharashtra	573	97,620
	Nagpur	Maharashtra	172	279,975
	Pune	Maharashtra	415	1,061,100
Grand Total			**6,388**	**3,694,423.80**

Source: Crisil Intelligence

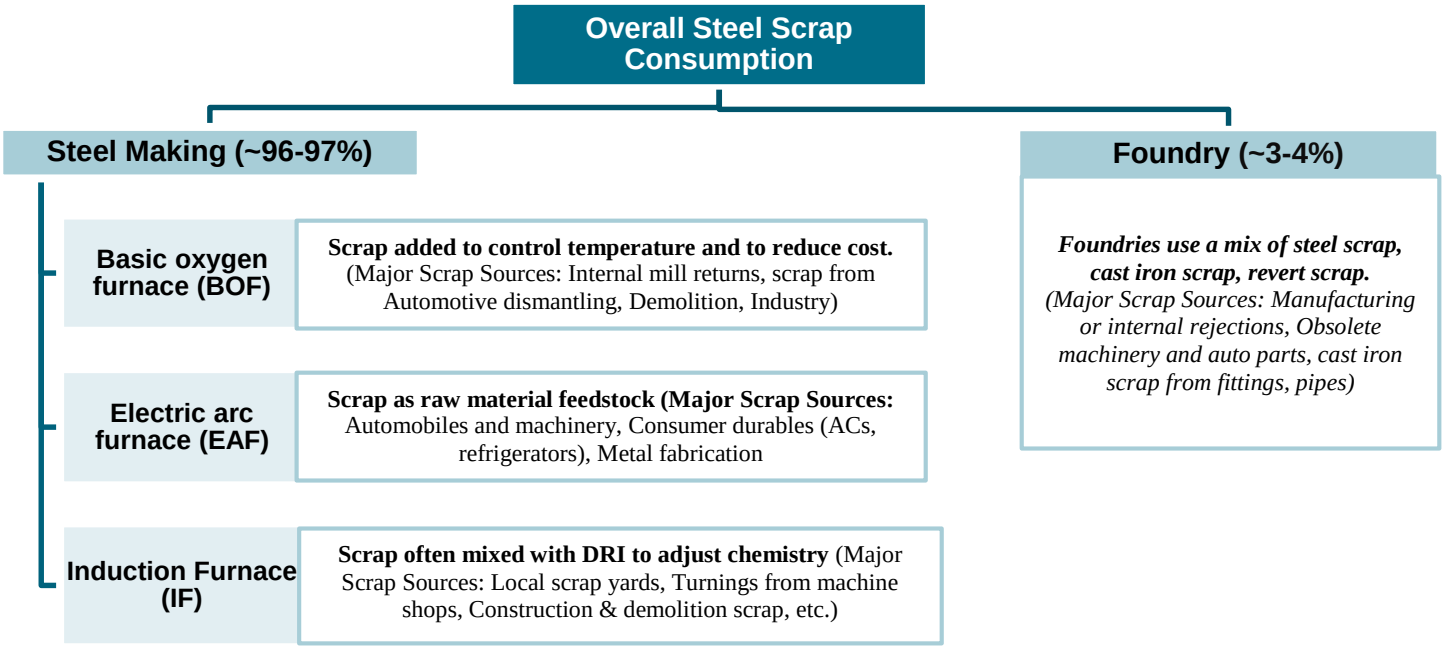
Key scrap-generating clusters identified include Jamshedpur and Patna in the East; Delhi NCR, Jalandhar, Mandi Gobindgarh, Sonipat and Panipat in the North; Chennai, Hyderabad and Palakkad in the South; and Mumbai, Pune, Nagpur, Jalna and Aurangabad in the West. The mapping provides a granular view of scrap availability across major industrial and consumption centres and serves as a basis for assessing the regional distribution of old scrap generation.

Scrap consumption: Overview and outlook

Consumption structure

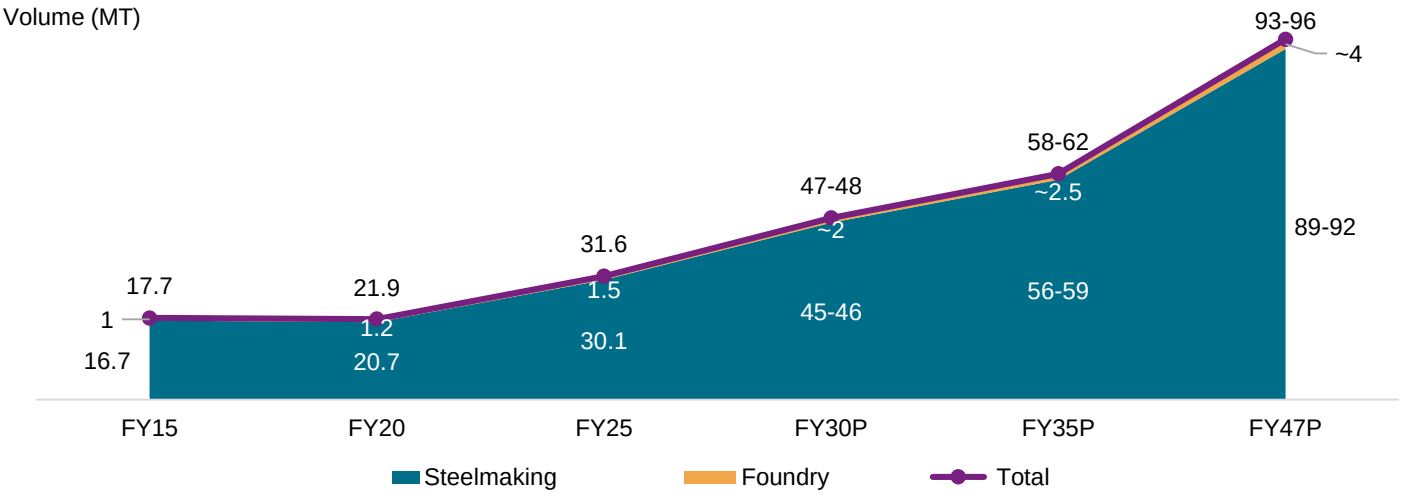
Overall steel scrap consumption can be broadly split between steelmaking (97-98%) and foundry (2-3%).

Figure: Steel scrap consumption



Source: Crisil Intelligence

Figure: Ferrous scrap consumption overview (fiscals 2015-2047P)



Note: P – projected
Source: Crisil Intelligence

Steelmaking accounts for ~95% of all scrap consumed in the country.
India's ferrous scrap demand has been on a steep growth path, rising from 17.7 MT in fiscal 2015 to 31.6 MT in fiscal 2025. Demand is set to reach 93-96 MT by fiscal 2047, driven primarily by steelmaking.

Table: Growth rates in steel scrap consumption in steelmaking and foundry

CAGR	Steelmaking	Foundry
FY20–FY25	7.8%	4.8%
FY25–FY30P	8.5–9%	4.5–5.5%
FY30P–FY35P	4.0–5.0%	4.5–5.5%
FY35P–FY47P	3.5–4.5%	4.0–4.5%

Source: Crisil Intelligence

Table: Steel making vs Foundry scrap share (%)

% Share	FY25	FY30P	FY35P	FY47P
Steelmaking	95%	96–97%	96–97%	96–97%
Foundry	5%	3–4%	3–4%	3–4%

Source: Crisil Intelligence

Steelmaking scrap demand is expected to log a robust CAGR of 8.5-9% between fiscals 2025 and 2030, before moderating to 4.0-5.0% beyond fiscal 2030, reflecting both capacity additions and higher scrap usage in EAF/IF routes.

Foundry demand remains small but is steadily rising (CAGR of 4.5-5.5%). Its share remains limited at 2-3%, highlighting that incremental scrap demand continues to be led by steelmaking.

Foundry scrap

Foundries are a small but quality-sensitive consumer of scrap, relying heavily on clean auto-industry punching waste and internally recycled casting rejects.

Overall foundry scrap consumption is split between purchased scrap (~65%) and own generated return scrap from the casting/foundry process (~35%).

Figure: Foundry scrap composition



Source: Crisil Intelligence

Table: Characteristics of foundry scrap composition

Source	Share	Yield	Key characteristics
Purchased (CRC, metal punching, stamping steel scrap from automobile and other fabrication industries)	~65%	97-98%	Auto-industry punching (70-80% of input for purchased scrap) remains the dominant scrap category in many foundries
Own generated return (from the casting/foundry process)	~35%	97%	Gates, runners, risers and rejected castings recycled internally

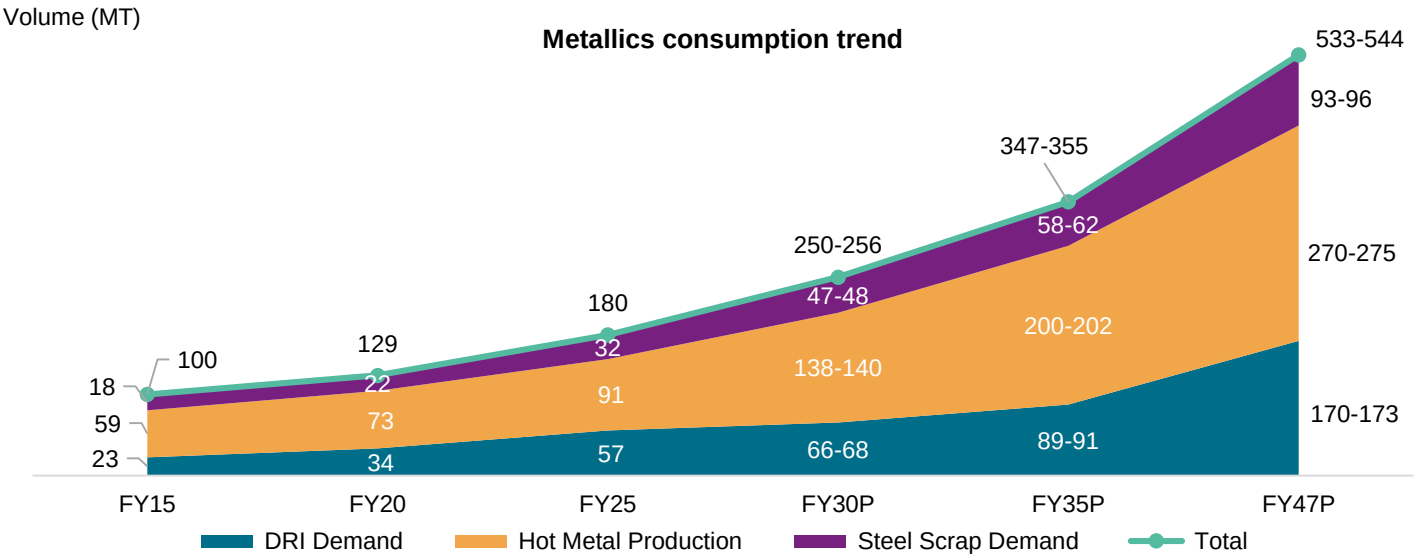
Source: Crisil Intelligence

Foundries maintain strict scrap quality control to avoid oxidation defects and ensure casting integrity. They prefer scrap from flat products due to higher availability from automotive and fabrication clusters, combined with clean, uniform and predictable chemistry.

Raw material demand in steelmaking

Steel scrap is one of the three key metallics (alongside hot metal and DRI) used in India's steelmaking furnaces, and its share in the overall metallics mix is rising faster than the other two.

Figure: Raw material demand in steelmaking



Source: Industry, Crisil Intelligence

Table: Growth rates for demand in steelmaking across DRI, hot metal and scrap metal

Metallics	FY20–FY25 CAGR	FY25–FY30P CAGR	FY30P–FY35P CAGR	FY35P–FY47P CAGR
Steel Scrap	7.8%	8.5–9.0%	4.5–5.5%	3.5–4.5%
Hot Metal	3.6%	8.5–9.0%	7.5–8.5%	2.5–3.5%
DRI	12.9%	2.5–3.0%	5.5–6.5%	5.0–6.0%

Source: Crisil Intelligence

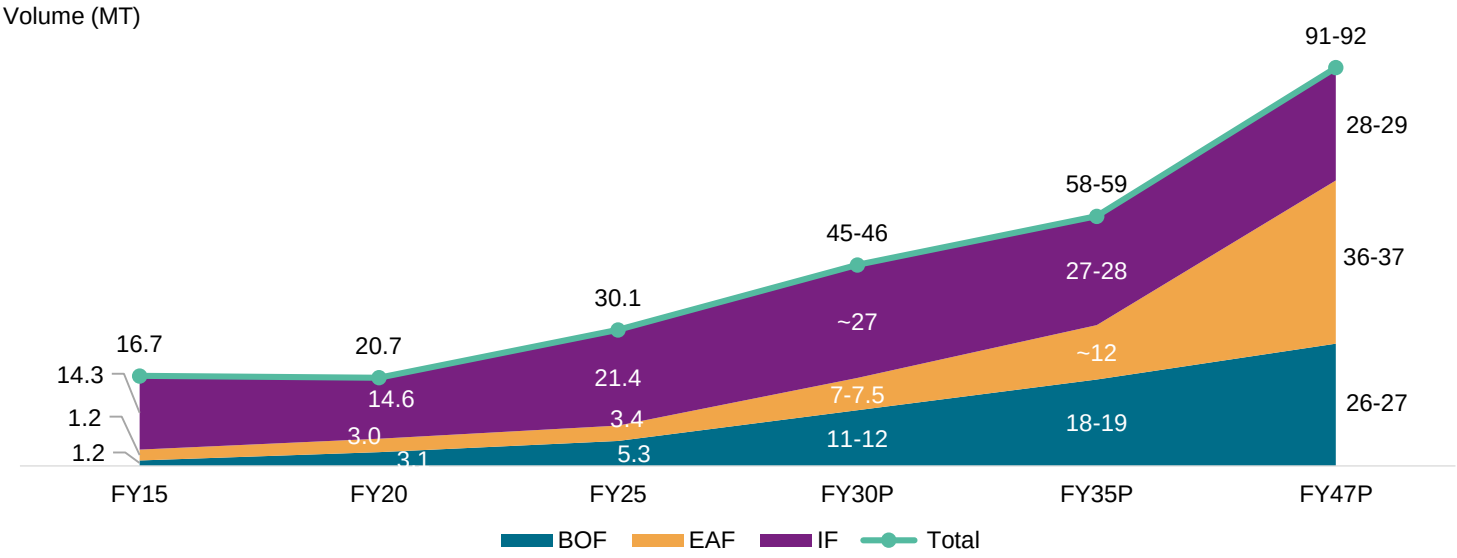
India's total metallics demand is projected to rise sharply from 129 MT in fiscal 2020 to 250-256 MT by fiscal 2030, driven by strong growth in scrap demand (from 18 MT in fiscal 2015 and 32 MT in fiscal 2025 to 93-96 MT by fiscal 2047).

Route-wise scrap demand

The three steelmaking routes- BOF, EAF and IF- use scrap differently in their charge mix, and the share of scrap in each route is projected to rise over the coming decades.

India's steel scrap demand is projected to increase sharply from 20 MT in fiscal 2015 to 89-92 MT by fiscal 2047, with the BOF and EAF routes expanding their scrap percentage in the charge mix.

Figure: Route-wise scrap demand



Source: Crisil Intelligence

Table: Route-wise scrap share in charge mix (%)

Route	FY15	FY20	FY25	FY30P	FY35P	FY47P
BOF	3%	6%	8%	10–12%	11–13%	13–15%
EAF	5%	10%	10%	12–14%	13–15%	16–18%
IF	47%	40%	35%	41–43%	42–44%	43–45%

Source: Crisil Intelligence

IF scrap share in the overall charge mix is expected to reach 43-45% by fiscal 2047, from the current 35% (fiscal 2025), reflecting a gradual shift towards cleaner steelmaking technologies. BOF scrap usage is projected to rise from 3% in fiscal 2015 to nearly 13-15% by fiscal 2047, and that of EAF from 10% to 16-18%.

Table: Detailed charge mix by route (% of total charge)

BOF Route						
Raw material	FY15	FY20	FY25	FY30P	FY35P	FY47P
HM/PI	96%	93%	91%	88%	88%	86%
Scrap	*3%*	*6%*	*8%*	*11%*	*12%*	*13%*
Ferro alloys	1%	1%	1%	1%	1%	1%
EAF Route						
Raw material	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY47P**
HM/PI	54%	55%	46%	42%	36%	30%

EAF Route						
Sponge Iron	40%	34%	43%	44%	50%	52%
Scrap	*5%*	*10%*	*10%*	*13%*	*14%*	*17%*
Ferro alloys	1%	1%	1%	1%	1%	1%
IF Route						
Raw material	**FY15**	**FY20**	**FY25**	**FY30P**	**FY35P**	**FY47P**
HM/PI	8%	5%	5%	5%	4%	3%
Sponge Iron	36%	54%	57%	52%	52%	52%
Scrap	*47%*	*43%*	*35%*	*45%*	*43%*	*44%*
Ferro alloys	1%	1%	1%	1%	1%	1%

Note: HM/PI – hot metal/pig iron
Source: Crisil Intelligence

The IF route's scrap share dropped from 47% in fiscal 2015 to 35% in fiscal 2025 as DRI availability increased and it became more cost-competitive in certain periods.

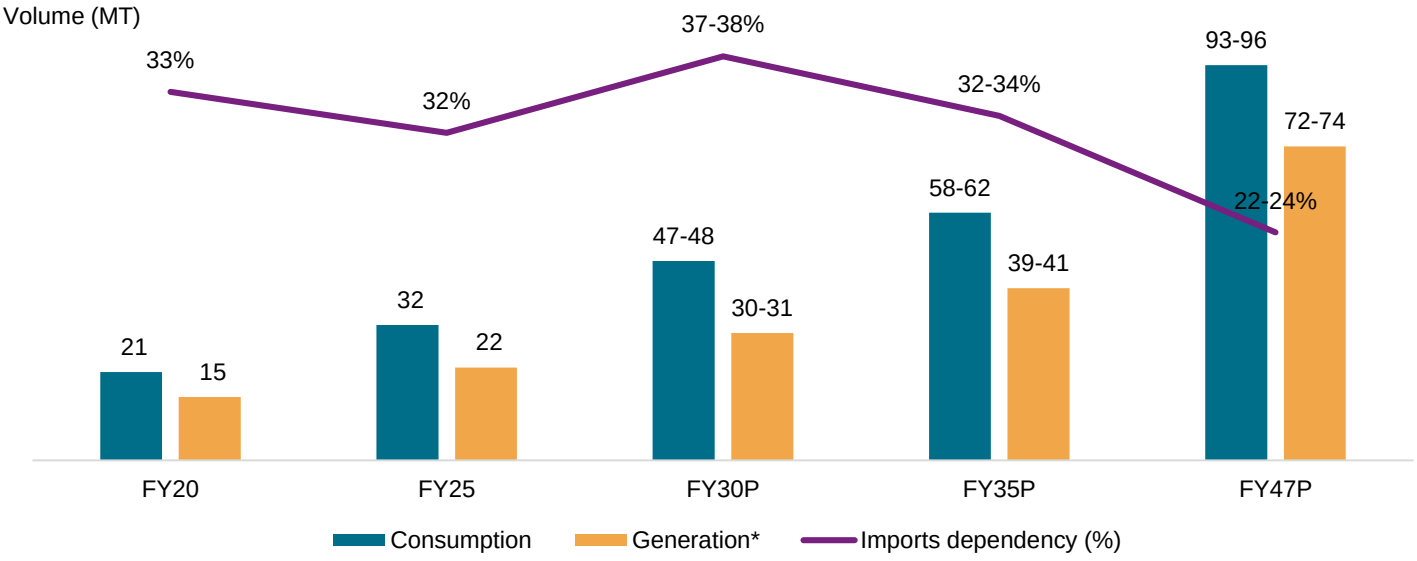
However, the path ahead shows a recovery towards ~44% by fiscal 2047, as scrap availability improves and the economic advantages of scrap over DRI (in terms of energy consumption and productivity) reassert themselves.

The EAF route’s scrap share is projected to increase to 17% by fiscal 2047 from the current 10%, reflecting the global trend of EAFs increasing their scrap usage intensity as they scale up and seek to reduce carbon footprint.

Import dependency

Despite strong growth in domestic generation, India is a structural net importer of steel scrap, with the production-consumption gap necessitating imports in the raw material mix.

Figure: Import dependency trajectory (fiscals 2020-2047P)



**Generation represents domestic scrap generated and used only for remelting.*
Source: Crisil Intelligence

India's steel scrap imports dependency stood at 34% (6.8 MT) during fiscal 2022, declining to 32% (9.3 MT) in fiscal 2025 on the back of better domestic scrap collection and processing.

We project the dependency to rise to 37-38% in the near term (fiscal 2030). The commissioning of new capacity, particularly EAF and BOF, will generate demand faster than the domestic scrap supply's growth. Moreover, the steel consumed by India's construction and automobile sectors in the 2010s will not begin returning as scrap in large volumes until the late 2030s and 2040s.

The trend will reverse beyond fiscal 2030. As India's installed steel stock matures and collection infrastructure gets stronger, import dependency is expected to come down to 32-34% by fiscal 2035 and further to 22-24% by fiscal 2047. Higher recovery and collection of domestically generated steel scrap will drive this long-term decline even as overall scrap demand continues to rise.

For the next decade, India will need to retain and expand its access to global scrap markets while investing in the domestic collection and processing infrastructure to lower reliance on imported material.

Evolution of India’s steel scrap policy

Steel scrap recycling policy

India's regulatory framework for steel scrap has evolved rapidly over the past 25 years, covering everything from automobile scrapping and e-waste recycling to ship breaking and scrap imports.

The framework covers several policies, rules and international commitments introduced between 2000 and 2025. These span automobile scrapping, consumer durables recycling, ship breaking, construction and demolition waste and scrap imports.

The Steel Scrap Recycling Policy, issued in 2019, aims to promote scrap processing and ensuring a steady supply of scrap to steelmakers in an organised and environment friendly manner.

The National Steel Policy, released in 2017, set the target for steel capacity at 300 MT by 2030.

In 2025, steel production was at ~152 MT, with primary steel (from iron ore) making up 75-80% and scrap contributing 20-25% (35 to 40 MT). The 2030 target calls for steel production of 300 MT, with primary steel's share coming down to 60-65% and scrap rising to 35-40% (105 to 120 MT).

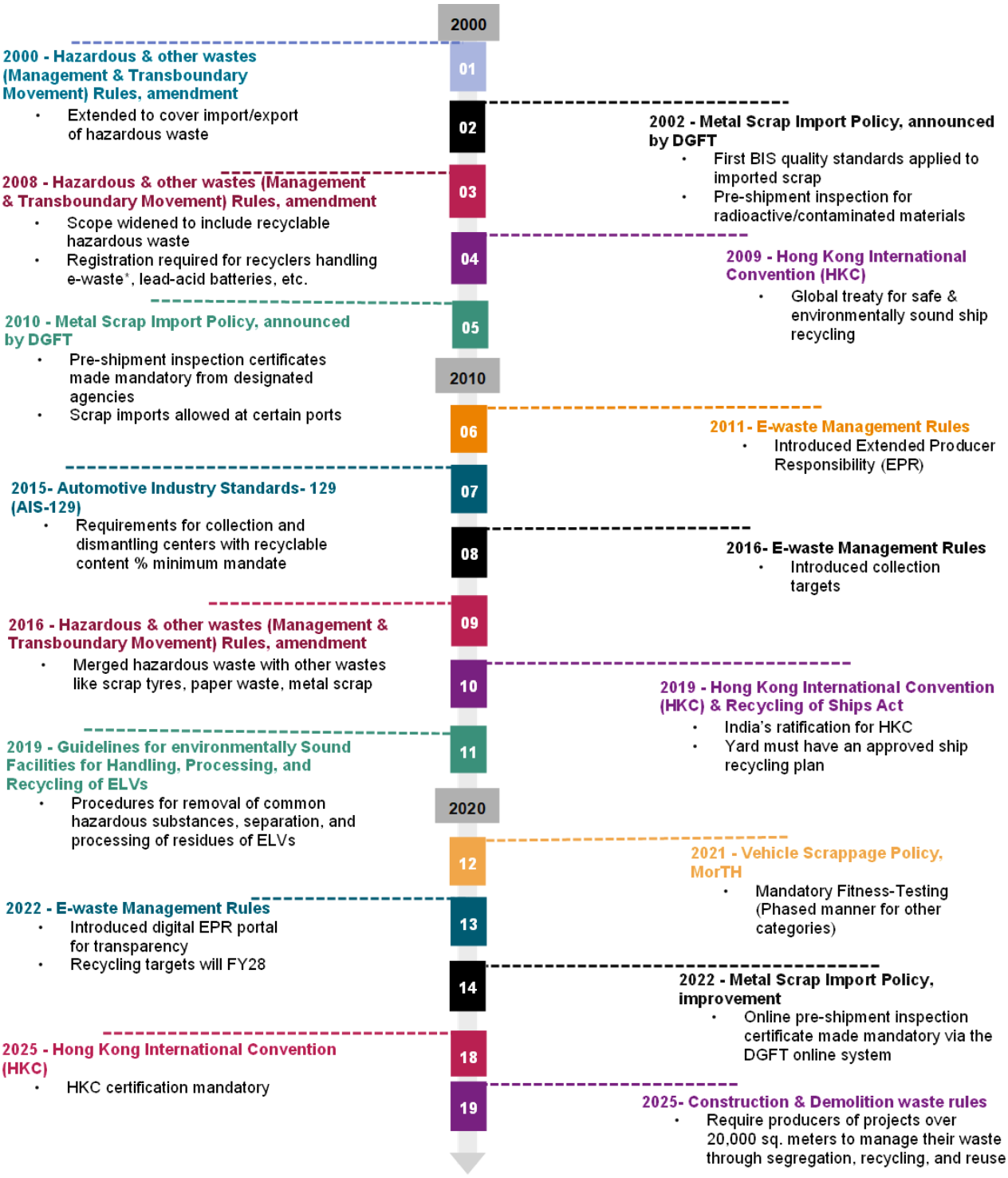
This large jump in scrap requirement explains why the policy push has been so strong in recent years.

Timeline of steel scrap-related policies

More than two dozen policies, rules and international commitments around steel have been introduced between 2000 and 2025.

- In 2000, the Hazardous & Other Wastes (Management & Transboundary Movement) Rules were amended to extend coverage to the import and export of hazardous waste. This was one of the first regulatory actions around cross-border movement of scrap.
- In 2002, the Directorate General of Foreign Trade (DGFT) announced the Metal Scrap Import Policy. This was the first time Bureau of Indian Standards (BIS) quality norms were applied to imported scrap. The policy also introduced pre-shipment inspection for radioactive and contaminated materials. This was a direct response to incidents where contaminated scrap had entered Indian ports.
- The hazardous waste rules were amended again in 2008, widening their scope to include recyclable hazardous waste. This revision introduced registration requirements for recyclers managing e-waste, lead-acid batteries and similar materials. In 2009, the Hong Kong International Convention (HKC) was adopted globally as a treaty for safe and environmentally sound ship recycling, though it would take another decade for India to ratify it.
- In 2010, the DGFT updated the Metal Scrap Import Policy. It made pre-shipment inspection certificates from designated agencies mandatory, and scrap imports were allowed only at certain ports. This was to tighten quality control and limit the entry of sub-standard or contaminated scrap.
- The E-Waste Management Rules were introduced in 2011, bringing in extended producer responsibility (EPR) for the first time. Producers were made responsible for collecting and channelling e-waste, which included white goods such as refrigerators, washing machines, air conditioners, televisions and laptops. However, no quantitative collection targets were set.

Figure: Evolutionary timeline of the steel scrap recycling initiative



- The E-Waste Management Rules were introduced in 2011, bringing in extended producer responsibility (EPR) for the first time. Producers were made responsible for collecting and channelling e-waste, which included white goods such as refrigerators, washing machines, air conditioners, televisions and laptops. However, no quantitative collection targets were set.
- In 2015, the Automotive Industry Standards-129 (AIS-129) set out requirements for collection and dismantling centres and introduced minimum standards for recyclable content in automobiles. The standard specified the reusable and/or

recyclable mass should be at least 80% of the vehicle, and the reusable and/or recoverable mass should be at least 85%.

- The E-Waste Management Rules were amended in March 2016 to introduce phase-wise collection targets under EPR. The targets started at 30% for fiscals 2017 and 2018, rising to 40% for fiscals 2019 and 2020, 50% for fiscals 2021 and fiscal 2022 and 70% from fiscal 2023 onwards, calculated as a percentage of the quantity of waste generation indicated in the EPR plan.
- In 2016, the hazardous waste rules were revised again, this time aligning with the Basel Convention and regulating cross-border movement. The revision merged hazardous waste with other wastes such as scrap tyres, paper waste and metal scrap. It also mandated the removal of hazardous fractions from white goods such as refrigerants, oils, foam and coatings, and streamlined the classification between hazardous and non-hazardous waste.

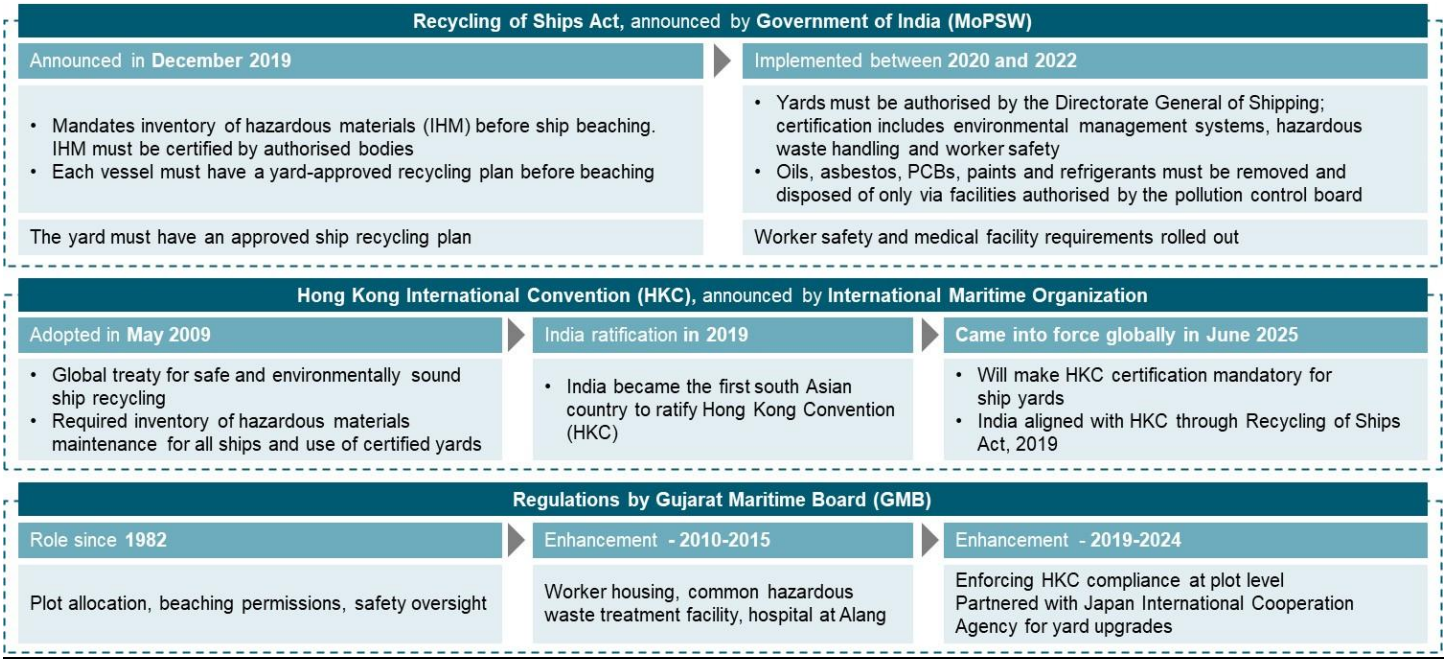
Figure: Evolution of e-waste management rules governing consumer durables scrap



Source: Crisil Intelligence

- The E-Waste Management Rules were amended again in March 2018; this time relaxing collection targets. The targets were lowered to 10% for fiscal 2018, 20% for fiscal 2019, 30% for fiscal 2020 and 40% for fiscal 2021 in recognition of the earlier targets having been aggressive given the ground reality of the collection infrastructure.
- There were two important developments in 2019. India ratified the HKC and passed the Recycling of Ships Act, becoming the first South Asian country to ratify the HKC. Under this Act, yards were required to have an approved ship recycling plan, and an inventory of hazardous materials had to be certified by authorised bodies before a ship could be beached.
- Also in 2019, the CPCB issued the Guidelines for Environmentally Sound Facilities for Handling, Processing and Recycling of ELVs. These laid out procedures for the removal of common hazardous substances, environmentally sound dismantling and segregation, and shredding, separation and processing of residues of end-of-life vehicles.
- In 2025, the union government has notified the construction & demolition(C&D) waste management rules, 2025 – to be enforced from April 1, 2026 – city administrations and waste generators across the country have been given one year to prepare for compliance. The rules place the construction industry under an Extended Producer Responsibility (EPR) framework, mandating registration, waste reporting, recycling, targets, and traceability.

Figure: Key regulations for ship recycling scrap



Source: Crisil Intelligence

The Recycling of Ships Act was implemented between 2020 and 2022.

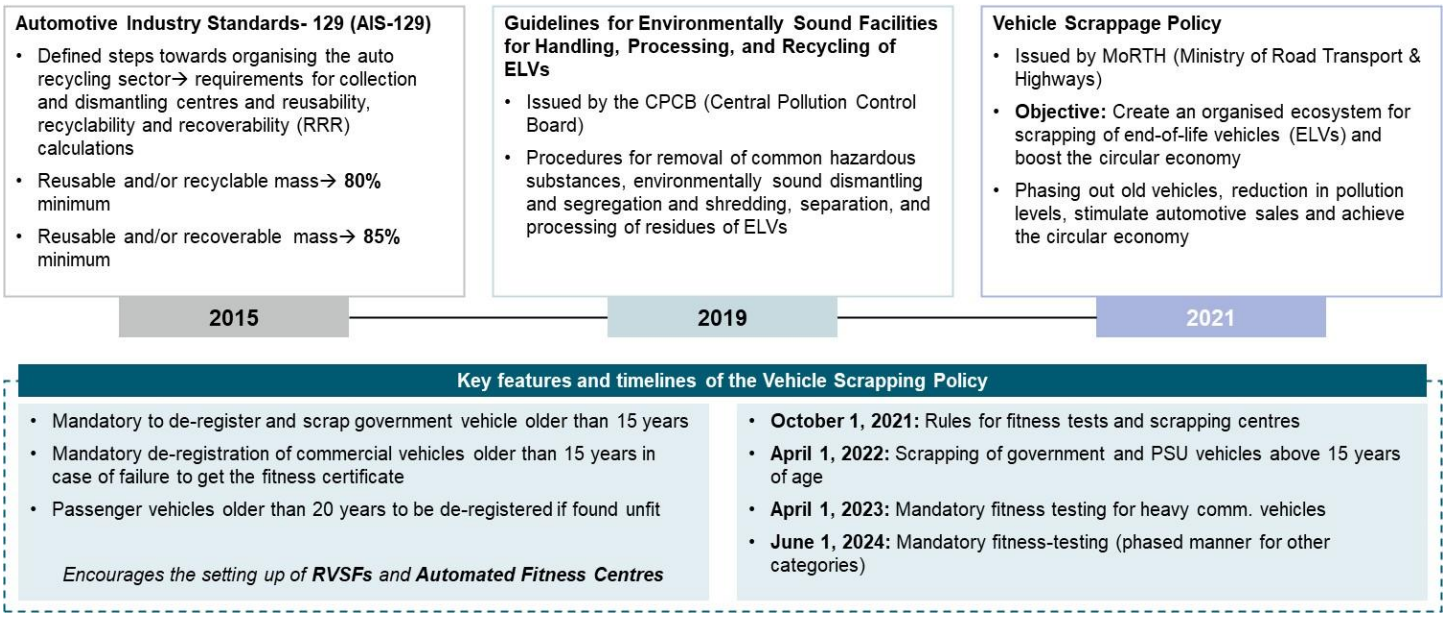
- The Recycling of Ships Act, 2019 aligns India with the HKC. As part of the Act, yards recycling ships had to be authorised by the Directorate General of Shipping. The Act laid down environmental and safety standards for the exercise and mandated certification covering environmental management systems, hazardous waste handling and worker safety. Oils, asbestos, PCBs, paints and refrigerants were required to be removed and disposed of only through facilities authorised by the pollution control boards. Worker safety and medical facility requirements were also rolled out.
- The Gujarat Maritime Board (GMB) has played an important role in regulating ship recycling at Alang since 1982, when it started with plot allocation, beaching permissions and safety oversight. Between 2010 and 2015, the GMB added worker housing, a common hazardous waste treatment facility and a hospital. Between 2019 and 2024, it has been enforcing HKC compliance at the plot level and has partnered with the Japan International Cooperation Agency for yard upgrades. With the HKC enforced globally from June 2025, HKC certification will become mandatory for shipyards.
- EU Ship Recycling Regulation (EU SRR) mandates that EU-flagged vessels can only be recycled at EU-approved yards meeting stringent environmental and safety standards; in India, Alang has aligned with these requirements, with 90%+ yards compliant with the Hong Kong Convention (HKC) and several already EU-approved, positioning it as a key compliant global recycling hub.
- In 2022, the e-waste framework was updated with a digital EPR portal. Recycling targets were set at 60% for fiscal 2024, rising to 80% from fiscal 2028. The Metal Scrap Import Policy was updated to make online pre-shipment inspection certificates mandatory through the DGFT, with registration on SIMS (a portal to track steel imports) and random checks for radioactive contamination.
- In June 2025, the HKC came into force globally, making HKC certification mandatory for shipyards. C&D Waste Management Rules were updated with EPR requirements for construction projects over 20,000 square metres.

The vehicle scrappage policy

The Vehicle Scrappage Policy (VSP), issued by the Ministry of Road Transport and Highways (MoRTH) in 2021, is one of the most important policy actions affecting the steel scrap market. Its objective is to create an organised system for scrapping

end-of-life vehicles and to support the circular economy, while also phasing out old vehicles, reducing pollution and giving a push to new automotive sales.

Figure: Central policies on automobile regulations



Source: Crisil Intelligence

- The policy requires mandatory de-registration and scrapping of government vehicles older than 15 years, mandatory de-registration of commercial vehicles (CVs) older than 15 years if they fail to get the fitness certificate, and de-registration of passenger vehicles (PVs) older than 20 years if found unfit. The policy encourages the setting up of RVSFs and automated fitness centres (AFCs).

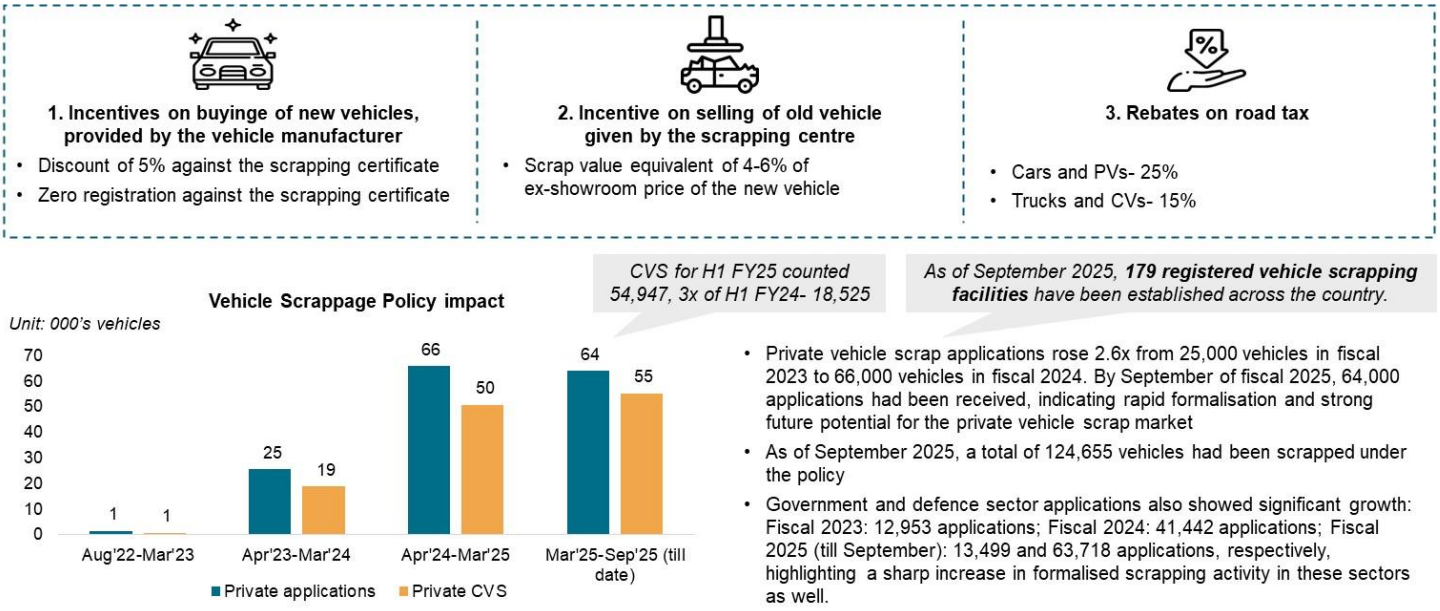
The key timelines for the policy's rollout were as follows.

- On October 1, 2021, rules for fitness tests and scrapping centres were notified.
- On April 1, 2022, scrapping of government and PSU vehicles above 15 years of age began.
- On April 1, 2023, mandatory fitness testing for heavy commercial vehicles started.
- From June 1, 2024, mandatory fitness testing began in a phased manner for other categories.

Incentives under the VSP

The VSP offers three types of incentives to encourage vehicle owners to scrap their old vehicles through the formal channel.

Figure: Incentives offered under VSP, 2021



Website Link: https://vscrap.parivahan.gov.in/vehiclescrap/vahan/rvsfdetails.xhtml
VSP 2021: https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1705811
CVS: Certificate of Vehicle Scrapping
Source: MoRTH's Vehicle Scrap Dashboard, Industry, Crisil Intelligence

- The first incentive is to buy a new vehicle. Vehicle manufacturers provide a discount of 5% and zero registration charges against the scrapping certificate. The second incentive is to sell the old vehicle.
- The scrapping centre gives a scrap value equivalent to 4-6% of the ex-showroom price of the new vehicle. The third incentive is a rebate on road tax: 25% for cars and passenger vehicles, and 15% for trucks and commercial vehicles.

Impact of the scrappage policy

The impact of the policy is becoming visible, though from a small base. Private vehicle scrap applications rose 2.6 times, from 25,000 vehicles in fiscal 2023 to 66,000 vehicles in fiscal 2024. By September of fiscal 2025, 64,000 applications had been received, showing rapid formalisation and strong future potential for the private vehicle scrap market. Certificates of Vehicle Scrapping (CVS) for the first half of fiscal 2025 came in at 54,947, which is three times the first half of fiscal 2024 figure of 18,525.

As of September 2025, 124,655 vehicles have been scrapped under the policy and 179 registered vehicle scrapping facilities have been set up across the country.

Government and defence sector applications also showed significant growth: fiscal 2023 saw 12,953 applications, fiscal 2024 had 41,442 applications and fiscal 2025 (till September) had 13,499 and 63,718 applications, respectively, showing a sharp increase in formalised scrapping activity in these sectors as well.

Vehicle Scrappage Policy – EPR (extended producer responsibility) for end-of-life vehicles 2025 Guidelines

The EPR - ELVs Guidelines 2025 (effective April 1, 2025) hold vehicle manufacturers accountable for the entire lifecycle of vehicles, mandating they meet annual steel-based recycling targets for end-of-life transport (15+ years) and non-transport (20+ years) vehicles.

Key features include mandatory registration on a Centralized Online Portal managed by the CPCB, compulsory scrapping at Registered Vehicle Scrapping Facilities (RVSFs), and strict producer-funded collection mechanisms to ensure authorized recycling.

Key benefits of implementing rules for responsible vehicle scrapping facilities (RVSFs)

The enforcement of rules for RVSFs is expected to have a significant impact on the domestic scrap steel market, leading to several benefits. Some of the key advantages include:

Boost in formal domestic scrap generation

The implementation of these rules is anticipated to generate an additional amount of steel scrap domestically by 2035. This increase in formal domestic scrap generation will reduce the country's reliance on imported scrap, enhancing self-sufficiency and reducing the trade deficit. With a formalized scrap collection system, the industry can expect a steady and reliable supply of high-quality scrap steel, which will support the growth of the domestic steel industry.

Formalization of the sector

The mandatory establishment of RVSFs will lead to the formalization of the informal sector, often referred to as the "kabadiwala" sector. This formalization will result in better material recovery rates, as RVSFs will be required to adhere to standardized processes and environmental regulations. The formalization of the sector will also reduce environmental hazards associated with unregulated scrap collection and processing methods.

Higher value recovery

The standardization of RVSF processes will maximize the extraction of high-grade steel, which is superior to the material recovered through informal methods. This will lead to higher value recovery from end-of-life vehicles, reducing waste and increasing the availability of high-quality scrap steel for the domestic steel industry.

Vehicle replacement demand

The rules mandating the removal of older, polluting vehicles will accelerate the replacement cycle, increasing the velocity of older vehicles entering the recycling stream. This will not only reduce the environmental impact of older vehicles but also create a steady supply of scrap steel from end-of-life vehicles. The increased availability of scrap steel will support the growth of the domestic steel industry, while also promoting sustainable and environmentally responsible practices in the automotive sector.

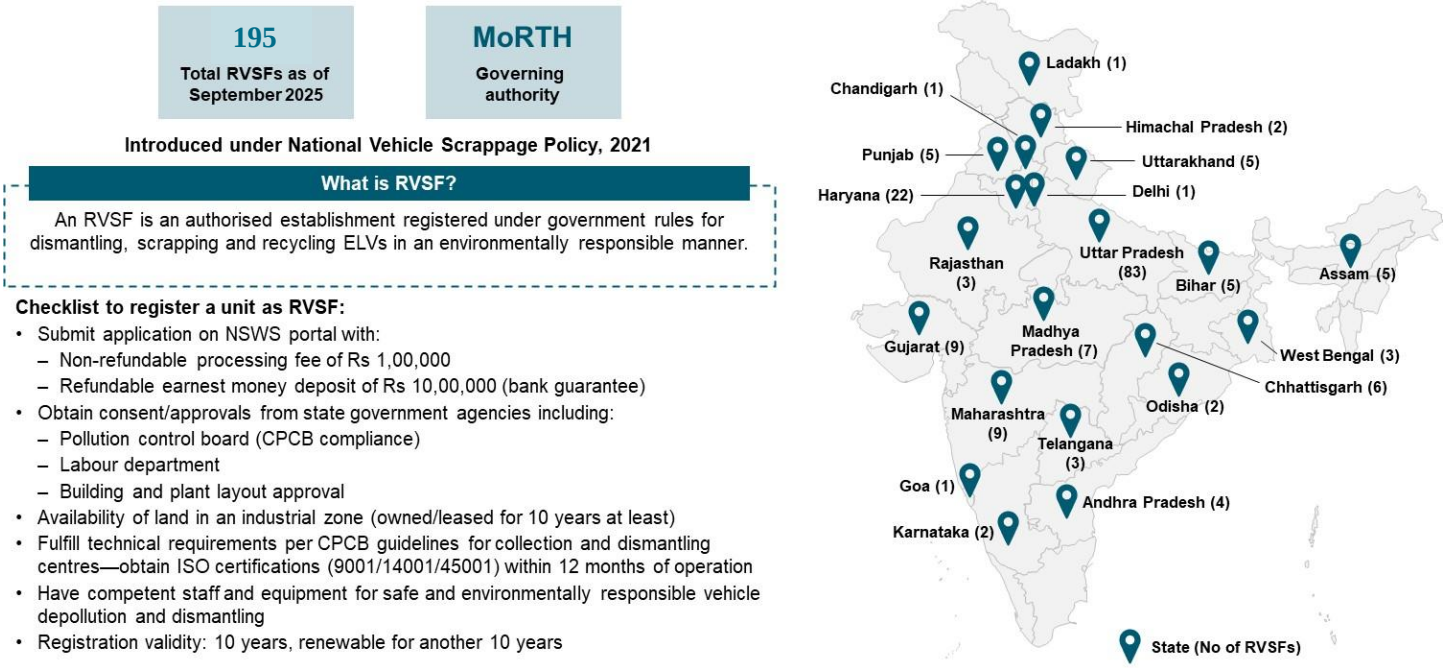
Overall, the implementation of rules for RVSFs is expected to have a positive impact on the domestic scrap steel market, promoting formalization, increasing value recovery, and reducing reliance on imported scrap.

The ELV Rules, 2025 reflect India’s commitment to reducing the environmental impact of its expanding automotive industry. By holding manufacturers accountable through EPR, building digital infrastructure for compliance, and encouraging responsible scrapping and recycling, India is taking significant steps toward a more sustainable automotive future.

Successful implementation will rely on collaboration between policymakers, manufacturers, recyclers, and consumers to ensure that the new regulations meet their environmental and economic goals.

RVSF distribution across India

Figure: State-wise distribution of RVSFs



NSWS: National Single Window System

As of September 2025, there are 195 registered RVSFs across the country under the National Vehicle Scrapping Policy, 2021. RVSF is an authorised establishment registered under government rules to dismantle, scrap and recycle end-of-life vehicles in an environmentally responsible manner.

Uttar Pradesh tops the list with 83 RVSFs, followed by Haryana with 22, Gujarat and Maharashtra with nine each, Madhya Pradesh with seven, Chhattisgarh with six, Punjab, Uttarakhand, Assam and Bihar with five each, and Andhra Pradesh with four. Several states including Delhi, Chandigarh, Goa and Ladakh have only one RVSF each, while Karnataka has just two and West Bengal has three.

To register as an RVSF, a unit needs to apply on the National Single Window System portal with a non-refundable processing fee of Rs 1,00,000 and a refundable earnest money deposit of Rs 10,00,000 (bank guarantee). It needs to obtain approvals from state agencies including the Pollution Control Board (state pollution control boards & CPCB), the Labour Department and clearance for building and plant layouts. The unit must have land in an industrial zone (owned or leased for a minimum 10 years), meet technical requirements in accordance with CPCB guidelines for collection and dismantling centres and obtain ISO certifications (ISO 9001/14001/45001) within 12 months of operation. The registration is valid for 10 years and is renewable for another 10.

State-level policies and action plans

Several states have also introduced their own measures for vehicle scrapping and scrap management.

Table: State-wise policies and plans

Timeline	State	Aim	Measures
Aug-18	Delhi	Scrap 10-year-old diesel vehicles and 15-year-old petrol vehicles	Up to 25% rebate on road tax with vehicle scrapping certificate
Dec-18	Kolkata, West Bengal	Air pollution control	Phasing out/scrapping of more than 15-year-old commercial vehicles based on the Eastern Bench of the NGT; only four stroke LPG three-wheelers allowed
Feb-19	Kohima, Nagaland	Air quality monitoring	Phasing out 15-year-old commercial diesel vehicles
Sep-19	Mumbai, Maharashtra	Action plan for control of air pollution	Bharat Stage (BS)-II and BS-III bus scrapping policy developed; restrict age of taxies to 20 years and 16 years for autorickshaws
2021	Madhya Pradesh	Vehicles scrappage policy	Incentives on new vehicle purchase; waiver of pending dues/liabilities
Jul-22	Assam	Vehicle Scrappage Policy of Assam, 2022	Incentivise voluntary scrappage of old and unfit vehicles; support to RVSF
Dec-22	Odisha	Improve air quality, regularise informal facilities and promote circular economy	Vehicles over 15 years old banned in low emission zones; incentives to customers; land incentives, capital investment subsidy, SGST reimbursement to RVSFs

Source: Crisil Intelligence

The pattern across states is clear. The early movers (Delhi, Kolkata, Kohima and Mumbai) focused mainly on air quality and pollution control, using age-based bans on older vehicles.

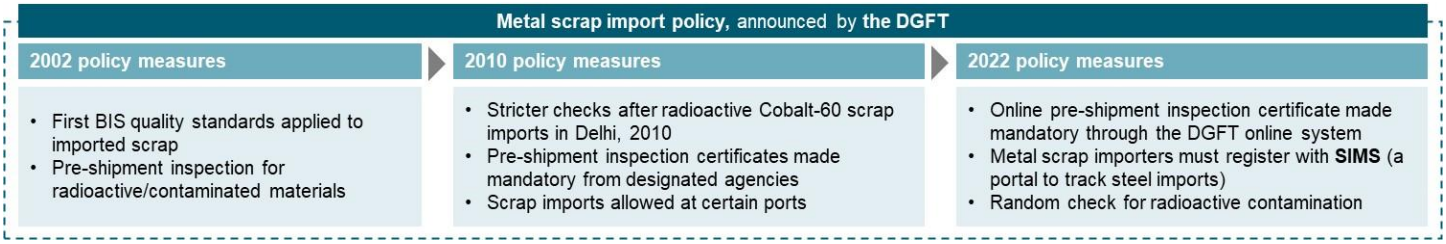
The later adopters (Madhya Pradesh, Assam and Odisha) took a broader approach, combining pollution goals with economic incentives for scrapping, support for RVSFs and promotion of the circular economy.

Consumer durables: Key regulations

The regulatory framework for consumer durables scrap has developed along two main tracks: The E-Waste Management Rules and the Hazardous & Other Wastes (Management & Transboundary Movement) Rules.

- **E-waste management rules:** The most recent update came in November 2022, when a digital EPR (extended producer responsibility) portal was introduced for transparency. The recycling targets under the latest framework are set at 60% for fiscal 2024 and fiscal 2025, rising to 70% for fiscal 2026 and fiscal 2027 and 80% from fiscal 2028 onwards, calculated as a percentage of the quantity of waste generation indicated in the EPR plan.
- **Metal scrap import policy:** The metal scrap import policy, announced by the DGFT, has also gone through several updates.

Figure: Metal scrap import policy evolution

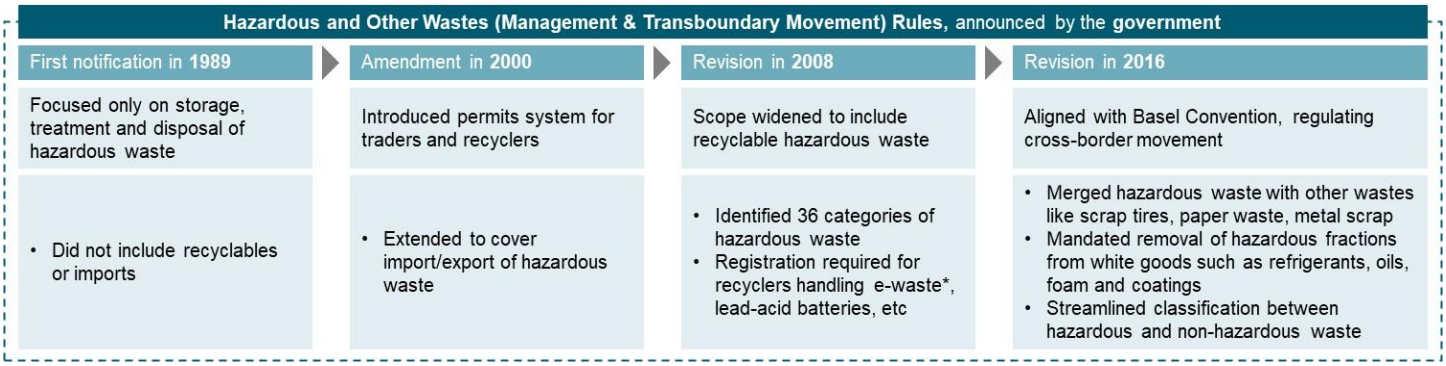


The first BIS quality standards were applied to imported scrap in 2002, along with pre-shipment inspection for radioactive and contaminated materials. In 2010, checks became stricter following the detection of radioactive Cobalt-60 scrap imports in Delhi.

Pre-shipment inspection certificates from designated agencies became mandatory, and only certain ports were permitted to handle scrap imports. In 2022, the Pre-Shipment Inspection Certificate through the DGFT online system became mandatory. Metal scrap importers had to register with SIMS (a portal to track steel imports), and random checks for radioactive contamination were introduced.

Rules pertaining to hazardous and other wastes

Figure: Consumer durable scrap, hazardous waste rules evolution



Source: Crisil Intelligence

The Hazardous & Other Wastes (Management & Transboundary Movement) Rules have evolved over four phases. The first notification in 1989 focused only on the storage, treatment and disposal of hazardous waste and did not include recyclables or imports.

An Amendment in 2000 introduced a permits system for traders and recyclers and extended the coverage to the import and export of hazardous waste. The revision in 2008 widened the scope to include recyclable hazardous waste, identified 36

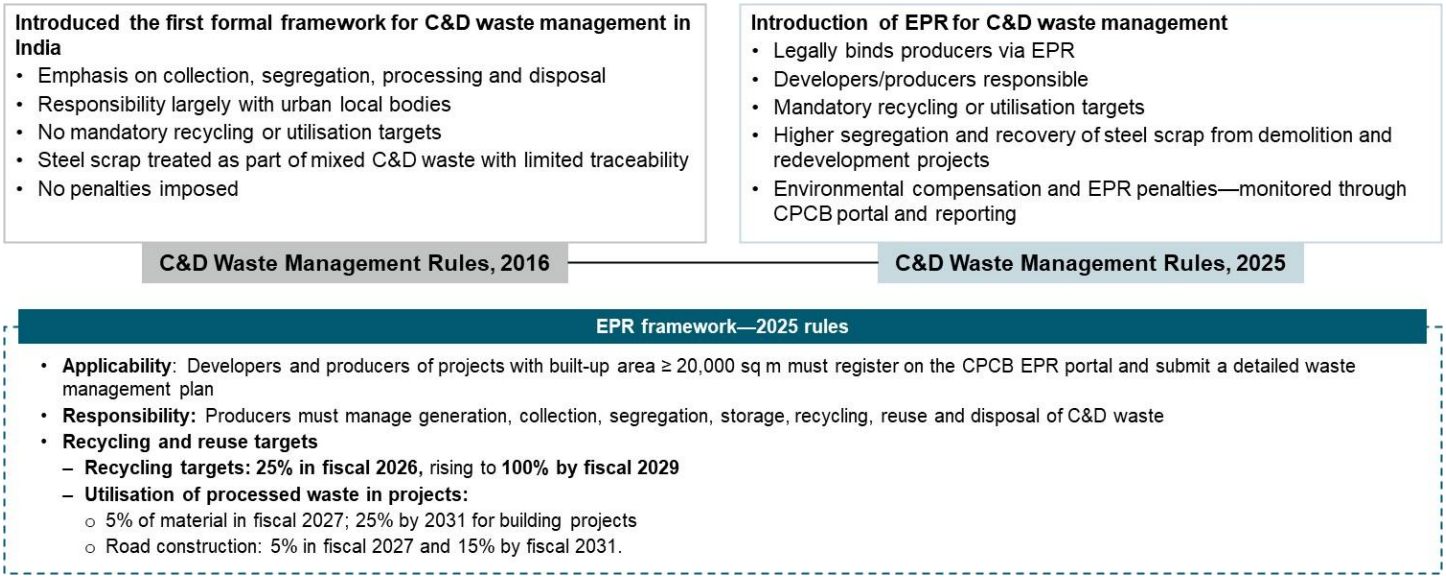
categories of hazardous waste and introduced registration for recyclers handling e-waste, lead-acid batteries and similar materials.

The revision in 2016 aligned with the Basel Convention and regulated cross-border movement. It merged hazardous waste with other waste such as scrap tires, paper waste and metal scrap, mandated the removal of hazardous fractions from white goods like refrigerants, oils, foam and coatings, and streamlined the classification between hazardous and non-hazardous waste.

Construction and demolition: Key regulations

The regulatory framework for C&D waste has seen a major shift between 2016 and 2025.

Figure: C&D rules-EPR framework



Source: Crisil Intelligence

The Construction and Demolition Waste Management Rules of 2016 introduced the first formal framework for C&D waste management in the country. The responsibility was placed mainly with urban local bodies. The emphasis was on the collection, segregation, processing and disposal, but without mandatory recycling or utilisation targets. Steel scrap was treated as part of mixed C&D waste with limited traceability, and no penalties were imposed for non-compliance.

The C&D Waste Management Rules of 2025 introduced EPR for C&D waste management. Developers and producers are now legally bound by EPR and are made responsible. Mandatory recycling and utilisation targets were introduced, along with a push for higher segregation and recovery of steel scrap from demolition and redevelopment projects. Environmental compensation and EPR penalties are monitored via an online CPCB portal and reporting system.

The EPR framework under the 2025 rules requires developers and producers of projects with built-up area of 20,000 sq. m or more to register on the CPCB EPR portal and submit a detailed waste management plan.

Producers must manage the generation, collection, segregation, storage, recycling, reuse and disposal of C&D waste. Recycling targets start at 25% in fiscal 2026 and rise to 100% by fiscal 2029. Utilisation of processed waste in projects is set at 5% of material in fiscal 2027, rising to 25% by fiscal 2031 for building projects, and for road construction, 5% in fiscal 2027 and 15% by fiscal 2031.

Legal Framework: Acts/ Rules notified by Government of India that empowers Central Government to take enforceable actions

The Government of India has established a comprehensive regulatory framework across major scrap-generating sectors through sector-specific Acts and Rules. These provisions define the responsibilities of stakeholders, designate enforcement authorities, and provide legal powers for monitoring, inspections, penalties, and compliance actions. Mapping these enforceable provisions helps identify the regulatory levers available to improve scrap collection, formalization, traceability, and environmentally compliant recycling across key scrap streams.

Table: Key legally enforceable Acts/ Rules notified by Government of India

Parent act / convention	Relevant rule / Provision under the act	Sector Covered	Primary Enforcement Body
Motor Vehicles Act, 1988	Vehicle Scrapping Facility Rules, 2021; amendments in 2022, 2024 & 2025	**Automobiles (ELVs)**	MoRTH
	ELV Rules, 2025 effective Apr-25	**Automobiles (ELVs)**	MoRTH
Environment (Protection) Act, 1986	C&D Waste Management Rules, 2025; supersede 2016 Rules; effective Apr-26	**Construction & Demolition**	CPCB
	E-Waste Management Rules, 2022; amendments in 2023 & 2024	**Consumer Durables/ Electronics**	CPCB
	Battery Waste Management Rules, 2022; amendments in 2023, 2024 & 2025	**Consumer Durables / Automotive Batteries**	CPCB
	Hazardous & Other Wastes Rules, 2016; latest amendment in 2025	**Automobiles, Ship Recycling, Consumer Durables**	CPCB
	Solid Waste Management Rules, 2026; supersede 2016 Rules; effective Apr-26	**Municipal Scrap Streams, Construction & Demolition**	CPCB
Recycling of Ships Act, 2019	Ship Recycling Facility Authorization provisions	**Ship Recycling**	Directorate General of Shipping (DGS)
	Inventory of Hazardous Materials (IHM) provisions	**Ship Recycling**	Directorate General of Shipping (DGS)
	Ready for Recycling Certificate provisions	**Ship Recycling**	Directorate General of Shipping (DGS)
	Ship Recycling Plan (SRP) requirements	**Ship Recycling**	Directorate General of Shipping (DGS)
	Recycling of Ships Rules, 2021; amended in 2025; Regulations, 2026	**Ship Recycling**	Directorate General of Shipping (DGS)
Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009	Convention entered into force Jun-25; implemented in India through domestic ship-recycling framework	**Ship Recycling**	Implemented through DGS

Source: Industry, Crisil Intelligence

1. Motor Vehicles Sector

The Motor Vehicles Act, 1988, along with the Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021, forms the core legal basis for vehicle scrappage and ELV management. The Act authorizes the Ministry of Road Transport and Highways (MoRTH) to regulate vehicle registration, scrapping facilities, and related functions. The Central Motor Vehicles Rules, 1989, further specify provisions related to vehicle fitness, registration, and testing stations, ensuring compliance through MoRTH's enforcement mechanisms.

2. Environment (Protection) Act, 1986

This parent legislation provides overarching authority for environmental regulation and enforcement. Under its umbrella, several sector-specific rules have been notified:

- **Construction & Demolition Waste Management Rules, 2016**: Regulate the handling and disposal of C&D waste, enforced by the Central Pollution Control Board (CPCB).
- **E-Waste (Management) Rules, 2022**: Govern electronic waste, including consumer durables, with CPCB as the primary enforcement body.
- **Battery Waste Management Rules, 2022**: Cover automotive and consumer batteries, ensuring environmentally sound disposal.
- **Hazardous and Other Wastes Rules, 2016**: Address hazardous waste management across automobiles, ship recycling, and consumer durables.
- **Solid Waste Management Rules, 2016**: Focus on municipal and construction waste streams, with CPCB overseeing compliance.

3. Ship Recycling Act, 2019

- This Act establishes a comprehensive legal framework for ship recycling, including:
- **Facility Authorization**: Mandates licensing of ship recycling yards.
- **Inventory of Hazardous Materials (IHM)**: Ensures ships are equipped with proper documentation.
- **Ready for Recycling Certificate & Ship Recycling Plan (SRP)**: Require ships to obtain certification before recycling.
- **Ship Recycling Rules, 2021**: Detail operational and safety standards enforced by the Directorate General of Shipping (DGS).

4. International Convention Implementation

India has adopted the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, through DGS regulations. This includes requirements for IHM, SRP, facility authorization, and survey & certification, aligning domestic standards with international best practices.

Automobile- Legally enforceable Acts/ Rules notified by Government of India

The automobile segment faces seven major challenges.

- RVSF penetration is low in most states. Currently, there are about 195 RVSFs, with formal channels handling less than 2% of auto scrap (as per the CVS data on the Parivahan portal).
- RVSF scrap reporting is poor, with inconsistent or partial data.
- Informal scrapping channels pay vehicle owners a higher amount for their vehicles than formal ones.
- RC deregistering is not being carried out properly.
- Illegal trading of Certificates of Deposit (CDs) is a problem.
- Skilled labour availability is very low, and gas cutting is common across all areas.

Automobile sector is supported by a structured regulatory framework covering vehicle scrapping, deregistration, ELV generation, hazardous waste management, and battery recycling.

Table: Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced By (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021	State Transport Authorities / MoRTH	Formal scrap generation	Rule 5: Vehicle Scrapping Facility must obtain registration before operation
	State Transport Authorities / MoRTH	Authorized scrapping capacity	Rule 6: Registration Authority empowered to grant/refuse registration
	State Transport Authorities / MoRTH	Compliance / Formalization	Rule 8: Registration may be suspended or cancelled for violations
	State Transport Authorities / MoRTH	Reporting compliance	Rule 11: Facility required to maintain records and furnish information
	State Transport Authorities / MoRTH	Collection %	Rule 18: Certificate of Deposit upon receipt of vehicle
	State Transport Authorities / MoRTH	Traceability / Formalization	Rule 19: Certificate of Vehicle Scrapping after scrapping process
	MoRTH	ELV generation	Rule 175A onwards: Vehicles failing fitness requirements may be declared unfit
Central Motor Vehicles Rules, 1989	State Transport Authorities	Vehicle retirement	Fitness Certificate renewal requirements for older vehicles
Motor Vehicles Act, 1988	State Transport Authorities	Deregistration / ELV generation	Section 56: Mandatory certificate of fitness for transport vehicles
	State Transport Authorities	Deregistration	Section 55: Cancellation of registration where vehicle incapable of use
Environment (Protection) Act, 1986	CPCB/SPCBs	SOP compliance	Section 5: Power to issue directions including closure or regulation
	CPCB/SPCBs	Compliance	Section 15: Penalties for contravention
Hazardous & Other Wastes Rules, 2016	CPCB/SPCBs	Hazardous component management	Rule 6: Authorization requirement for handling hazardous waste
	CPCB/SPCBs	SOP compliance	Rule 8: Responsibilities of occupiers for environmentally sound management
Battery Waste Management Rules, 2022	CPCB	Battery collection %	EPR obligations and mandatory collection/recycling targets

Source: Industry, CRISIL Intelligence

Enforcement of these provisions can strengthen formal vehicle scrappage, improve traceability of end-of-life vehicles, enhance authorized scrapping capacity, and increase recovery of recyclable materials through the organized ecosystem.

Table: Key action plans and implementation teams- Automobile

Unique Problem	Action Plan	Implementation Team
RVSF penetration is low in states - currently 195 RVSFs with <2% of Auto scrap handling (as per CVS, on Parivahan portal)	Drive state-wise expansion of RVSFs to improve geographic coverage and increase the share of end-of-life vehicles processed through authorised scrappage facilities.	MoRTH to lead implementation with State Transport Depts + MoEFCC + MoS
RVSF scrap reporting poor (inconsistent / partial data etc.)	Standardise digital scrap reporting and integrate it with VAHAN and deregistration systems, supported by stronger compliance monitoring and regular state-level reporting.	MoRTH (lead); partners: State Transport, MoS, NIC/VAHAN teams
Higher amount paid to vehicle owner in case of scrapping illegally	Link scrappage incentives to verified deregistration and RVSF certification, while strengthening enforcement and transaction traceability to discourage illegal scrapping.	MoRTH + State Transport; partners: MoS, MoF, State GST/Commercial Tax
RC deregistering is not being carried diligently	Enable seamless auto-deregistration through RVSF certificate uploads and strengthen monitoring of vehicle status and pending deregistration cases.	MoRTH (lead); partners: State RTOs, NIC/IT teams
Trading of CDs	Strengthening controls on Certificate of Deposit (CD) transactions by linking sales to required test certification and enhancing compliance checks across RVSFs and enforcement agencies.	MoRTH (lead); State enforcement, MoS

Refer to annexures for abbreviations
Source: Crisil Intelligence

The implementation approach will follow a clear RACI structure, with MoRTH providing overall accountability across the initiatives, while relevant central ministries, State Transport Departments, RTOs, RVSFs and other institutional partners will be responsible for execution, consultation and coordination as appropriate.

- RVSF penetration low in states - currently 195 RVSFs with <2% of Auto scrap handling (as per CVS, on Parivahan portal): For expanding RVSF penetration, State Transport Departments and RTOs will be responsible for implementation, with MoRTH accountable for overall delivery. MoEFCC and State Industries will be consulted on the relevant policy and industry aspects.
- RVSF scrap reporting poor (inconsistent / partial data etc.): For improving RVSF scrap reporting, NIC/VAHAN and State RTOs will be responsible for the system and compliance aspects, while RVSFs will be responsible for filing. MoRTH will remain accountable, with State Transport Departments consulted on implementation.
- Higher amount paid to vehicle owner in case of scrapping illegally: For addressing illegal scrappage and related payment practices, State Transport authorities will be responsible for enforcement, supported by the Ministry of Finance for incentive operations and mills/large aggregators. MoRTH will be accountable, with State GST authorities consulted on relevant transaction and tax matters.
- RC deregistering is not being carried diligently: For improving RC deregistration, NIC and State RTOs will be responsible for system execution, with MoRTH accountable for implementation. State Transport Departments will be consulted, while MoS and Niti Aayog will be kept informed.
- Trading of CDs: For strengthening controls over trading of Certificates of Deposit, RVSFs will be responsible for logging and compliance and State enforcement agencies for checks. MoRTH will be accountable, with State Home Departments consulted on enforcement-related matters.
- Gas cutting prevalent in all areas: For addressing unsafe gas-cutting practices, RVSFs will be responsible for implementation, supported by State Labour Departments and State Pollution Control Boards for inspections. MoRTH will be accountable for licensing conditions, while MoEFCC will be accountable for environmental and occupational health and safety norms. MoSDE will be consulted on the relevant skilling and workforce aspects.
- Skilled labor is very low: For addressing the shortage of skilled labour, States, NSDC and training partners will be responsible for delivery, with RVSFs supporting on-the-job training. MoRTH will be accountable, while MoSDE and State Skill Missions will be consulted on the skilling framework and implementation.

Overall, the RACI structure is intended to ensure clear ownership of implementation while maintaining coordination across central ministries, State-level authorities, RVSFs, technology partners and industry stakeholders.

Ship Recycling- Legally enforceable Acts/ Rules notified by Government of India

The ship recycling segment faces four specific challenges:

- Volumes and scrap yields have not been consistently reported after fiscal 2021.
- There is limited transparency in scrap grade segregation, with unclear separation between re-rollable, re-melting and re-sale grades.
- Resaleable items leak into informal channels.
- Gas cutting is common across all areas.

Ship recycling ecosystem is governed through dedicated legislation aligned with international standards, with provisions covering facility authorization, hazardous material management, reporting, and environmental compliance.

Table: Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced by (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
The Recycling of Ships Act, 2019	Directorate General of Shipping (DGS)	Compliance %, Formal Collection %	Section 16: Ships may be recycled only at authorized Ship Recycling Facilities (SRFs).
	Directorate General of Shipping (DGS)	Compliance %	Section 17: Competent Authority may grant, renew, suspend or revoke authorization of Ship Recycling Facilities.
	Directorate General of Shipping (DGS)	Compliance %, Authorized Capacity	Section 18: Inspection of Ship Recycling Facilities for compliance with the Act and Rules.
	Directorate General of Shipping (DGS)	Reporting Compliance	Section 20: Ship Recycling Facilities must maintain records and furnish information as prescribed.
	Directorate General of Shipping (DGS)	Compliance %, Hazardous Material Management	Sections 7–10: Inventory of Hazardous Materials (IHM), certification and survey requirements.
	Directorate General of Shipping (DGS)	Formal Collection %	Section 12: Recycling can commence only after approval of Ship Recycling Plan.
	Directorate General of Shipping (DGS)	Compliance %	Sections 30–34: Penalties, offences and enforcement actions for violations.
Recycling of Ships Rules, 2021	Directorate General of Shipping (DGS)	Compliance %	Authorization procedure, inspections, monitoring and reporting requirements for SRFs.
	Directorate General of Shipping (DGS)	Reporting Compliance	Prescribed formats for maintenance of records, reporting and certification.
Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009	Implemented through DGS under Recycling of Ships Act, 2019	Compliance %	Requires Inventory of Hazardous Materials (IHM), Ship Recycling Plan (SRP), facility authorization and certification regime.
Environment (Protection) Act, 1986	CPCB / SPCBs	Environmental Compliance	Section 5: Power to issue directions including closure, prohibition or regulation of operations.
	CPCB / SPCBs	Compliance %	Section 15: Penalties for violation of environmental requirements.
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	CPCB / SPCBs	SOP Compliance	Rule 6: Authorization for handling hazardous waste streams generated during dismantling.

Relevant Acts/Rules	Enforced by (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
Hazardous and Other Wastes Rules, 2016	CPCB / SPCBs	Environmental Compliance	Rule 8: Responsibility of occupier for environmentally sound management of hazardous waste.

Source: Industry, CRISIL Intelligence

Effective enforcement is expected to improve formal recycling, ensure environmentally sound dismantling practices, strengthen compliance monitoring, and enhance recovery of recyclable steel through authorized facilities.

Table: Key action plans and implementation teams- Ship Recycling

Unique Problem	Action Plan	Implementation Team
Ship recycling volumes and scrap yields not consistently reported post FY21	Standardise reporting of ship-recycling volumes and scrap yields through digital yard-level reporting and regular consolidated reporting and audits.	MoPSW + MoEFCC; State maritime boards, PCBs, MoS
Limited transparency a scrap grade segregation (re-rollable vs re-melting vs re-sale)	Standardise scrap-grade definitions and strengthen inspection and documentation of scrap lots to improve transparency across recycling and resale channels.	MoS + MoPSW; BIS, industry
Leakage of re-saleable items into informal channels	Strengthen inventory tracking at yards, establish authorised resale channels, and reinforce controls for hazardous and other regulated items.	MoEFCC + MoPSW; Customs, State authorities
Gas cutting prevalent in all areas	Strengthen controls around gas cutting through appropriate permits, gas-free certification, fire-safety readiness and periodic safety audits.	MoEFCC + State Labor Dept; MoPSW

Refer to annexures for abbreviations
Source: Crisil Intelligence

The ship recycling initiatives will be implemented through a coordinated framework involving MoEFCC, MoPSW, State authorities, ship recycling yards, BIS and other relevant stakeholders. MoEFCC will provide overall accountability for environmental and compliance-related interventions, while ship recycling yards and other designated operators will be responsible for implementing the required practices on the ground.

- For improving transparency and reporting of ship recycling volumes and scrap generation, port authorities and recycling yards will be responsible for maintaining and reporting relevant information, with MoEFCC accountable and State maritime/port authorities consulted. This will help strengthen monitoring of recycling activity and improve visibility across the formal ship recycling ecosystem.
- For improving segregation and preventing leakage of re-saleable materials into informal channels, ship recycling yards will be responsible for implementing appropriate segregation, tracking and handling practices, while relevant State and maritime authorities will support inspection and enforcement. BIS and MoPSW will be consulted on standards, operational requirements and sector-specific implementation, with MoEFCC retaining overall accountability.
- For addressing unsafe practices such as gas cutting, ship recycling yards and contractors will be responsible for implementation, supported by State Labour and other relevant authorities for inspections and enforcement.

Overall, the RACI framework places MoEFCC as the key accountable authority, with MoPSW, State authorities, BIS, recycling yards and other stakeholders taking responsibility for implementation, consultation and monitoring across the ship recycling value chain.

Construction & Demolition- Legally enforceable Acts/ Rules notified by Government of India

The construction and demolition segment faces six major challenges:

- Collection rate is low, at about 70%, in fiscal 2025.
- C&D waste processing facilities have not been set up as per targets.

- State PCBs are not reporting C&D waste data annually.
- Landfilling data has not been reported after fiscal 2022.
- Non-standard practices in recycling, with SOPs not being followed.
- Segregation practices are poor.

The C&D waste regulatory framework establishes clear responsibilities for waste generators, urban local bodies, and pollution control authorities across collection, segregation, processing, and reporting.

Table: Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced by (State/Central)	KPI / Lever Affected	Specific Enforcement Provisions
Environment (Protection) Act, 1986 (Construction & Demolition Waste Management Rules, 2016)	CPCB / SPCBs / ULBs	Reporting Compliance	Rule 10: State Pollution Control Boards are required to submit annual reports on implementation. Section 15 EPA 1986: Penalties for non-compliance.
Environment (Protection) Act, 1986 (Rules 8 & 9, C&D Rules 2016)	Urban Local Bodies (ULBs)	C&D Processing Capacity	Rule 8 & Rule 9: ULBs must establish collection, processing and disposal facilities and facilitate recycling of C&D waste.
Environment (Protection) Act, 1986	CPCB	Reporting Compliance	Section 18(1)(b): CPCB may issue directions and monitor compliance through reporting mechanisms.
	CPCB / SPCBs	SOP Compliance	Section 5: Power to issue directions including closure, prohibition or regulation of activities.
	CPCB / SPCBs	Compliance %	Section 15: Penalties for contravention of environmental requirements.
Environment (Protection) Act, 1986 (Construction & Demolition Waste Management Rules, 2016)	ULBs	Collection %	Rule 4(1): Waste generators must segregate and store C&D waste separately.
	ULBs	SOP Compliance	Rule 4(3): Large generators must submit waste management plans before approval of construction activity.
	ULBs	C&D Processing Capacity	Rule 6: Local authorities must identify sites and establish collection, processing and recycling facilities.
	SPCBs	Reporting Compliance	Rule 11: SPCBs are required to monitor implementation and submit annual reports.
	CPCB	Reporting Compliance	Rule 12: CPCB responsible for reviewing implementation and preparing consolidated reports.
	SPCBs / ULBs	Applicable Across All Levers	Rule 13: Monitoring and enforcement responsibilities assigned to local authorities and pollution control boards.

Source: Industry, CRISIL Intelligence

Strong enforcement can improve segregation at source, expand processing infrastructure, enhance reporting compliance, and increase recovery of recyclable materials from construction and demolition waste.

Table: Key action plans and implementation teams- Construction & demolition

Unique Problem	Action Plan	Implementation Team
Low collection rate ~70% in FY 25	Strengthen C&D waste collection through mandatory planning for projects above the applicable threshold, better linkage between collection arrangements and project permissions, and wider coverage of designated collection points. Gradually increase formal collection through stronger municipal monitoring.	MoHUA, ULBs, MoRTH, BIS
C&D waste processing facilities not established as per targets	Develop city-level C&D waste processing capacity plans, prioritise facility development in high-generation cities, and streamline land allocation and statutory clearances to accelerate commissioning of processing facilities.	MoHUA, ULBs, MoRTH, BIS
State PCBs not reporting C&D waste annually	Standardise C&D waste reporting formats and timelines, strengthen mandatory reporting by ULBs, and institute periodic state-level compliance reporting to improve data completeness and monitoring.	MoEFCC, MoHUA, State PCBs
Landfilling data not reported post FY22	Establish a consistent methodology for landfill data capture, supported by digital measurement and reporting systems. Strengthen reporting by ULBs and landfill operators to enable reliable tracking of landfill inflows and disposal trends.	MoHUA + ULBs, MoEFCC, PCBs
Non-standard in recycling being followed - SOPs not being adhered - SOPs not being adhered to	Standardise and periodically update recycling SOPs and QA/QC requirements, encourage the use of recycled products in construction, and strengthen periodic audits and compliance monitoring.	MoHUA + BIS, MoRTH
Poor segregation practices	Embed on-site segregation requirements in construction contracts, mandate separate handling and storage of C&D waste streams, and strengthen awareness and training of contractors to improve segregation at source.	MoHUA, ULBs, State Urban Depts

Refer to annexures for abbreviations
Source: Crisil Intelligence

The C&D waste initiatives will be implemented through a clear RACI structure, with MoHUA/ULBs providing overall ownership and accountability, while State PCBs, contractors, facility operators, BIS and other stakeholders support execution, consultation and monitoring.

- Collection and processing: ULBs will be responsible for implementation, with MoHUA accountable and State PCBs/Urban Departments or relevant technical stakeholders consulted.
- Reporting and data: State PCBs, ULBs and landfill operators will be responsible for data capture and reporting, with MoHUA accountable and relevant statistical and policy stakeholders consulted/informed.
- Recycling standards: Facility operators and BIS will drive implementation and compliance, with ULBs accountable and MoHUA consulted.
- Segregation: Construction contractors will be responsible for on-site segregation, with ULBs accountable and MoHUA consulted.

Consumers Durables- Legally enforceable Acts/ Rules notified by Government of India

The consumer durables segment faces four main challenges.

- Collection rate was low at about 65% in fiscal 2025.
- There is an unauthorised flow of components to the second-hand market.
- EPR compliance visibility is low beyond Tier 1 cities.
- Hazardous components (refrigerants, oils and foams) are handled improperly.

The regulatory framework for consumer durables primarily focuses on Extended Producer Responsibility (EPR), collection targets, material flow verification, and environmentally sound handling of hazardous components.

Table: Key legally enforceable Acts/ Rules notified by Government of India

Relevant Acts/Rules	Enforced by (State/Central)	KPIs/Lever Affected	Specific Enforcement Provisions
E-Waste (Management) Rules, 2022	CPCB	Collection %	Rule 4 & 13: Mandates Extended Producer Responsibility (EPR) targets and establishment of collection infrastructure.
Environment (Protection) Act, 1986	CPCB	Compliance %, Collection %	Rule 15: Empowers CPCB to levy Environmental Compensation (EC).
E-Waste (Management) Rules, 2022	CPCB	Compliance %, Collection %	Rule 16: Empowers CPCB to conduct verification and audits of material flow.
	CPCB	Compliance %, Collection %	Rule 16: Empowers CPCB to conduct verification and audits of material flow.
	CPCB	Compliance %, Collection %	Rule 16: Empowers CPCB to conduct verification and audits of material flow.
	CPCB/SPCBs	Compliance %, Collection %	Rule 16: Mandates random audits and inspections by CPCB/SPCBs.
Environment (Protection) Act, 1986	CPCB	Compliance %	Section 15 (EPA): Penalties for false reporting and non-compliance.
	CPCB	Compliance %	Section 15 (EPA): Penalties for false reporting and non-compliance.
	CPCB	Compliance %	Section 15 (EPA): Penalties for false reporting and non-compliance.
Hazardous and Other Wastes Rules, 2016	CPCB	SOP Compliance	Rule 10 (ODS Rules): Strict regulations on handling refrigerants.
Ozone Depleting Substances (Regulation and Control) Rules, 2000	CPCB	SOP Compliance	Rule 4 (Hazardous Waste): Mandates authorization and safe disposal of hazardous materials.

Source: Industry, CRISIL Intelligence

Enforcement of these provisions can improve formal collection rates, strengthen compliance across producers and recyclers, increase traceability of material flows, and facilitate higher recovery of recyclable metals through the organized recycling ecosystem.

Table: Key action plans and implementation teams- Consumer Durables

Unique Problem	Action Plan	Implementation Team
Low collection rate -65% in FY 25	Expand the take-back and collection network, register relevant aggregators, and strengthen the shift towards authorised collection channels.	MoEFCC; partners: State PCBs, ULBs, MoS
Unauthorized flow of components to the 2nd hand market	Establish an authorised refurbished category and strengthen documentation and controls for resale of used components.	MoEFCC; BIS, State enforcement
Low EPR compliance visibility beyond tier-1 cities	Strengthen district-level reporting and expand EPR collection and compliance coverage beyond major cities, with greater visibility of PRO and recycler activity.	MoEFCC; State PCBs, ULBs
Improper handling of hazardous components (refrigerants, oils, foams, etc.)	Strengthen recovery infrastructure and safe handling practices at authorised centres, supported by training and compliance monitoring for hazardous components.	MoEFCC + State PCBs; MoPNG, MoSDE

Refer to annexures for abbreviations
Source: Crisil Intelligence

The implementation of the consumer durables initiatives will require coordinated action across central ministries, State authorities, ULBs, Pollution Control Boards, producers and other industry stakeholders. MoEFCC will serve as the overall Accountable authority for driving the key interventions, while producers/RPROs, ULBs, State PCBs and authorised recyclers will be responsible for implementation across their respective areas.

- For improving collection rates, ULBs and collection/aggregation partners will be responsible for strengthening collection mechanisms and coverage, with MoEFCC providing overall accountability and State PCBs and other State authorities consulted on implementation.
- For addressing unauthorised flow of components and strengthening the formal recycling ecosystem, recyclers and State enforcement agencies will be responsible for compliance and enforcement, with MoEFCC accountable and BIS/State PCBs consulted. Producer and RPRO stakeholders will be responsible for improving EPR compliance and visibility, supported by MoEFCC, while State PCBs will play a key role in monitoring and enforcement.
- For improving collection and recycling of low-value or hazardous components, producers/RPROs will be responsible for establishing appropriate recovery and processing mechanisms, with MoEFCC accountable and State PCBs consulted. Similarly, authorised recyclers will be responsible for implementing safe handling and recovery practices for hazardous components, with relevant State PCBs and industry stakeholders providing oversight and technical inputs.

Overall, MoEFCC will remain Accountable for the implementation framework, while State PCBs, ULBs, producers, recyclers and enforcement agencies will assume responsibility for execution, monitoring and compliance.

Relevant ministries and industry bodies will be consulted where required, while stakeholders such as MoS and NITI Aayog will be kept informed of progress and key developments.

Startup initiatives

India's steel scrap sector has historically been dominated by informal players. But over the past decade, a growing number of startups, social enterprises, NGOs and industry bodies have entered the space. These organisations are working to bring formalisation, technology and better practices to various parts of the value chain, from doorstep collection and kabadiwala integration to digital marketplaces and policy research.

The approaches vary widely. Some are tech-driven social enterprises that aim to bring informal waste-pickers and kabadiwalas into formal supply chains. Others are app-based platforms that connect households and businesses to scrap collectors and recyclers. Some are research organisations and think tanks that work on policy, while others are trade associations that connect recyclers with steel mills.

Table: Startups and organisations working in scrap management

Name	Type	Founded	HQ, areas of operation	Role in steel scrap/formalisation
Kabadiwala Connect	Tech social enterprise	2014-2015	Chennai, multiple cities	Digitises and integrates kabadiwalas, traceability, municipal/industrial scrap projects
The Kabadiwala (Aapka Kabadiwala)	App-enabled scrap collection startup	2013-2014	Bhopal, multiple cities	Doorstep scrap collection, logistics, linking to recyclers
Recykal	Tech marketplace	2016	Hyderabad, pan-India	Digital B2B/B2C marketplace, connects aggregators, recyclers, brands, EPR traceability
Saahas Zero Waste	Social enterprise/waste management	2013 (company); NGO since 2001	Bengaluru, 20+ states	End-to-end waste management, segregation, MRFs, supports formalisation
ScrapUncle	App-based doorstep scrap collection	2019	Delhi-NCR (expanding)	Household/business scrap collection, verified agents, standard pricing
RaddiConnect/ReCircle	Platform turned circular-economy enterprise	2015-2016	Mumbai, metro cities	Household-to-kabadiwala connector; now part of broader circular-economy services
EcoEx/Recycle India/similar marketplaces	Digital marketplaces/NGOs	2015-2020 era	Mumbai/Delhi, pan-India	Marketplaces for recyclables, traceability, EPR credits
Chintan	NGO/advocacy and research	1999-2000s	Delhi, pan-India	Research and pilots, integrates informal recyclers, policy advocacy
Toxics Link	NGO (environmental health)	1996	Delhi, pan-India	Advocacy on hazardous waste, safe recycling practices
Centre for Science & Environment (CSE)	Think tank/research organisation	1980s	Delhi, pan-India	Policy research, EPR, informal integration models
TERI	Research institute	1974	Delhi, national and international	Circular economy, recycling roadmaps, policy guidance
SWaCH Pune	Waste-picker cooperative	2008-2010	Pune	Cooperative doorstep collection, integrates waste-pickers
KKPKP	Waste-picker union	1993	Pune	Union of kabadiwalas, pioneered organising and transition to SWaCH

Name	Type	Founded	HQ, areas of operation	Role in steel scrap/formalisation
Hasiru Dala	Waste-picker collective/social enterprise	2011-2013	Bengaluru, Karnataka	Organises waste-pickers, processing centres, MoUs with municipalities
Alliance of Indian Waste pickers (AIW)	National coalition	2010s	National	Advocacy, networking, policy for waste-picker inclusion
Material Recycling Association of India (MRAI)	Trade association	2011 (evolved from earlier bodies)	Mumbai, pan-India	Apex trade body for recyclers; policy, standards, connects mills
Large processors (e.g., MTC Group)	Private sector processors	Established decades ago,	City, pan-India/global	Industrial-scale scrap handling, supply to mills

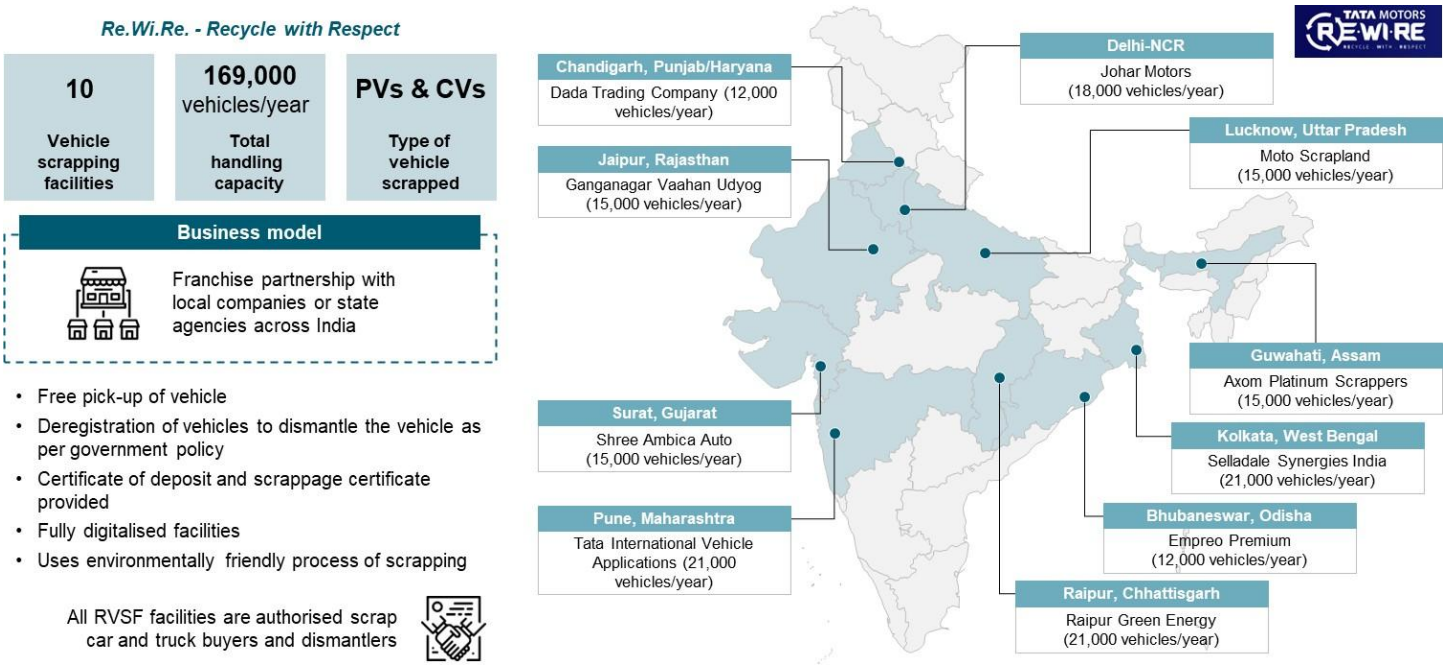
Source: Crisil Intelligence

Tata Motors Re.Wi.Re Initiative

The organisations active in India's scrap space include app-based doorstep collection startups, digital marketplaces, waste-picker cooperatives, research think tanks and the apex recyclers' trade body.

One of the most notable industry-led efforts to scale up formal vehicle scrapping is the Re.Wi.Re or Recycle with Respect initiative of Tata Motors.

Figure: Tata rewire initiative to drive RVSFs



Source: Crisil Intelligence

Re.Wi.Re is one of the larger corporate-led efforts to scale up formal vehicle scrapping, operating 10 franchise-based RVSFs across the country with a combined capacity of 169,000 vehicles per year. The facilities handle both passenger vehicles (PVs) and commercial vehicles (CVs). The business model is based on franchise partnerships with local companies or state agencies across India.

Table: The facilities are spread across the country

City/state	Partnership company	Vehicle handling capacity (per year)
Delhi-NCR	Johar Motors	18,000
Lucknow, Uttar Pradesh	Moto Scrapland Pvt Ltd	15,000
Guwahati, Assam	Axom Platinum Scrappers	15,000
Chandigarh, Punjab/Haryana	Dada Trading Company	12,000
Jaipur, Rajasthan	Ganganagar Vaahan Udyog Pvt Ltd	15,000
Surat, Gujarat	Shree Ambica Auto	15,000
Kolkata, West Bengal	Selladale Synergies India Pvt Ltd	21,000
Pune, Maharashtra	Tata International Vehicle Applications	21,000
Bhubaneswar, Odisha	Empreo Premium Pvt Ltd	12,000
Raipur, Chhattisgarh	Raipur Green Energy Pvt Ltd	21,000

Source: Crisil Intelligence

All the RVSF facilities under this initiative are authorised scrap cars and truck buyers and dismantlers. The facilities have fully digitalised services and offer services such as free pick-up of vehicles, deregistration of vehicles to dismantle the vehicle as per government policy, provision of certificate of deposit and scrappage certificate and the use of environmentally friendly scrapping processes.

Kabadiwala Connect: A case study

Incorporated in 2016, Kabadiwala Connect is a Chennai-based social enterprise that offers tech-driven, data-centric solutions for post-consumer waste management. Its core function is to bring informal kabadiwalas and waste-pickers into formal supply chains by using mapping, KYC, digital transaction tracking and dashboards.

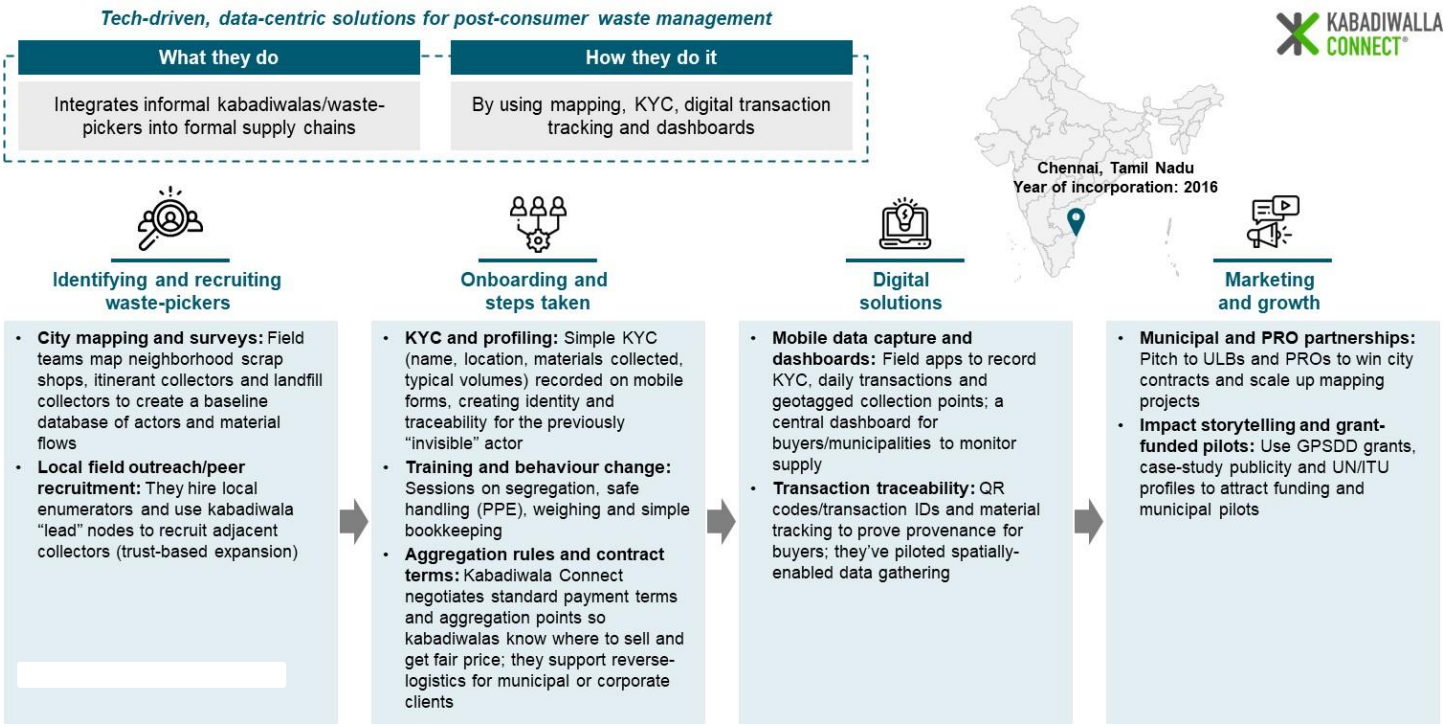
Among the startups trying to bring structure to the informal scrap collection system, Kabadiwala Connect stands out as an example of a tech-driven, data-centric approach.

The model works in four stages:

- The first stage is identifying and recruiting waste-pickers. City mapping and surveys are conducted by field teams to map neighbourhood scrap shops, itinerant collectors and landfill collectors to create a baseline database of actors and material flows. Local field outreach and peer recruitment follows, where local enumerators are hired and kabadiwala "lead" nodes are used to recruit adjacent collectors through a trust-based expansion model.

- The second stage is onboarding and steps taken. This includes KYC and profiling, where simple KYC information (name, location, materials collected, typical volumes) is recorded on mobile forms, creating identity and traceability for previously "invisible" actors. Training and behaviour change sessions cover segregation, safe handling (PPE), weighing and simple bookkeeping. Aggregation rules and contract terms are set, where Kabadiwala Connect negotiates standard payment terms and aggregation points so that kabadiwalas know where to sell and get a fair price. They also support reverse-logistics for municipal or corporate clients.

Figure: Kabadiwala connect, social enterprise model



Source: Crisil Intelligence

- The third stage involves digital solutions. Mobile data capture and dashboards use field apps to record KYC, daily transactions and geotagged collection points, with a central dashboard for buyers and municipalities to monitor supply. Transaction traceability uses QR codes, transaction IDs and material tracking to prove provenance for buyers. They have also piloted spatially enabled data gathering.

- The fourth stage is marketing and growth. Municipal and PRO partnerships involve pitching ULBs and producer responsibility organisations to win city contracts and scale mapping projects. Impact storytelling and grant-funded pilots use GPSDD grants, case study publicity and United Nations Development Programme (UNDP) profiles to attract funding and municipal pilots.

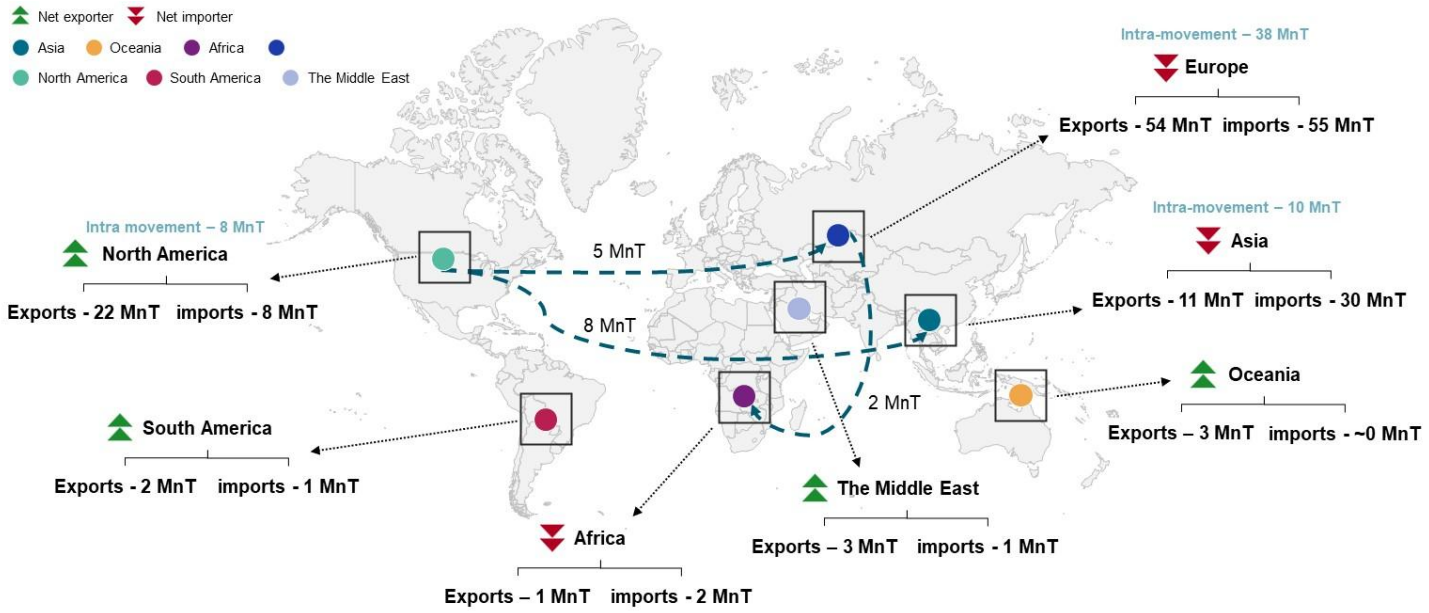
This model shows how technology and data can be used to bridge the gap between the informal scrap collection network and the formal recycling sector, creating traceability and accountability where none existed before.

Global scenario

Global steel scrap trade flows

India's steel scrap market does not exist in isolation. It is connected to a global scrap trade that moves roughly 100 MT of ferrous scrap across borders every year. Understanding the global trade dynamics is important because India's import dependency, currently at 30%, implies that changes in global supply, demand, and trade policies affect the availability and price of scrap in the Indian market.

Figure: Global steel scrap trade flow, calendar year 2024



Source: World steel, Industry (detailed list in annexure), Crisil Intelligence
Source: Crisil Intelligence

Europe accounted for more than 50% of global trade in calendar year 2024.

In calendar year 2024, the global ferrous scrap trade was organised around a few major regions, each with a distinct position as either a net exporter or a net importer.

Europe was the largest player in the global scrap trade, accounting for more than 50% of global trade flows. It exported 54 MT, imported 55 MT and had intra-regional movement of 38 MT. Europe was a slight net importer overall, but the high volume of intra-regional trade reflects the tightly connected markets within the European Union.

North America was a major net exporter. It exported 22 MT and imported 8 MT, with intra-regional movement of 8 MT. The United States (US) was the dominant exporter in this region, and also the single largest exporter of scrap to India

Asia was a major net importer. It imported 30 MT and exported only 11 MT, with intra-regional movement of 10 MT India, along with Turkey and Bangladesh, was among the key importers driving this demand.

South America was a small net exporter, exporting 2 MT and importing 1 MT.

Africa was a small net importer, exporting 1 MT and importing 2 MT.

The Middle East was a net exporter, exporting 3 MT and importing 1 MT.

Oceania was a net exporter, exporting 3 MT and importing almost nil.

The major inter-regional trade flows show that roughly 8 MT moved from North America to Europe, about 5 MT moved from North America to Asia, and about 2 MT flowed from the Middle East to Asia. These flows were shaped by the relative availability of scrap in mature, developed economies, where the stock of steel-in-use was high, replacement cycles generated large volumes of old scrap, and by the demand from developing economies, where rapid industrialisation and capacity expansion create demand that outstrips domestic scrap generation.

Implications for India

The global scrap trade scenario has three direct consequences for India's raw material planning: Concentration risk from a narrow supplier base, tightening global supply as more countries restrict exports, and a long timeline before domestic generation can close the gap.

First, India’s reliance on a few exporting countries (the US, the UK and the UAE) creates concentration risk. Any changes in these markets, whether through trade policy shifts, export bans or logistics problems, can quickly tighten supply and push up scrap prices in India.

Second, the global trend of countries restricting scrap exports is likely to continue as more countries adopt circular economy policies and look to keep scrap within their borders for domestic steelmaking. India needs to plan for a future in which imported scrap becomes harder and more expensive to source.

Third, India's shift towards self-sufficiency depends on two factors: How fast its domestic steel stock matures (which determines how much old scrap becomes available), and how well its collection and processing infrastructure works (which determines how much of that scrap is recovered and made furnace-ready). Both of these changes will play out over decades, strengthening the case for the policy push and action plans laid out in this report.

Best practices by advanced economies for development in scrap recycling

Table: Global practices in steel scrap handling

Mechanism	Japan	EU	USA	Korea	India
ELV upfront recycling fee	¥7,000–18,000 mandatory at purchase	Free take-back (manufacturer-funded EPR)	State-level only; no federal mandate	EPR fees via KECO; 70-90% cost coverage	None
Criminal imprisonment for violations	ELV Recycling Law Ch.VIII	Up to 5 years (Directive 2024/1203/EU)	Up to 2+ years (RCRA, CAA)	Confinement for EEEV Act violations	REMOVED (Jan Vishwas Act 2023)
Daily compounding environmental fines	Fines + continuing penalties	Per-day civil penalties	RCRA: $93,058/day; CAA: $124,426/day	APEO: clean-up cost + % annual sales	Partial: ₹10,000/day (continuing offence)
Cash payment bans for scrap	Designated categories	Bank transfer mandated at ATFs	State-level (varies)	Traceable payment mandated	No national ban
EPR for steel-containing goods	ELV + Home Appliances	ELV + WEEE	Partial (voluntary)	ELV + WEEE (EEEV Act 2007)	Not for vehicles/appliances
GST/VAT preference for scrap sector	Tax neutral/reduced	VAT relief for recyclers	Tax credits; bonus depreciation	EPR subsidy system	18% GST on formal operators; zero for informal

Sources: JARC (jarc.or.jp); EU Commission DG Environment (environment.ec.europa.eu); EUR-Lex (CELEX:32024L1203); US EPA Federal Register Vol.90 No.5 (January 8, 2025); IEA Policy Database iea.org/policies/25165 (updated 23 October 2024); NSW Police SLED (police.nsw.gov.au); PIB India PRID=2209837; IndiaCode.nic.in (EPA as amended by Jan Vishwas Act 2023).

Japan

Japan operates one of the most disciplined recycling systems among advanced economies. Its model is built on mandatory upfront funding, tight registration requirements, and digital traceability. In the vehicle segment, owners pay a recycling fee during the vehicle lifecycle, and the amount is held in escrow until verified recycling takes place through the formal system. This gives licensed dismantlers and processors a predictable revenue stream and ensures that end-of-life processing is financed before the vehicle becomes waste.

The system works because compliance is integrated into the ownership and registration framework. A vehicle cannot smoothly move through the legal lifecycle without the recycling obligation being fulfilled. In addition, Japan applies similar user-funded or producer-linked models in appliances and construction waste, ensuring that recycling is not left to informal negotiation at the point of disposal. Tax incentives for cleaner vehicles and support for recycled-content industrial production further reinforce formal recycling demand.

Penalties are also credible. Operators in the ELV chain must be registered or authorised, and failure to comply can trigger fines, business closure, and criminal consequences. Scrap dealers are subject to identity verification and inspection obligations, which reduce theft-linked leakage into informal channels. The key strength of the Japanese model is that funding, enforcement, and tracking are fully integrated, leaving limited room for informal diversion.

Japan's ELV and scrap-recycling framework enforces stringent compliance through a combination of financial penalties, imprisonment, licence suspension or revocation, business closure, criminal prosecution, and regulatory audits. The framework is supported by mandatory registration, end-to-end transaction traceability through electronic manifest systems, strict reporting requirements, and identity-verification obligations, ensuring strong deterrence against non-compliance, illegal scrap handling, underreporting, and informal recycling activities.

European Union and Germany

The European Union follows a producer-responsibility-led approach in which end users are protected from disposal costs, while manufacturers and authorised operators carry the recycling burden. In the ELV segment, vehicle owners can hand over end-of-life vehicles to authorised treatment facilities without charge. This removes a major reason for illegal dumping or informal disposal and shifts the system toward formal collection channels funded by producers.

The commercial incentive for formal recyclers is strong because only authorised facilities can legally participate in the chain and access the associated business flows. This is reinforced by broader policy drivers such as carbon pricing, recycled-content preferences, and green public procurement. For steel, the EU's carbon market creates an economic advantage for scrap-based electric arc furnace production over more carbon-intensive primary steel routes. This indirectly strengthens demand for quality scrap and improves the economics of formal recycling.

The penalty architecture is equally strong. Serious environmental offences, including unlawful waste handling and ship recycling violations, can attract criminal prosecution and imprisonment. Companies can face large fines, including turnover-based penalties. In parallel, failure to comply with emissions obligations carries statutory per-unit penalties and reputational consequences. Germany, as a leading implementation market, complements the EU framework with strong licensing requirements and local enforcement. Overall, the EU model works because it removes the consumer's cost burden while imposing high legal and financial risk on non-compliant firms.

The EU imposes a stringent enforcement framework across vehicle recycling, waste management and industrial emissions, combining substantial corporate fines, criminal prosecution, imprisonment, competition-law penalties, per-tonne environmental levies, licence restrictions and public disclosure of non-compliance. The regulatory regime targets anti-competitive practices, environmental crimes, illegal waste handling, emissions-reporting failures and improper recycling activities, creating strong financial and legal deterrents while reinforcing accountability, environmental compliance and circular-economy objectives.

United States

The United States relies less on prepaid recycling fees and more on environmental liability, permit compliance, and heavy enforcement against industrial operators. The key driver of compliance is not consumer obligation but the high cost of regulatory breach. Scrap yards, shredders, smelters, and related facilities operate under air, water, and hazardous waste rules, and violations can attract substantial daily penalties. These penalties are large enough to materially affect business economics and can escalate quickly if violations continue.

This framework makes preventive compliance economically rational. Scrap yards invest in stormwater management, refrigerant removal, emissions control, and hazardous material handling because the cost of failure is high. In addition to civil penalties, serious cases can trigger criminal prosecution, including imprisonment. Legacy contamination can also create retrospective clean-up liability, which makes environmental risk management central to business survival.

The US model is therefore enforcement-led. Legitimate recyclers benefit from regulatory certainty and legal protection when operating within the rules, but non-compliant operators face a combination of fines, capital expenditure mandates, criminal exposure, and long-tail liability. This creates a strong incentive to remain formal, documented, and environmentally compliant.

The U.S. environmental compliance framework imposes stringent civil and criminal penalties for violations related to waste management, air emissions, water pollution and hazardous-site remediation. Enforcement mechanisms include substantial per-day financial penalties, escalating fines for repeat offences, criminal prosecution, imprisonment, mandatory corrective actions and enhanced penalties for non-compliance with regulatory orders. The framework creates strong deterrence against environmental violations while ensuring accountability, regulatory compliance and protection of public health and environmental resources.

South Korea

South Korea offers one of the clearest examples of a balanced incentive–penalty structure. Its recycling framework is built around extended producer responsibility, digital compliance systems, and licensed dismantling networks. Producers and importers fund recycling through approved compliance structures, and these mechanisms cover a significant share of actual recycling cost. This reduces the financial burden on the downstream recycling chain and helps formal operators remain viable.

In the vehicle segment, dismantling through the authorised system is linked to administrative convenience and fiscal benefits, including tax and registration relief on replacement vehicles. Licensed dismantlers also gain access to formal industrial buyers and digital one-stop tracking systems, which improves both transparency and market access. This gives legal status real commercial value.

On the penalty side, South Korea imposes surcharges for failure to meet recycling obligations and escalated sanctions for environmental offences. Serious violations can trigger product restrictions, fines, and imprisonment. Illegal discharge and dumping provisions are stringent, and regulators can also recover clean-up costs. The Korean model works because it lowers compliance cost through producer funding while preserving a strong enforcement backstop.

South Korea's recycling and environmental compliance framework combines financial surcharges, product bans, administrative penalties, criminal prosecution and imprisonment to enforce producer responsibility, hazardous-substance controls and waste-management obligations. The regime imposes penalties for failing to meet recycling targets, illegal disposal of industrial waste, non-compliance with resource-recycling requirements and environmental violations, while leveraging market restrictions, enhanced fines and regulatory enforcement to promote traceability, recycling performance and environmental accountability.

China

China combines industrial policy support for scrap utilisation with a highly assertive environmental enforcement system. On the incentive side, the state uses trade-in programmes, strategic recycling targets, and favourable treatment for certified recycled raw materials to channel scrap into the formal industrial economy. This approach links recycling policy with broader objectives such as resource security, industrial upgrading, and lower-emission steel production.

By reclassifying high-quality scrap as recycled raw material rather than waste, China improves the commercial status of compliant scrap streams. At the same time, support for electric arc furnace capacity and recycling-linked industrial investments creates sustained demand for processed scrap. These measures make formal recycling part of national industrial strategy rather than a narrow waste-management issue.

The deterrence regime is strong and unusually aggressive. Facilities that fail to correct violations can face daily compounding fines without an effective cap. False reporting, tampering with monitoring systems, and obstruction of inspections can lead to criminal action. Senior responsible personnel may also face detention in serious cases. This makes non-compliance not only costly for the firm but personally risky for management. China’s model succeeds because it aligns state-backed demand creation with uncompromising enforcement.

China's environmental compliance framework employs a stringent enforcement regime combining uncapped daily accumulating fines, criminal prosecution, administrative detention, production restrictions and public disclosure mechanisms. The framework imposes severe penalties for environmental violations, illegal waste disposal, falsification of environmental data, obstruction of regulatory inspections and industrial non-compliance, while holding both companies and responsible individuals accountable. Through continuous financial penalties, personal liability provisions, operational restrictions and strict regulatory oversight, the regime creates strong deterrence against non-compliance and reinforces environmental governance, transparency and industrial discipline.

Australia

Australia’s recycling architecture is strongest in scrap dealer regulation, traceability, and anti-theft enforcement. Rather than depending mainly on subsidies, the system uses registration, market access control, and transaction transparency. Scrap dealers must be registered to operate legally, and registration is therefore a commercial prerequisite. This creates a direct incentive for formalisation because an unregistered business cannot lawfully participate in the sector.

Another important feature is the restriction on cash payments for scrap in key jurisdictions. Requiring traceable payment reduces anonymity, discourages stolen material from entering the system, and improves the audit trail for regulators and law enforcement. Dealers are also required to maintain transaction records and verify seller details, which further constrains informal and illicit trade.

Australia also supports formal recycling through product stewardship in e-waste, where consumers can dispose of covered items at little or no direct cost through producer-funded collection systems. Enforcement is practical and immediate: non-compliant dealers can face suspension, closure, inspection, and seizure. This makes the Australian model effective even without extensive direct subsidies, because the legal right to trade itself becomes the main incentive.

India

India has made visible progress in creating formal scrappage infrastructure, particularly through registered vehicle scrapping facilities and automated testing stations. It has also introduced road tax concessions and selected state-level incentives linked to certificates of deposit. These steps indicate policy intent, but they do not yet create a complete compliance architecture comparable to advanced markets.

The core weakness is the absence of a stable funding mechanism for end-of-life recycling. Unlike Japan or the EU, India does not have a mandatory upfront recycling fee or a producer-funded take-back model for vehicles and large steel-containing goods. This means formal operators must compete for material using only downstream scrap value, while informal buyers can often offer better terms to owners. As a result, the formal sector remains structurally disadvantaged in feedstock acquisition.

The second weakness is enforcement. Recent changes have increased monetary penalties under environmental law, but criminal imprisonment for core violations has been removed. This marks a sharp divergence from all major comparator economies, where serious environmental violations continue to attract criminal liability. India’s continuing daily penalties also remain modest relative to the financial scale of industrial non-compliance. In practice, this reduces deterrence.

The third weakness is transaction opacity. India has no national restriction on cash payments for scrap, and no comprehensive traceability architecture comparable to those in Japan, Korea, or Australia. EPR is also absent for vehicles and large steel-bearing appliances, even though these are major scrap-generating categories. Together, these gaps weaken collection efficiency, formal channel viability, and enforcement credibility.

Table: India's Specific Policy Gaps and Recommended Actions

Gap	Global Best Practice	India Current State	Recommended Action
ELV upfront recycling fee — mandatory	Japan: ¥7,000–18,000 mandatory at purchase; escrow released only on verified scrapping. EU: manufacturer-funded free take-back.	None. RVSFs pay ~₹30,000 for a vehicle; informal operators pay ~₹60,000 — formal sector is economically uncompetitive.	Legislate mandatory ₹3,000–5,000 ELV recycling fee via Motor Vehicles Act amendment. Hold in MSTC escrow; release to RVSFs only on VAHAN-verified scrapping.
Tax neutrality for formal scrap sector	All peer countries: tax neutral or preferential for scrap recyclers. EU: VAT relief. Japan: tax credits.	18% GST on formal operators; informal sector pays zero. ~₹5,400+/tonne competitive disadvantage.	GST Council: reduce GST to 5% + Reverse Charge Mechanism (RCM) shifting liability to registered buyers. Precedent: RCM already used in India for construction services.
Criminal liability for environmental violations	All six peer countries: criminal prosecution + imprisonment available for serious violations.	Removed by Jan Vishwas Act 2023 (in force April 2024). Maximum: ₹15 lakh civil only.	Restore criminal liability for serious, wilful or repeat EPA violations. Minimum: create a separate 'aggravated environmental offence' with imprisonment for industrial-scale illegal dumping.
Daily compounding environmental fines (no cap)	China: unlimited daily fines. US RCRA: $93,058/day. EU: per-day civil penalties.	Continuing violation: ₹10,000/day. Maximum total: ₹15 lakh.	Introduce daily compounding fines with no cap for uncorrected violations. Minimum target: ₹1 lakh/day for MSME scale; ₹10 lakh/day for large industries.
Cash payment bans for scrap	Australia: cash ban enforced across NSW, Vic, SA. Korea: traceable payment mandated.	No national ban. Cash enables informal sector to operate without paper trail.	Notification under Prevention of Money Laundering Act: ban cash payments above ₹10,000 for scrap metal transactions. Enforce through GST audit trail.
EPR for steel-containing goods	Japan: ELV + home appliances. EU: ELV + WEEE. Korea: EEEV Act 2007.	EPR exists for e-waste, plastics, batteries — NOT for vehicles or large steel-containing appliances.	Extend E-Waste Management Rules 2022 to include steel-containing home appliances. Mandate OEM vehicle take-back under amended Motor Vehicles Act.

Source: Industry, Crisil Intelligence

Industry consultations identified a set of priority interventions to strengthen the formal scrap ecosystem, with emphasis on formal procurement, mechanisation, traceability and streamlined regulation. Key recommendations include incentivising procurement from compliant recyclers, promoting mechanised scrap processing and recognising processing equipment as recycling infrastructure. Further, KYC-based procurement, digital payment trails and improved traceability can support greater formalisation and transparency. Industry also highlighted the need to facilitate scrap imports through smoother PSIC processes and improved port infrastructure, while adopting a risk-based regulatory approach that differentiates compliant recyclers from non-compliant operators. These measures are broadly aligned with recent policy recommendations around formalisation, traceability, mechanisation and strengthening domestic recycling capacity.

Primary interactions coverage

Over 270 primary interactions were conducted across the steel scrap value chain. These conversations spanned both the supply side (scrap generators, collectors and processors) and the demand side (steel producers and foundries), covering four major scrap-generating segments: Automobile, consumer durables, ship breaking, and construction and demolition.

Stakeholder type	Number of interactions
Scrap generators	
EAF/IF/BOF players	57
Fabricators	5
Manufacturers*	29
Builders and contractors	13
Scrap consumers	
RVSFs	21
Scrap aggregators and processors	130
Ship recyclers	15
Grand total	**270**

Note: The interactions were distributed across all four regions of India: West (31%), north (28%), south (23%), and east (20%), ensuring that the insights reflect the diverse operating conditions that exist across the country's major steel and scrap clusters. On the segment side, the automobile and consumer durables verticals received the deepest coverage (35-40 interactions each), followed by ship breaking (15 interactions) and construction and demolition (13 interactions).

**Manufacturers include the manufacturers of Automobile, Auto components, White Goods, PEB, General Engineering, re-rollers etc.*

Source: Crisil Intelligence

Glossary

Term	Full Form / Definition
BOF	Basic Oxygen Furnace
EAF	Electric Arc Furnace
IF	Induction Furnace
ELV	End-of-Life Vehicle
RVSF	Registered Vehicle Scrapping Facility
OEM	Original Equipment Manufacturer
EPR	Extended Producer Responsibility
C&D Waste	Construction and Demolition Waste
DRI	Direct Reduced Iron
HMS	Heavy Melting Scrap
LMS	Light Melting Scrap
ISP	Induction Steel Plant
JPC	Joint Plant Committee
MSTC	Metal Scrap Trade Corporation Limited
IREPS	Indian Railways E-Procurement System
P-Way	Permanent Way (Railway Track Infrastructure)
RC	Registration Certificate
CoD	Certificate of Deposit
CoVS	Certificate of Vehicle Scrapping
IHM	Inventory of Hazardous Materials
SRP	Ship Recycling Plan
DGS	Directorate General of Shipping

CPCB	Central Pollution Control Board
GPCB	Gujarat Pollution Control Board
MoRTH	Ministry of Road Transport and Highways
MoS	Ministry of Steel
MoEFCC	Ministry of Environment, Forest and Climate Change
MoHUA	Ministry of Housing and Urban Affairs
MoPNG	Ministry of Petroleum and Natural Gas
MoPSW	Ministry of Ports, Shipping and Waterways
MoSPI	Ministry of Statistics and Programme Implementation
MoSDE	Ministry of Skill Development and Entrepreneurship
NSDC	National Skill Development Corporation
ULB	Urban Local Body
PCB	Pollution Control Board
OHS	Occupational Health & Safety
PRO	Producer Responsibility Organisation
BIS	Bureau of Indian Standards
VAHAN	National Vehicle Registry Platform
PSIC	Pre-Shipment Inspection Certificate
CAGR	Compound Annual Growth Rate
MT / MnT	Million Tonnes
Crude Steel Capacity	Installed facility capacity to produce crude steel
Home Scrap	Scrap generated internally within steel plants and foundries
New / Prompt Scrap	Manufacturing and fabrication scrap generated before products reach end users
Old / Obsolete Scrap	Scrap generated from end-of-life products such as vehicles, buildings and appliances
Re-melting Scrap	Scrap used as furnace feedstock for steelmaking

Re-rollable Scrap	Scrap directly rolled into steel products without melting
Re-usable / Re-profiled Scrap	Scrap reused after resizing, cutting or reshaping without melting
Formal Scrap Channel	Regulated and traceable scrap collection, processing and recycling system
Informal Scrap Channel	Unorganized scrap collection and trading network with limited traceability
Steelmaking Scrap	Scrap consumed by BOF, EAF and IF routes for steel production
Foundry Scrap	Scrap consumed by foundries for production of castings
Collection Efficiency	Percentage of theoretically available old scrap actually collected for recycling
Import Dependency	Share of scrap demand met through imports

List of abbreviations

MoRTH	Ministry of Road Transport and Highways
MoF	Ministry of Finance
MoEFCC	Ministry of Environment, Forest and Climate Change
MoS	Ministry of Steel
NIC	National Informatics Centre
VAHAN	VAHAN national vehicle registry (India's vehicle database system)
State RTOs	State regional transport offices
RVSF	Registered vehicle scrapping facility
MoSPI	Ministry of Statistics and Programme Implementation
State GST/commercial tax	State goods and services tax
OEMs	Original equipment manufacturers
PCBs	Pollution Control Boards
OHS	Occupational health and safety
MoSDE	Ministry of Skill Development and Entrepreneurship
NSDC	National Skill Development Corporation
OJT	On-the-job training
ULBs	Urban local bodies
PROs	Producer responsibility organisations
MoCA	Ministry of Consumer Affairs
MoPNG	Ministry of Petroleum and Natural Gas
MoPSW	Ministry of Ports, Shipping and Waterways
PPP SPVs	Public-private partnership special purpose vehicles
BIS	Bureau of Indian Standards
MoHUA	Ministry of Housing and Urban Affairs
CPWD	Central Public Works Department
MoC	Ministry of Commerce
State skill missions	State skill development missions

Source: Crisil Intelligence