Qatar's Recycling Sector

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CEO’S MESSAGE

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As part of Qatar’s efforts to develop its private sector and bring progress to the country’s entrepreneurship, Small and Medium-sized Enterprises (SMEs), and innovation ecosystems towards the realization of its national vision for 2030, Qatar Development Bank (QDB) continues to advance its role as the entrepreneur's and SME's growth partner from ideation to fruition.

To support local entrepreneurs and foster a data-driven approach to business ventures, QDB has published a series of reports that explore potential SME opportunities across various sectors within the local market. These reports provide entrepreneurs with valuable insights, including market demand analysis, competitive landscape assessments, and information on existing market players, enabling them to make informed decisions regarding market entry and business development.

Qatar is advancing its recycling sector as part of broader efforts to reduce environmental impact and promote a circular economy. Environmental development, a key pillar of Qatar National Vision 2030, aims to balance economic growth with environmental protection. The sector is supported by the Ministry of Environment and Climate Change (MECC) and the Ministry of Municipality (MM), both working to realize the environmental goals outlined in Qatar’s National Vision 2030.

Across the Gulf Cooperation Council (GCC) region, material recovery has become a key priority due to the region’s high per capita waste generation. Governments are investing in recycling infrastructure, waste-to-resource projects, and smart technologies to enhance environmental performance and global sustainability rankings.

This report provides detailed insights into global and GCC recycling markets with a comprehensive analysis of Qatar’s evolving recycling sector. It identifies emerging trends and potential areas of opportunity across the recycling value chain. Waste generation in Qatar grew from 12 million tons in 2013 to 16 million tons in 2023, reflecting a Compound Annual Growth Rate (CAGR) of 3%. This growth underscores the increasing potential for recycling to contribute to sustainability in waste management.

As part of this transition, Qatar is fostering private sector participation in the sustainability space. The QNE provides the overarching policy framework, while the MM initiatives such as Al Afjah Recycling City and the expansion of smart waste infrastructure offer practical implementation pathways. Regulatory measures including mandated waste segregation, streamlined land allocation for recycling enterprises, and digital service platforms further enable SME involvement and innovation. Collectively, these efforts support Qatar’s goal of converting waste into economic value while advancing a low-carbon, circular economy.

I invite readers to explore the report to gain valuable insights and in-depth knowledge and understanding of this sector’s prospects.

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List of Abbreviations

CAGR	Compound Aggregate Growth Rate
CDW	Construction and Demolition Waste
DFIs	Development Financial Institutions
DSWMC	Domestic Solid Waste Management Center
EAF	Electric Arc Furnace
ELV	End-of-life Vehicle
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GRF	Glass Recycling Factory
HDPE	High Density Polyethylene
HS	Harmonized System
LDPE	Low Density Polyethylene
MCC	Modern Cleaning and Trading Company
MECC	Ministry of Environment and Climate Change
MENA	Middle East and North Africa
MM	Ministry of Municipality
MoU	Memorandum of Understanding
MSW	Municipal Solid Waste
NDS3	Third Qatar National Development Strategy
NFCA	National Factory of Copper and
NOC	No Objection Certificate
NPC	National Planning Council
OCC	Old Corrugated Containers
OECD	Organization for Economic Cooperation and Development
ONP	Old Newspapers
PE	Polyethylene
PET	Polyethylene Terephthalate
PP	Polypropylene
PPP	Public-private Partnership
QALCO	Qatar Lubricants Company
Qatalum	Qatar Aluminum
QCS	Qatar Construction Specifications
QMPF	Qatar Modern Recycling Factory
QNE	Qatar's National Environment & Climate Change Strategy
QPMC	Qatar Primary Materials Company
R&D	Research and Development
RAP	Reclaimed Asphalt Pavement
RCA	Recycled Concrete Aggregates
Rebar	Reinforcement bar
SDG	Sustainable Development Goal
SME	Small and Medium Enterprise
UN	United Nations
WEEE	Waste Electrical and Electronic Equipment
WLO	Waste Lubricant Oil
WtE	Waste-to-Energy

1. Introduction

1.1 Purpose of the report

The material recovery and recycling industry plays a significant role in advancing global environmental sustainability, offering long-term social and economic benefits. As a result, the market for recovery and recycling materials is growing rapidly in many countries. Material recovery involves receiving, sorting, and processing recyclable materials from waste and scrap, aiming to maximize their use as raw inputs to improve business efficiency and profitability. Globally, the adoption of circular economy principles is increasing demand for Material Recovery Facilities (MRFs). These facilities are designed to collect, sort, recover, and recycle waste materials, helping to streamline the industry and establish a structured value chain. This report examines the recycling and material recovery sector globally, regionally, and locally, with a focus on Qatar.

Recycling transforms waste into new products, while material recovery extracts valuable components for reuse, reducing landfill dependence and supporting the circular economy. These efforts align with the sustainability goals of Qatar National Vision 2030 (QNV) and the third Qatar National Development Strategy (NDS3), which emphasize economic diversification and reduce environmental impact through non-hydrocarbon industries. Qatar has developed infrastructure to support recycling across key waste streams, including paper, plastic, metal, glass, rubber, construction aggregates, e-waste, and waste oils, creating potential for SMEs to innovate and invest. Organic waste (e.g., food and sewage) is excluded from the scope of this report, as its treatment methods, such as composting and waste-to-energy conversion, differ from the industrial and chemical processes used in material recovery process.

1.2 Recycling Market Segmentation

While the recycling sector encompasses a wide range of materials, this report has selected and examined the following recovery segments, based on relevance to the Qatar market:

Material Segment	Description	Source of Waste*	Applications*
Paper	This segment addresses the collection, processing, and recycling of paper and its derivatives, transforming paper waste into pulp to produce new paper-based products.	■ Municipal Solid Waste (MSW)	■ Packaging ■ Construction materials ■ Printing and publishing ■ Agriculture
Plastic	Plastic recovery and recycling primarily involve converting plastic waste into resins for manufacturing use. Key materials in this segment include polyethylene (PE), polypropylene (PP), and polyethylene terephthalate (PET).	■ Municipal Solid Waste ■ Construction & Demolition Waste	■ Packaging ■ Construction materials ■ Textiles ■ Landscaping and gardening
Metal	**Steel (Ferrous)** Steel recycling involves the recovery and processing of steel scrap, which comes largely from construction and industrial manufacturing waste. **Iron (Ferrous)** Iron recycling, like steel, involves the collection and processing of iron scrap, which is commonly derived from construction and industrial manufacturing waste. **Aluminum (Non-Ferrous)** Aluminum recycling addresses the recovery and recycling of aluminum scrap, sourced from packaging, automotive and construction waste. **Copper (Non-Ferrous)** Copper recycling involves the recovery of copper scrap from sources such as industrial manufacturing and construction. This segment transforms copper waste into two primary products: ingots and bullions.	■ Municipal Solid Waste ■ Industrial Waste ■ Construction & Demolition Waste	■ Industrial machinery and equipment ■ Automotive industry ■ Construction ■ Infrastructure and urban development ■ Energy sector ■ Aerospace ■ Packaging ■ Furniture and appliances

*Please note that the examples listed are not exhaustive

Material Segment	Description	Source of Waste*	Applications*
Glass	Glass recycling focuses on recovering glass waste, mainly from municipal sources like bottles and packaging, and transforming it for reuse in various applications.	■ Municipal Solid Waste	■ Beverage bottling ■ Construction materials ■ Household products ■ Art and design
Rubber	This material segment involves the recovery and recycling of discarded rubber items mainly from vehicle tires, seals, gaskets, conveyor belts, hoses, and footwear[1].	■ Municipal Solid Waste ■ Industrial Waste	■ Construction and infrastructure ■ Sports and recreation ■ Agriculture
Recycled Aggregates	The recycling of construction and demolition debris including recycled concrete aggregates (RCA), recycled asphalt pavements (RAP), and mixed materials, which are processed into materials that can be reused in construction projects.	■ Construction & Demolition Waste (CDW)	■ Asphalt production ■ Road construction ■ Landscaping ■ Drainage systems
E-Waste	**Lead-Acid Batteries** Lead-acid battery recycling focuses on recovering valuable materials from used automotive and industrial batteries. The process extracts lead metal, which can be reused, reducing the need for virgin materials. **Waste Electronics and Electrical Equipment (WEEE)** This category covers discarded electronic devices and electrical appliances, including computers, mobile phones, home appliances, and industrial equipment. WEEE recycling extracts precious metals, plastics, and other components, helping to reduce landfill waste and conserve resources through material recovery and reuse.	■ Municipal Solid Waste ■ Industrial Waste	■ Metals recovery ■ Battery components ■ Industrial applications ■ Artisanal uses
Waste Oil	The recovery and recycling of waste lubricant oil, generated from automotive, industrial, and machinery use. Lubricant oil recycling processes aim to reclaim hydrocarbons, enabling the production of re-refined oils for reuse.	■ Industrial Waste	■ Biofuels ■ Industrial lubricants ■ Energy generation ■ Asphalt production

[1] US EPA – Rubber Waste Data

*Please note that the examples listed are not exhaustive

2. Global Recycling Market Overview

This section provides an overview of the global recycling landscape, covering the value chain, market size and growth projections, waste generation and recovery trends, and profiles of leading global players.

2.1 Material Recovery Value Chain Analysis

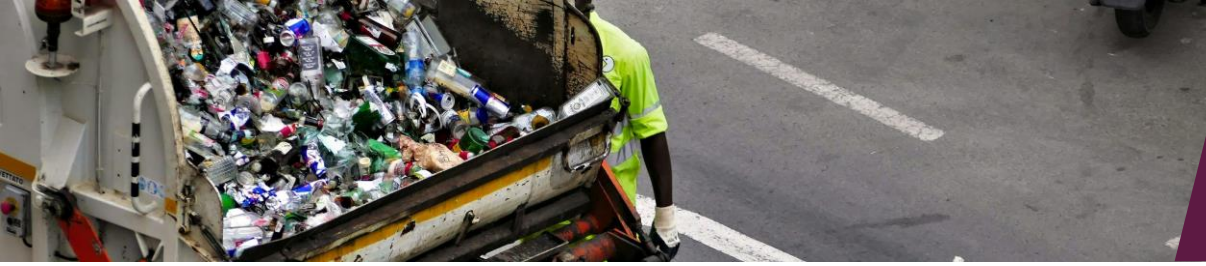
The recycling value chain transforms waste into raw materials and intermediate goods through **collection, sorting, Material Processing and Recovery,** and **downstream application** in a wide range of industries. This process is supported by advanced government incentives, laws, regulations, and public awareness campaigns, fostering a sustainable circular economy.

1	***Waste Collection***	The process of gathering recyclable materials from various sources, including MSW, CDW and Industrial waste streams, for further processing.
2	***Waste Sorting***	The separation of mixed waste into specific categories by material type and grade to ensure compatibility with recycling processes. AI technologies, such as optical sorting systems, can significantly enhance sorting efficiency across different waste streams.[2]
3	***Material Processing and Recovery***	The conversion of sorted waste into raw materials or semi-finished products through mechanical, chemical, or thermal processes, enabling their reintegration into production cycles for new applications.
4	***Downstream Application***	This final stage involves reusing recycled materials in industrial manufacturing to produce intermediate or finished goods, supporting the principles of a circular economy.

Enabling Activities	***Government Initiatives***	***Regulations***	***Awareness Campaigns***
	Policies such as tax exemptions, grants, subsidies & Public-Private Partnerships that support recycling businesses.	Legal measures mandating the use of recyclable materials and segregation of disposed waste materials facilitate the recycling sector.	Initiatives to educate consumers and businesses about the benefits of recycling, encouraging sustainable practices.

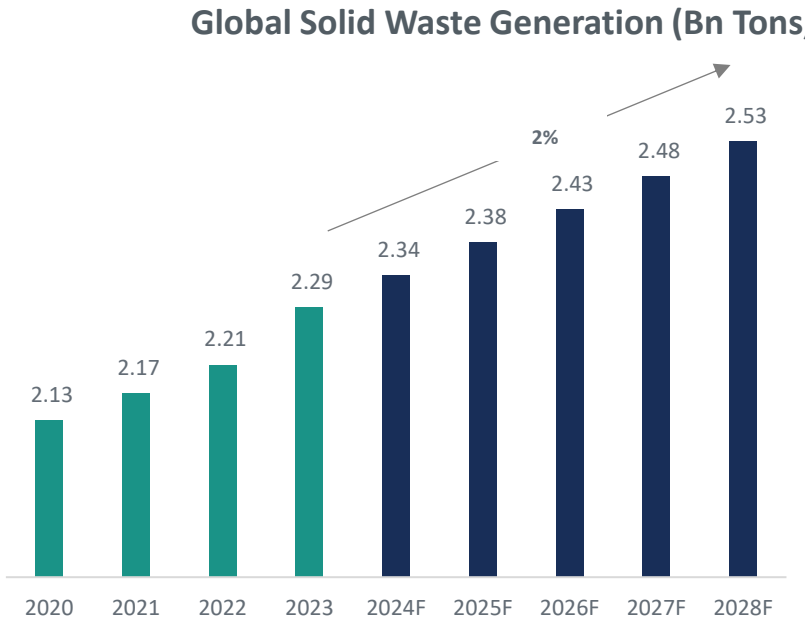
Figure 1: Global Recycling Value Chain[3]

[2] Primary Research
[3] Team Analysis



2.2 Solid Waste Generation

Substantial global population growth over the last century has led to a significant increase in waste generation, driven by changing patterns of human activity. Accelerating industrialization and urbanization has transformed housing and consumption patterns and introduced a wider array of products to the market. While MSW is generated by households, small businesses, and public services and is typically managed by local governments, as shown in the chart below, it represents only a fraction of the total waste produced. Enormous quantities of other waste streams, such as construction and demolition, industrial, agricultural, and healthcare waste, are also generated annually. The precise amounts of these non-municipal waste types vary considerably based on a country's economic focus (agricultural versus industrial) and its level of urbanization, though comprehensive data for these categories remain limited.



Key Insights

- A steady CAGR of 2% is projected for global waste generation from 2023 to 2028F.
- Global solid waste generation in 2023 amounted to 2.29 Bn tons.
- Global solid waste generation is projected to reach 2.53 Bn tons in 2028.

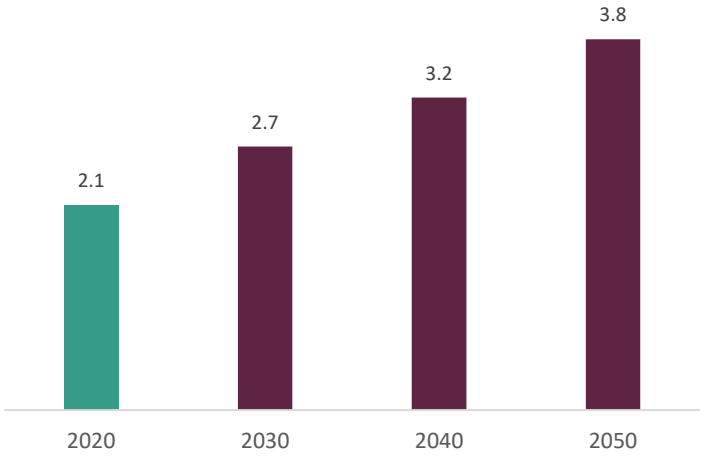
Chart 1: Global Solid Waste Generation (Bn Tons, 2020 -2028F)[4]

Material use and waste generation are expected to grow steadily in line with global development, requiring systemic improvements in waste governance[6].

[4] UNEP – Global Waste Management Outlook
[5] Team Analysis
[6] UNEP – Global Waste Management Outlook

Global MSW generation was estimated at 2.1 billion (Bn) tons per year in 2020. According to UNEP, projections based on linear regression models using GDP indicate that this figure could rise by 56%, reaching 3.8 Bn tons annually by 2050. This increase is primarily driven by continued economic and population growth, assuming current trends persist without significant intervention, as illustrated in Chart 2.

Global MSW Projections (Bn, Tons 2020-2050F)



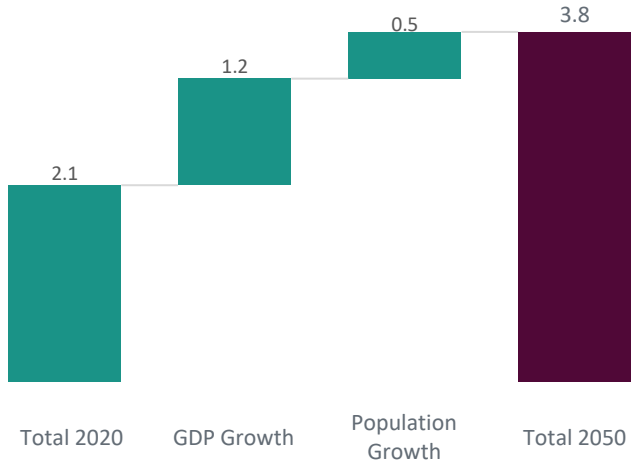
Key Insights

- Global m MSW is projected to rise from 2.1 Bn tons in 2020 to 3.8 billion tons by 2050, indicating an 81% increase over 30 years.
- The largest increase in MSW (0.6 Bn tons) occurs in the last decade of the forecast period, between 2040 and 2050

Chart 2: Global MSW Projections (Bn, Tons 2020-2050F)[7]

Chart 3 indicates that MSW growth is closely tied to economic development, as waste generation is highly sensitive to both rising GDP and population growth. Notably, economic growth is the dominant driver, accounting for an additional 1.2 Bn tons of waste.

Contribution of GDP and Population Growth to Projected Global Waste Generation (Bn, Tons)



Key Insights

- Waste generation exhibits high sensitivity to both rising GDP and population growth, highlighting economic development as a primary driver that necessitates mitigation efforts.
- Economic growth is the dominant driver, contributing 1.2 Bn tons to the projected increase—over twice the contribution of population growth (0.5 Bn tons)

Chart 3: Contribution of GDP and Population Growth to Projected Global Waste Generation (Bn, Tons)[8]

[7] UNEP – Global Waste Management Outlook
[8] UNEP – Global Waste Management Outlook
As per the UNEP source, these MSW projections are derived using linear regression models based on GDP

2.2.1 Waste Generation by Material

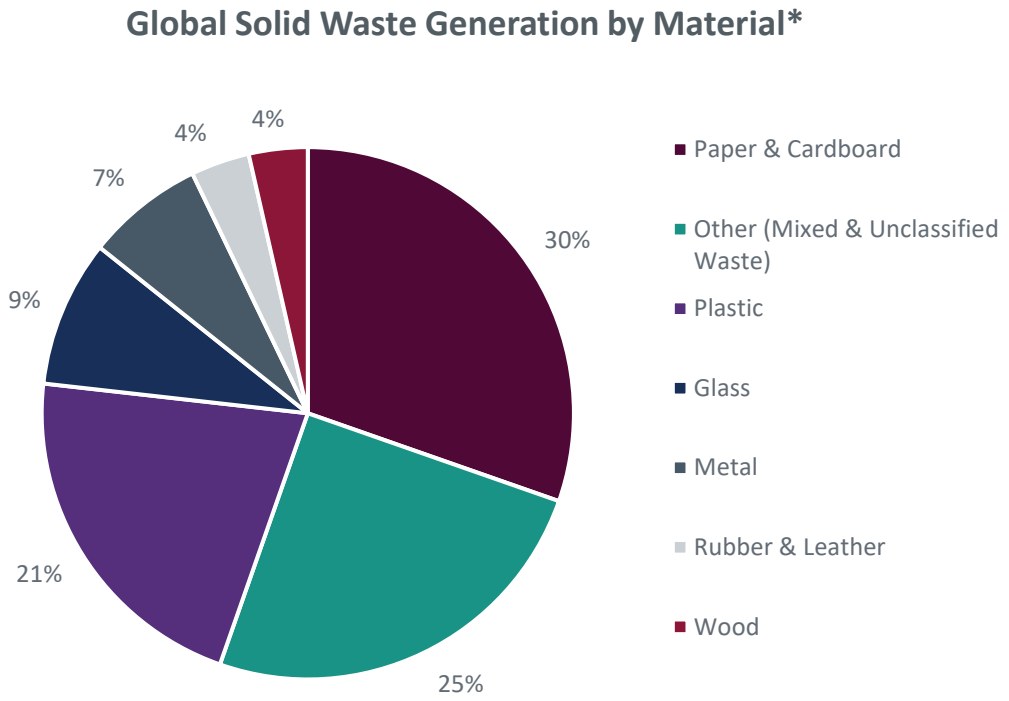


Chart 4: Global Solid Waste Generation by Material[9]

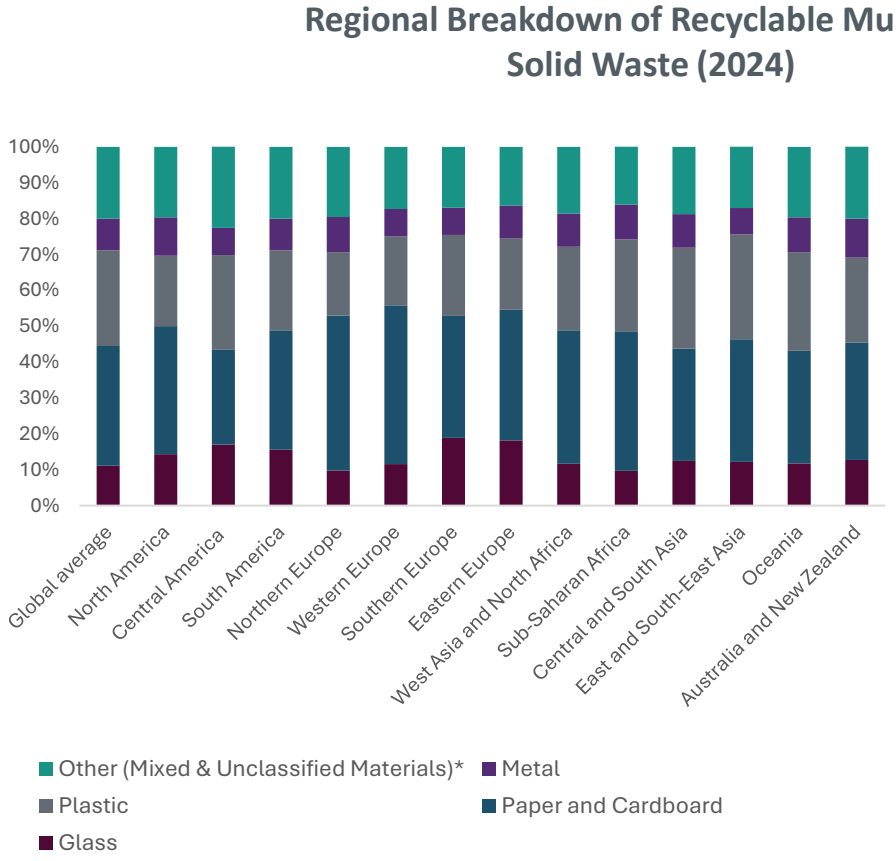
Chart 4 illustrates the distribution of global solid waste generation by material type, providing insight into key segments that contribute significantly to overall waste volumes. Based on World Bank data, the latest comprehensive material-level global dataset—paper and cardboard emerged as the largest waste component, accounting for 30% of global inorganic solid waste. Plastic followed closely at 21%, making both materials strategic priorities for recycling due to their high volume and potential for environmental impact mitigation. Smaller contributors, such as wood, metal, rubber, and leather, present niche opportunities for reuse and recycling

The "Other (Mixed & Unclassified Waste)" category—representing 25% of total waste—is the second-largest segment. While it includes relatively small streams like e-waste (0.2%) and waste oil (0.1%)[10], its size reflects a broader group of composite, contaminated, or non-categorized materials, such as multi-layer packaging, sanitary waste, textiles, ashes, and residues that cannot be cleanly sorted into standard material types.

[9] World Bank – Trends in Solid Waste Management
[10] Eurostat – Waste Generation
*Organic waste was excluded from the data as it falls outside the scope of this report. Despite the data being from 2018, the overall material composition trend remains broadly relevant today due to consistent consumption and disposal patterns in many countries.

2.3 Recycling Market Landscape

Global awareness of recycling and recycling rates have increased due to efforts by organizations such as the United Nations (UN), whose Sustainable Development Goals (SDGs) have played a pivotal role in influencing the global recycling and material recovery sector by raising awareness, shaping national and international policies, and catalyzing action toward more sustainable waste management practices. As countries align with these goals, understanding regional variations in waste composition is key to assessing recycling potential.



Key Insights

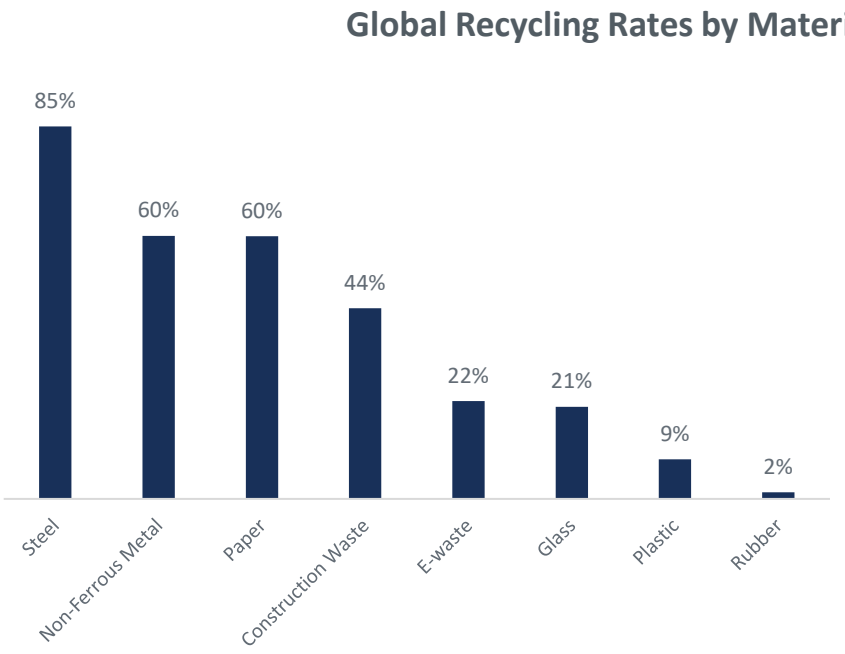
- Across all regions, paper and cardboard and plastic constitute the largest share of recyclable waste, typically making up over 50% combined.
- West Asia and North Africa exhibits one of the lowest proportions of recyclable materials—particularly in metal and paper—suggesting limited recycling potential compared to other regions.

Chart 5: Regional Breakdown of Recyclable Municipal Solid Waste (2024)[11]

Chart 5 represents a regional breakdown of municipal solid waste composition, excluding food and garden waste. The share of "Other" waste (which includes non-recyclables like textiles and rubber) remains significant across all regions, underscoring the challenge of addressing mixed and hard-to-recycle materials in global recycling strategies. Furthermore, UNEP notes that global waste data remains inconsistent due to limited monitoring systems and a lack of standard measurement and reporting.

[11] UNEP – Global Waste Management Outlook
*'Other' includes items such as textiles, wood, rubber, leather and household and personal hygiene products

2.3.1 Recycling Rates by Material



Key Insights

- Steel has the highest recycling rate at 85%, indicating its well-established recovery and reuse processes.
- E-waste (22%) and glass (21%) have relatively low recycling rates, reflecting the complexity of handling and processing these materials.
- Plastic (9%) and rubber (2%) have the lowest recycling rates, underscoring ongoing challenges in managing these waste streams and the need for improved recycling infrastructure.

Chart 6: Global Recycling Rates by Material[12]

The current state of recycling rates on a global scale varies greatly by material. While 85% of steel scrap is recycled worldwide, only 2% of rubber waste in the form of used tires is recycled and the rest is stockpiled. These rates show the space for growth in some material segments, especially plastic and rubber. Chart 7 shows that metals lead the recycling market, projected to reach QAR 1,221 Bn by 2028 (CAGR 5.26%), followed by plastic at QAR 373 Bn (CAGR 8.07%), paper at QAR 154 Bn (CAGR 3.77%), and glass at QAR 22 Bn (CAGR 6.58%).

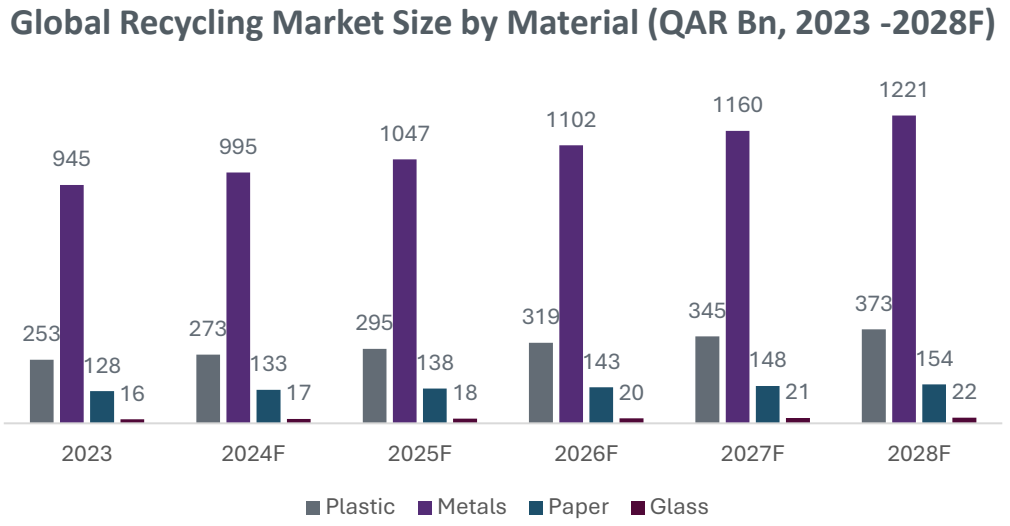


Chart 7: Global Recycling Market Size by Material (QAR Bn, 2023 -2028F)[13]

[12] UNDP, European Association for the Paper Industry (CEPI), Global Energy Monitor (GEM), Team Analysis
[13] Markets and Markets, Industry Arc, Spherical Insights, Textile Exchange - Materials Market Report

2.4 Leading Players

The global recycling sector features key players such as Veolia, Suez SA, Republic Services and Indorama Ventures which undertake recycling services and downstream activities in their respective regions. These companies thrive through vertical integration, efficiency, strategic growth, and long-standing industry presence. Below is a closer look at the players shaping this market.

Veolia, founded in 1853 and based in France, operates across the entire recycling value chain, including **collection, sorting, material recovery, and downstream application**. It manages over 823 recycling facilities globally. Through its PlastiLoop brand, Veolia recycles resins such as expanded polypropylene and polyethylene, supplying recycled plastics for packaging and construction. For SMEs, this model offers insights into plastic recycling for specific industries as well as integration of waste, water, and energy services for commercial clients and waste audits for large facilities. Veolia's use of digital tools for tracking and reporting enables efficient operations that SMEs can adopt to enhance their offerings.[14]

Suez, established in 2008, specializes in integrated waste management, covering the complete value chain from **collection and sorting to material recovery** and energy generation. It serves municipalities, industries, and commercial clients by managing both hazardous and non-hazardous waste streams. The company adopts smart bins, route optimization technologies and offers digital tools for real-time monitoring and sustainability reporting. As part of its circular economy initiatives, Suez also produces recycled plastic materials and collaborates with downstream industries to supply recycled inputs for manufacturing processes.[15]

Republic Services, founded in 1996 and headquartered in Phoenix, Arizona, is a leading provider of environmental services in the United States of America. The company operates in the **waste collection**, **material processing and recovery** and **downstream application segments** of the value chain, specializing in solid waste collection, transfer, recycling, and disposal services. It operates approximately 365 collection operations, 255 transfer stations, 75 recycling centers, and 205 active landfills[16]. These centers generate revenue through the processing and sale of paper, aluminum, glass and other materials.[16]

Indorama Ventures, is a major producer and recycler of PET plastics. Focusing on the **material processing and recovery** and **downstream application segments** of the value chain, the company serves diverse markets, including food and beverages, automotive, pharmaceutical, textile, home and personal care, and agrochemicals. In 2022, the company recycled 15.4 Bn plastic bottles. They support closed-loop systems, such as converting used PET bottles into food-grade resin. SMEs can adopt similar models by partnering with retailers and local brands to launch branded "bottle-to-bottle" recovery programs.[17]

[14] Fortune Business Insights – Top Companies of Recycled Plastics, Veolia
[15] Fortune Business Insights – Top Companies of Recycled Plastics, Suez
[16] Dun & Bradstreet – Republic Services Company Profile
[17] Indorama Ventures – Company Website

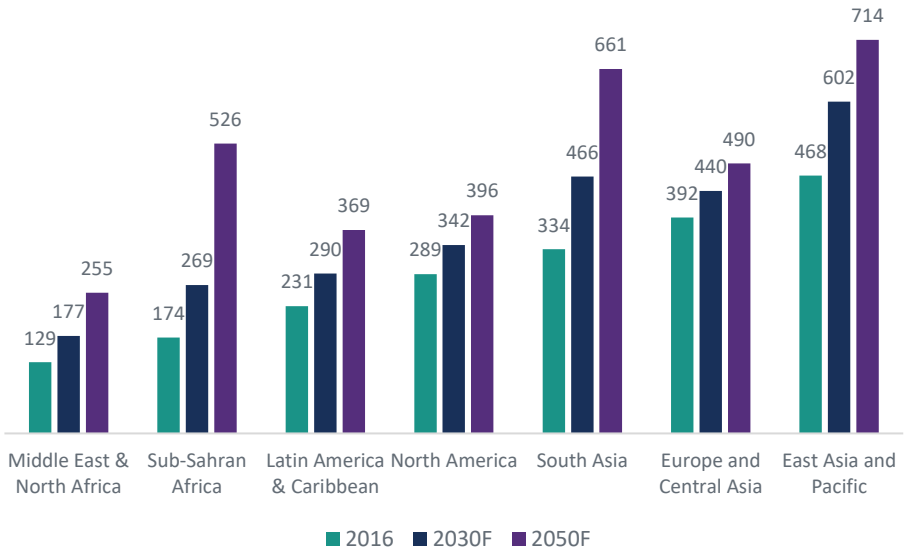
3. Regional Recycling Market Overview

3.1 Waste Generation

The growing industrial and economic activity in the GCC and Broader MENA region is contributing to an increase in waste generation, with distinct patterns in the types of waste produced. Per capita daily waste generation in the MENA region aligns with the global average of 0.74 kg[18].

Compared to other regions, waste generation in the MENA region is projected to increase moderately, as shown in the chart below. In the GCC, this is driven primarily by the higher per capita rates of plastic and metal waste generation, about 9 million (Mn) and 10 Mn tons respectively.

Projected Waste Generation by Region (Mn Tons / Year, 2016-2050F)



Key Insights

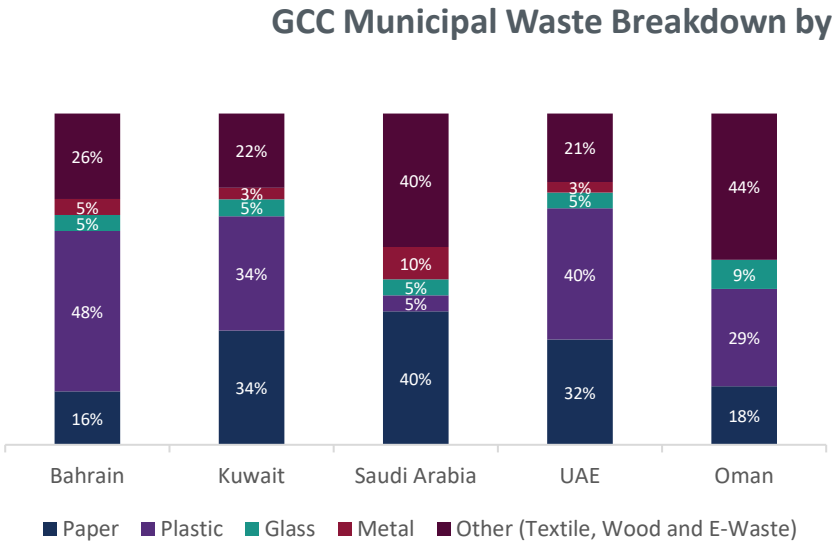
- The MENA region is expected to almost double in waste generation in 2050 from 2016 levels, likely driven by urbanization and population growth.
- North American and European waste is expected to grow at a slower rate over the same period (16% and 11%) respectively.

Chart 8: Projected Waste Generation by Region (Mn Tons / Year, 2016-2050F)[19]

As per the World Bank, the MENA region is projected to contribute approximately 7% of global waste generation in 2030.

[18] World Bank – Trends in Solid Waste Management
[19] World Bank – Trends in Solid Waste Management

The chart below illustrates the composition of municipal waste (waste collected from households and commercial buildings) across GCC countries, highlighting the dominance of paper and plastic in this waste stream. While proportions vary by country, paper and plastic consistently represent significant portions, with glass and metal contributing smaller shares.



Key Insights

- Paper waste is highest in Saudi Arabia (40%) and Kuwait (34%), while Oman (18%) has the lowest share.
- Glass waste rates are low across all countries, ranging from 5% to 9%.
- Plastic waste accounts for the largest share in Bahrain (48%) and the UAE (40%) but is notably low in Saudi Arabia at only 5%.

Chart 9: GCC Municipal Waste Breakdown by Material[20]

3.1.1 GCC Waste Driving Factors

The primary drivers of waste generation in the GCC include local economy characteristics such as high per capita consumption, and urban development, each of which is explored in detail below.

Hydrocarbon-Based Economies

GCC economies' focus on hydrocarbon drives petrochemical production, leading to a wide array of plastic products. Consequently, the waste stream in these countries includes a substantial amount of plastic waste.

High Consumption

High GDP per capita in the GCC drives consumption rates and disposable item use. This consumption boosts the generation of inorganic waste.

Urban Development

Rapid urbanization and infrastructural development in the GCC drives inorganic waste. As the region continues to expand its urban centers, construction and demolition activities generate CDW.

[20] Arabian Gulf University – Municipal Solid Waste in GCC, Team Analysis, International Solid Waste Association, UAE Ministry of Works, Municipalities Affairs & Planning and Energy Conversion & Management Journal

*Note: Remaining waste categories under discussion (Rubber, Aggregates, Waste Oil) do not make up MSW and thus are not shown in this breakdown. E-Waste makes up a small portion of 'Other' in addition to textile and wood waste.

3.2 Recycling Initiatives in the GCC

GCC member states have established programs and entities to increase recycling rates in the country. This indicates a growing shift toward sustainability in the region. Examples of such initiatives are outlined below.

Domestic Solid Waste Management Centre (DSWMC) *(Established 2011)*

The DSWMC is an initiative of MM and comprises waste sorting and recycling facilities, landfill, composting plant and a WtE incineration plant. DSWMC generates 25 MW of electricity from waste[21]

Masdar *(Established 2006)*

Sharjah's Waste-to-Energy plant (Bee'ah & Masdar) diverts up to 75% of waste from landfill while generating 30 MW of power.

National Center for Waste Management (MWAN) (Established 2019)

MWAN was established in 2019 to organize and regulate waste management activities in the country and secure funding for waste management and recycling companies.

Askar Waste-to-Energy Project (In development)

Bahrain has established recycling and WtE projects, such as Askar and is advancing multiple WTE and renewable energy initiatives to reduce landfill waste and meet sustainability targets.

Al Afja Recycling Hub *(Established 2019)*

Al Afja is a dedicated area for recycling activities in Qatar, being developed as a hub for the recycling industry. It currently holds 24 factories under construction and 16 existing factories

Tadweer *(Established 2008)*

Abu Dhabi's Tadweer is involved in the establishment of recycling facilities and the implementation of programs and community engagement activities aimed at segregating recyclable waste at source.

Oman Environmental Services Holding Company (Be'ah) (Established 2007)

Be'ah is responsible for the operation of waste sorting and recycling facilities, WtE projects and community engagement initiatives.

Kabd Waste-to-Energy Plant & Metal Recycling Company (MRC) (In development)

Kuwait is advancing sustainability through projects like Al Kabd, set to process 3,275 tonnes of waste daily to generate 650 GWh annually, and MRC's steel recycling facility, targeting 60,000 tonnes of scrap steel yearly

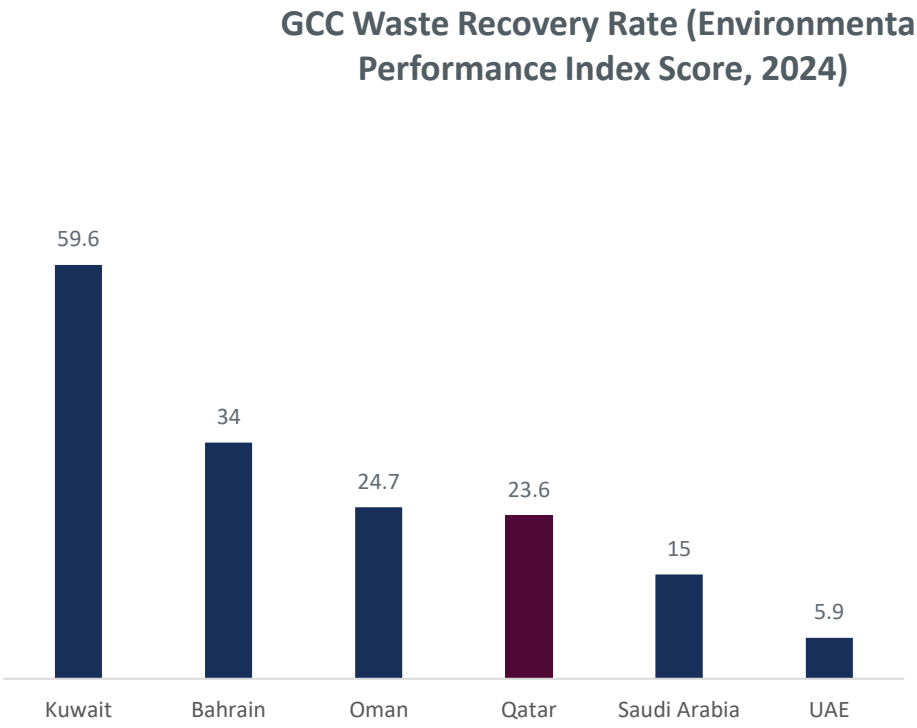
A common feature across the GCC is the emphasis on public-private partnerships (PPPs) to develop recycling infrastructure, bringing in expertise from the private sector and financial backing from the public sector.

Figure 2: GCC Recycling Programs and Entities[22]

[21] Waste Management in Qatar: A Systematic Literature Review and Recommendations for System Strengthening
[22] Primary Research, Zawya – Kuwait Recycling, Power Technology – Askar, Be'ah – About, MWAN, Masdar – About, Tadweer - About

GCC Waste Recovery Rates

Waste recovery rates across GCC countries, as reported in Yale University's 2024 Environmental Performance Index (EPI), provide a general indication of progress based on datasets from the OECD and World Bank. While useful for global comparisons, these figures do not capture country-specific operational realities. The previous section outlined recycling initiatives and institutional efforts across the GCC, indicating a gradual shift toward more sustainable waste management practices.



Key Insights

- **Qatar's waste recovery rate score stands at 23.6,** placing it behind Bahrain and Oman, suggesting emerging progress and unrealized potential.
- **Kuwait records the highest score (59.6),** suggesting relatively stronger performance on waste recovery indicators compared to its regional peers.
- **Saudi Arabia and the UAE recorded lower scores,** which may have reflected gaps due to limited reporting of ongoing waste recovery initiatives.

Chart 10: GCC Waste Recovery Rate (Environmental Performance Index Score, 2024)[23]

Bridging data gaps in GCC waste recovery will be key to driving future progress—enabling more targeted policies, unlocking private investment, and realizing the full potential of a circular economy built on measurable impact.

[23] Yale Center for Environmental Law & Policy – Environmental Performance Index
Figures are modeled estimates and may not reflect actual waste recovery outcomes due to reporting time lags and data limitations across countries.

3.3 GCC Players

The GCC recycling sector features key players such as Averda, Enviroserve, and Blue LLC in the UAE, along with the Saudi Investment Recycling Company (SIRC) in Saudi Arabia. Below is a closer look at the players shaping this market.

Averda, founded in 1964 and headquartered in Dubai, offers a wide range of specialized waste management services tailored to municipalities, industries, and commercial clients. The company operates Material Recovery Facilities (MRFs) for sorting recyclables such as plastics, paper, and metals, along with composting units for organic and food waste. It also manages hazardous and industrial waste, providing safe collection, transportation, and treatment solutions for sectors including oil and gas.[26]

Enviroserve, founded in 2004 and headquartered in Dubai, provides E-waste management services to industrial, commercial, and government clients. Their services include data destruction, IT asset disposition, and the recovery of materials such as metals, plastics, and circuit boards. It also handles the destruction of expired or counterfeit e-goods and applies ISO-certified processes across its operations, with a focus on regulatory compliance and material recovery.[27]

Blue LLC, based in the UAE with 27 years of experience, offers integrated waste management solutions combining collection, recovery, cleaning, and technical services. It serves commercial, hospitality, municipal, and industrial clients through service contracts. The company also supports circular economy efforts through initiatives like used cooking oil-to-biofuel conversion and grease waste recycling, helping to reduce landfill use and recover valuable resources.

SIRC leads Saudi Arabia's circular economy efforts, focusing on the waste collection, sorting, material processing and recovery and downstream application segments of the value chain through its subsidiaries. SIRC is a Public Investment Fund company established to develop, own, operate and finance various activities across all waste types. The company aims to meet the objectives of the Vision 2030 and support of various national initiatives[29].

[26] Averda – About Us
[27] Enviroserve – About Us
[28] Blue LLC – Profile
[29] SIRC – Profile

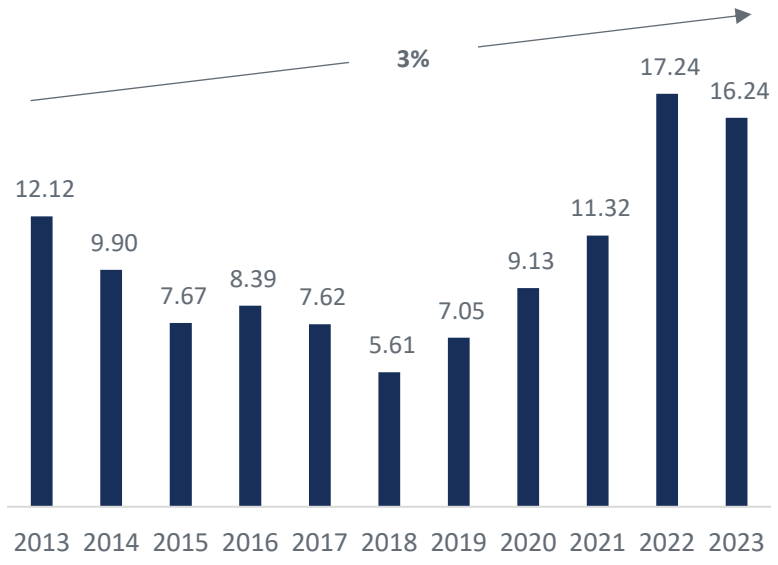
4. Qatar Recycling Market Overview

4.1 Waste Generation

Qatar's waste generation has experienced a moderate increase, primarily driven by construction and demolition activities, reflecting the country's rapid infrastructure development and urbanization. Qatar currently ranks 21st on the Total Circular Economy Index, highlighting the government's ongoing efforts to strengthen waste management regulations. Key policy priorities include raising public awareness on reuse and recycling, increasing private sector participation, and promoting best practices in resource recovery.[30]

The chart below illustrates Qatar's overall waste generated by households, commercial and industrial sources with recycled aggregates as the most significant contributor.

Waste Generation in Qatar (Mn Tons, 2013 - 2023)



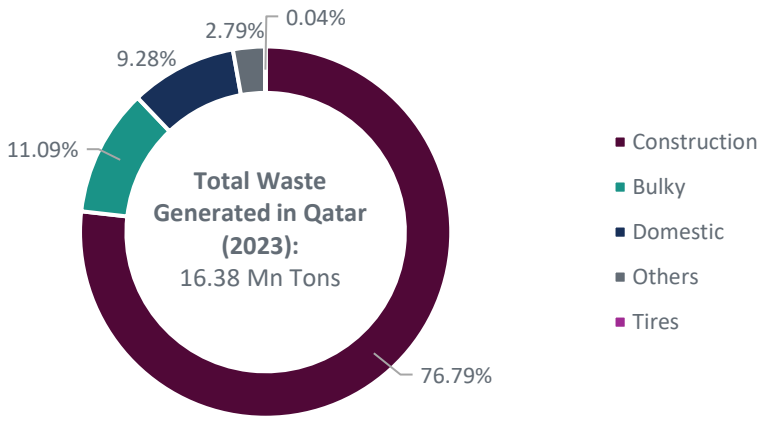
Key Insights

- Total waste generation in Qatar has increased by approximately 3% between 2013 and 2023.
- A growing increase in waste generation began in 2019, rising from 5.6 Mn tons (2018) to 17.24 Mn tons in 2022. This period coincides with Qatar's infrastructure development for the 2022 FIFA World Cup.
- The dip in waste generation between 2016 and 2018, likely due to a decline in economic activity caused by falling oil prices and the blockade.
- Waste generation is projected to increase by 3% annually.[31]

Chart 11: Waste Generation in Qatar (Mn Tons, 2013 - 2023)[32]

[30] Qatar's Waste and Recycling Landscape: An Overview
[31] Waste Management in Qatar: A Systematic Literature Review and Recommendations for System Strengthening
[32] NPC Environment Statistics, Team Analysis

Waste Generated in Qatar by Source (Tons, 2023)



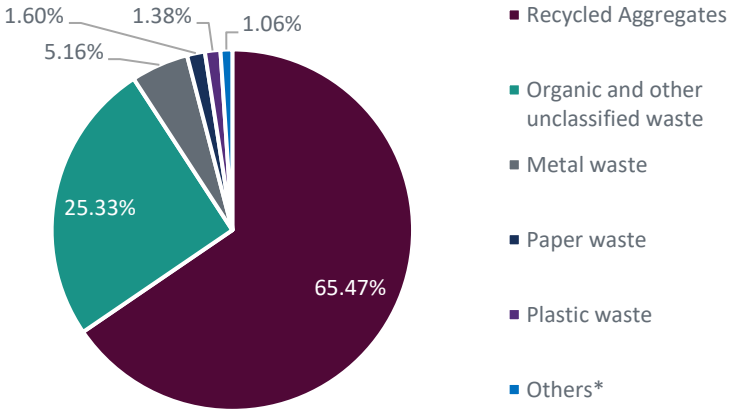
Key Insights

- At 76.8%, construction waste makes up the majority of waste generated in Qatar.
- Bulky waste contributes 11%, reflecting discarded furniture, appliances, and similar items.
- Accounting for around 9%, domestic waste highlights the relatively smaller contribution of households to the overall waste stream.

Chart 12: Waste Generated in Qatar by Source (Tons, 2023)[33]

In 2023, Qatar generated a total of 16.38 Mn tons of waste. The composition of waste was dominated by construction-related materials such as Recycled Aggregates, reflecting the country's large-scale infrastructure projects, particularly those related to the 2022 FIFA World Cup.

Waste Generated in Qatar by Material (Tons, 2023)



Key Insights

- Recycled aggregates account for 65.5% of total waste in Qatar, highlighting the impact of infrastructure projects related to the 2022 FIFA World Cup.
- Qatar mandates that 20% of materials used in construction projects could be recycled, driving growth in the sector[34]
- At 5.1%, metal waste also reflects the extensive urban development tied to mega construction projects.

Chart 13: Waste Generated in Qatar by Material (Tons, 2023)[35]

Qatar's waste composition reveals significant potential for circularity, especially through recycled aggregates and metal recovery from construction waste. While paper and plastic form a smaller share, better sorting and processing can boost recycling rates. At present, more than half of Qatar's waste continues to be sent to landfill, highlighting gaps in diversion and recovery systems. Addressing these challenges, while also strengthening public awareness and participation in recycling efforts, will be essential to building a more sustainable and resource efficient waste management system.

[33] NPC Environment Statistics, Team Analysis
[34] Waste Management in Qatar: A Systematic Literature Review and Recommendations for System Strengthening
[35] NPC Environment Statistics
*Material shares of "Others": Glass (0.33%), E-waste (0.30%), WEEE (0.27%), Waste Oil (0.09%), Lead (0.04%), and Rubber (0.03%).

4.2 Qatar's Recycling Value Chain

Figure 3 illustrates the flow of waste through Qatar's recycling value chain, from collection to final processing. As noted earlier, industrial waste including recycled aggregates accounts for over 88% of the total waste stream, suggesting potential opportunity to further enhance recycling systems and infrastructure for industrial materials.

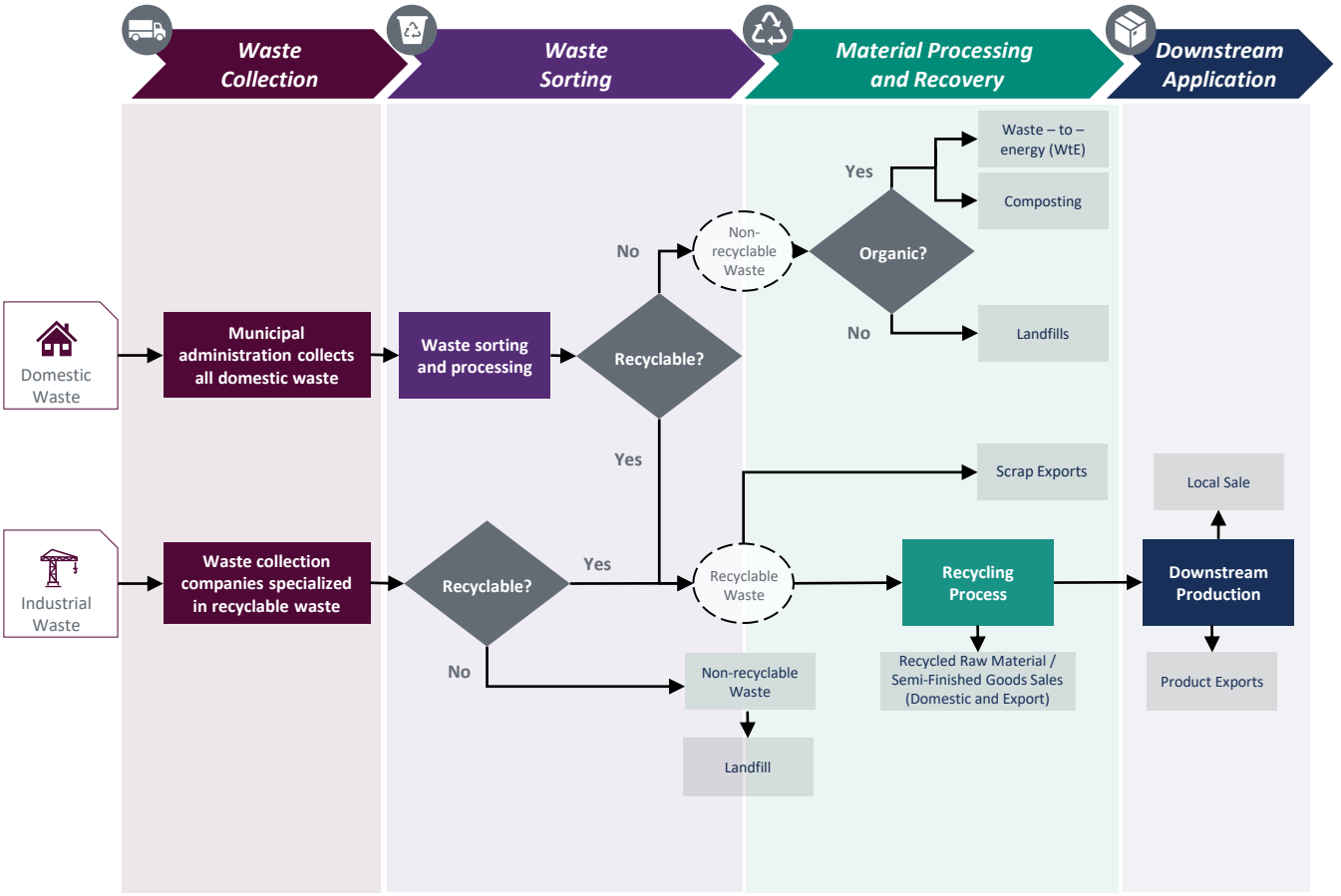


Figure 3: Qatar's Recycling Value Chain[36]

[36] Primary Research, Team Analysis

4.3 Qatar's Recycling Ecosystem

Qatar's recycling ecosystem features a diverse, collaborative network of stakeholders. This collaborative effort aims to enhance resource efficiency, reduce environmental impact, and promote sustainable practices through the development and implementation of effective recycling solutions. The ecosystem is structured as follows:

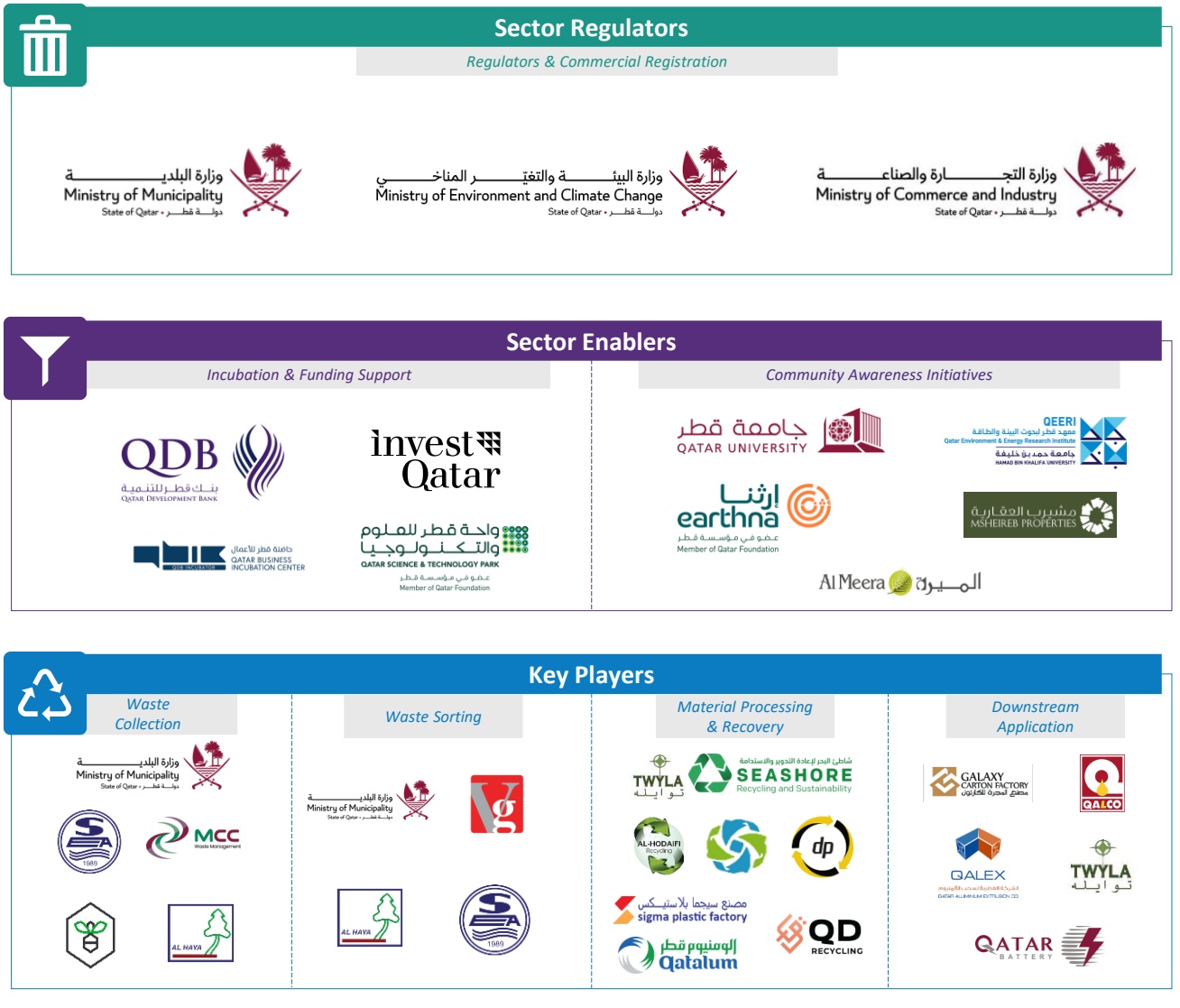


Figure 4: Qatar's Recycling Ecosystem[37]

[37] Primary Research, Team Analysis

*Please note that the list of entities provided is not exhaustive

Sector Regulators

Sector regulators in Qatar play a critical role in facilitating business entry, ensuring regulatory compliance, and promoting sustainable growth across key industries. The Ministry of Commerce and Industry (MOCI) facilitates private sector entry into the recycling sector by providing land allocations as well as company registration and trading license services.[38] MM grants initial approvals for waste collection, sorting, and recycling activities and coordinates land allocation for industrial recycling operations. MECC issues environmental permits, ensuring compliance with national standards, and conducts regular monitoring and inspections to enforce waste management regulations.

Sector Enablers

Sector enablers, including funding institutions, incubators, innovation hubs, and community initiatives, play a vital role in supporting SME growth, fostering innovation, and promoting sustainability in the recycling sector. QDB provides financing options for SMEs participating in the recycling value chain, while QBIC offers incubation and mentorship support. QSTP supports innovative and sustainable startups through funding and infrastructure. Community awareness initiatives, such as Al Meera's reverse vending and e-waste collection programs and Msheireb Properties' green building efforts, help improve national sustainability and recycling rates[39]. Entities like Earthna, part of Qatar Foundation, implements circular economy programs and builds networks among businesses, universities, and policymakers to develop data-driven recommendations for the recycling sector. Additionally, QEERI, part of HBKU is a national institute addressing challenges related to energy, water and environment

Key Players

The entities involved in waste management ecosystem collect, sort, and process waste into raw materials, which are then used by manufacturing entities to produce new products. Collection of MSW, managed primarily by MM and a large portion of waste originates from industrial activities, with private companies such as Al Haya and Beehive providing specialized collection services, including hazardous waste handling. Waste is then sorted at facilities like the DSWMC and private companies. In Qatar, 12% of MSW is diverted to recycling centers, with 9% processed by DSWMC and the remainder managed by private operators.[40] Sorted waste is then sent to recycling centers for cleaning, recovery, treatment and processing into new raw materials. Finally, manufacturing entities use these raw materials in their production processes. Companies like Twyla and Sigma Plastic operate vertically integrated systems, combining material recovery and manufacturing using recycled plastics.

[38] Gulf Times
[39] The Peninsula
[40] Qatar's Waste and Recycling Landscape: An Overview

4.3.1 Licensing and Registration

The registration and licensing of recycling companies in Qatar are facilitated by three key entities: MECC, MM, and MOCI

وزارة البيئة والتغير المناخي Ministry of Environment and Climate Change State of Qatar • دولة قطر	**MECC** issues environmental permits or recycling projects to ensure compliance with national regulations. It also conducts Environmental Impact Assessments (EIAs) and compliance monitoring to enforce environmental and waste management standards.
وزارة البلدية Ministry of Municipality State of Qatar • دولة قطر	**MM** plays a central role in registering and licensing recycling companies in Qatar by issuing approvals and permits, such as Waste Disposal Permits which enables entities to dispose waste in one of the landfills affiliated with the Department). The Ministry also allocates land for recycling facilities in areas like Al Afja. MM also coordinates with MOCI to streamline commercial registration, environmental permitting, land allocation, and industrial licensing processes, facilitating more efficient market entry.
وزارة التجارة والصناعة Ministry of Commerce and Industry State of Qatar • دولة قطر	**MOCI** handles company registration and commercial licensing and land allocation in the Al Afja area for recycling businesses through the On-Stop-Shop Platform. To apply for a license, entities must submit required documents, including preliminary project approval, a valid commercial registration, and a feasibility study.

Figure 5: Registration and Licensing Paths in Qatar[41]

[41] MM – Ministry Website, MECC – Ministry Website, MM – Recycling and Waste treatment Department Manual, Qatar Guides, LexisNexis

4.3.2 Analysis of Sector Enablers

The supporting environment for SMEs in Qatar's recycling industry features strategic initiatives, including enhanced waste management practices, infrastructure development such as the Al Afja recycling hub, and regulatory measures to streamline waste sorting and recycling processes. These efforts, which aim to foster a circular economy, reduce environmental impact and emissions.

The **MECC's 2021 QNE strategy** aims to balance safeguarding the environment and achieving economic growth, committing to improving waste management practices and **targeting a 15% material recycling rate** for municipal waste. By prioritizing recovery and reuse, the QNE aims to **establish a circular economy** in Qatar. As part of its **2024–2030 strategy**, **MM** is implementing the **National Integrated Solid Waste Program**, which includes developing a new engineered landfill, closing and rehabilitating old sites, promoting waste segregation at source, and increasing recycling rates. The strategy also supports smart city initiatives, including a smart waste management system.

National Environment & Climate Change Strategy

Domestic Waste Management

The MM is responsible for the collection and treatment of domestic waste across the country. MM has introduced a **national waste sorting program**, providing recycling bins to 80% of households in Doha. The collected recyclables are processed at the **Mesaieed Recycling Hub**, which currently houses 11 recycling factories, The DSWMC, operating under MM, receives waste and undertakes AI waste sorting and WtE processes. Recyclable materials are then supplied to recycling companies, providing a flow of raw materials for players in the sector. MM aims to allocate **153 land plots to the private sector** for waste recycling projects to increase recycling rates.

To bolster Qatar's sustainability and reinforce the country's commitment to waste reduction, recycling, and circular economy transformation, MM and MOCI has recently established a designated hub for recycling at **Al Afja**. This hub, strategically positioned near the DSWMC and other waste disposal sites, helps to reduce logistical challenges, reduce costs, improve operational efficiency, and encourage more companies to participate in the industry. Al Afja currently currently holds **24 under construction factories** and **16 existing factories** that are specializing in recycling various types of waste.

Infrastructure Development

Laws and Regulations

To improve the efficiency of the recycling value chain, the MM mandated that commercial buildings must provide and place containers for **sorting solid waste at their facilities**. This regulation has improved the initial stages of waste management by ensuring that waste is **sorted at the source**, making it easier for processing and recycling companies to access raw materials and allowing them to operate more efficiently.

Figure 6: Recycling Sector Enablers in Qatar[42]

[42] MECC – National Environment and Climate Change Strategy, Waste Management in Qatar: A Systematic Literature Review and Recommendations for System Strengthening, Qatar's Waste and Recycling Landscape: An Overview, The Peninsula, Gulf Times, Sustainability MEA, Gulf Times – MM Strategy

4.4 Support for SMEs in Qatar

Qatar offers a multifaceted support system for SMEs, providing essential resources for their success. SMEs benefit from this support in the following ways:

Financial Support

In addition to retail banking institutions, QDB offers support to SMEs through green financing—also known as eco-friendly financing for those producing or manufacturing products that contribute to improved environmental outcomes such as waste to resource products.

Regulatory & Policy Support

In 2022, a Ministerial Decision was introduced to restrict the use of plastic bags. This regulation complements the "No for Plastic" campaign, a government-led initiative that encourages alternatives to single-use plastics. As mentioned in the previous section, MM now requires commercial buildings to sort solid waste on-site, improving access to raw materials and efficiency for recycling companies.

Infrastructure & Technological Resources

As part of its digital transformation initiative, MM launched the 'Oun' app, offering hundreds of municipal services—including waste sorting guidance and requests for large solid waste removal. In addition, as mentioned in the previous section, MM has designated the Al Afja area specifically for recycling, offering companies dedicated land to carry out recycling activities.

Education & Awareness

Qatar Foundation's Green Island initiative serves as an educational platform designed to incubate locally grown SMEs in the recycling field. It offers opportunities for research, education, and community engagement to promote sustainable living and environmental protection. Additionally, MM has launched the "Zero Waste" campaign to raise public awareness of waste's impact on resource sustainability.

Figure 7: Support for SMEs in Qatar[43]

Sections 5 to 12 of this report provide an in-depth analysis of each recycling segment within Qatar.

[43] Primary Research, The Peninsula – Oun App, The Peninsula – New Services on Oun App, QDB – Green Financing Program, QF – Green Island, The Peninsula – Student Education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5. Paper

5.1 Overview of Paper Waste

Paper recycling involves processing wastepaper to create reusable material for paper and cardboard products. However, not all paper is recyclable. Paper with non-paper additives (e.g., waxed or carbon paper) or contamination from food and liquids (e.g., candy wrappers, coffee cups, tissue papers, pizza boxes) usually cannot be recycled.

Types of Paper Waste

Old Corrugated Containers (OCC) – used cardboard boxes that are typically recycled from shipping and packaging materials.

Old Newspapers (ONP) – refers to newspapers that have already been distributed to consumers.

High-Grade Deinked Paper – includes items such as letterhead, stationery, and business documents produced in office and commercial settings.

Mixed Paper – includes discarded mail, telephone books, and paperboard, encompassing various types of fibers.

Pulp Substitutes – high-grade recycled paper from shavings and clippings at mills and print shops.

Recycled Paper - Applications

Corrugated Paperboard and Boxes – known for their strength and light weight, they provide protection for items during transport. These boxes are used for shipping and transportation of goods and storage in warehouses and homes.

Kraft Paper and Test Liner – a strong and durable type of paper made from chemical pulp, known for its high tensile strength. It is widely used for a variety of industrial and commercial purposes, such as packaging, crafts and stationery products.

Paper Sheets – flat sheets made from processed wood pulp or recycled fibers, versatile for writing, printing, packaging, and crafting. They are used for documents, artwork, and various paper-based products.

Tissue Paper – soft, lightweight and absorbent paper made from recycled or virgin pulp. It is commonly used for hygiene products like facial tissues, toilet paper and napkins, as well as for wrapping, packing, and decorative purposes.

Currently recycled in Qatar

Figure 8: Types of Paper Waste[44]*

[44] Team Analysis, Primary Research

*Please note that the examples listed are illustrative and not exhaustive

Recovered Paper Segmentation

Chart 13 below shows inputs from primary interviews, which indicate that OCC accounted for almost 90% of the recovered paper in Qatar while other paper scraps – such as old newspapers, magazines, and other grades of paper – made up the remaining 10% of recovered paper.

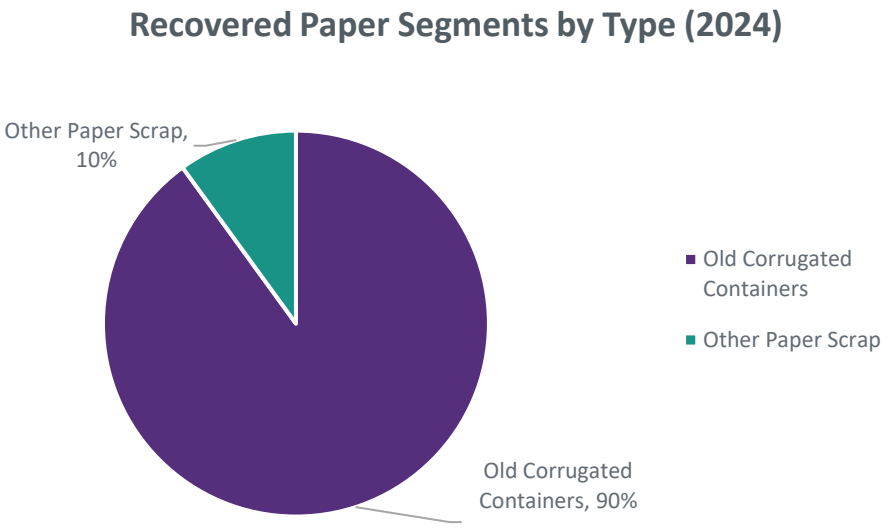


Chart 14: Recovered Paper Segments by Type (2024)[45]

The low percentage share of other grades of paper scrap in recovered paper can be attributed to factors such as household generation and contamination from insufficient source segregation. As stated in the previous section, tissue paper and facial paper are contaminated and therefore cannot be easily recovered and reused.

[45] Primary Research

5.2 Trade Overview

Chart 14 below shows the exports of recovered paper waste and scrap classified under Harmonized System (HS) Code: 4707 in Qatar. Exports have demonstrated consistent growth in recent years, marked by a significant rise beginning in 2018 and reaching a peak volume of 11,444 tons and value of QR 6.5 Mn in 2024. A defining characteristic of this sector is its strong export orientation across the value chain.

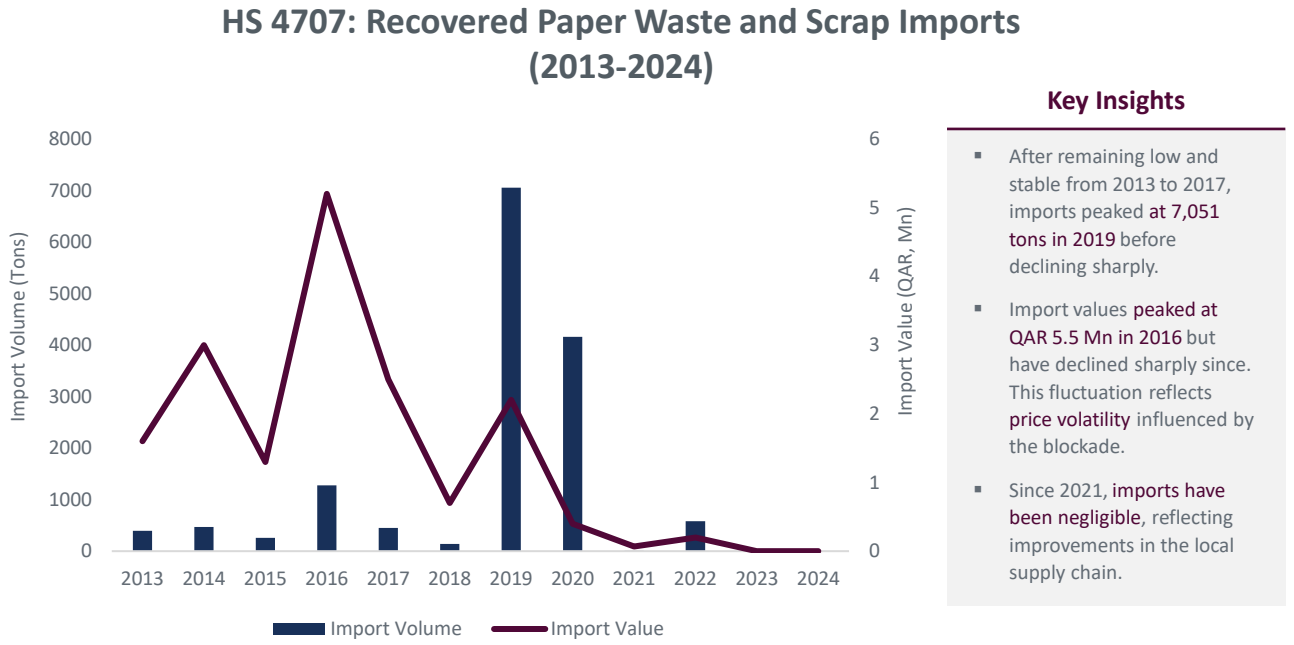
Chart 15: HS 4707: Recovered Paper Waste and Scrap Exports (2013-2024)[46]

Recovered Paper scrap exports peaked in 2024, at QAR 6.5 Mn representing 16% increase from the previous year indicating strong potential in the sorting and recovery process of paper waste

[46] NPC – Foreign Trade Data

Note: NPC export data includes re-exports

Chart 15 shows that compared to exports, imports are considerably low. Imports of recovered paper waste and scrap classified under HS Code: 4707 in Qatar have demonstrated a significant shift over the past decade.



Key Insights

- After remaining low and stable from 2013 to 2017, imports peaked at 7,051 tons in 2019 before declining sharply.
- Import values peaked at QAR 5.5 Mn in 2016 but have declined sharply since. This fluctuation reflects price volatility influenced by the blockade.
- Since 2021, imports have been negligible, reflecting improvements in the local supply chain.

Chart 16: HS 4707: Recovered Paper Waste and Scrap Imports (Tons, 2013-2024)[47]

Chart 16 shows that Jordan, the GCC countries, and Iraq are the main export destinations for Qatar's paper and paperboard products. These exports come from local manufacturers that use both virgin raw materials and recycled paper scrap in their production.

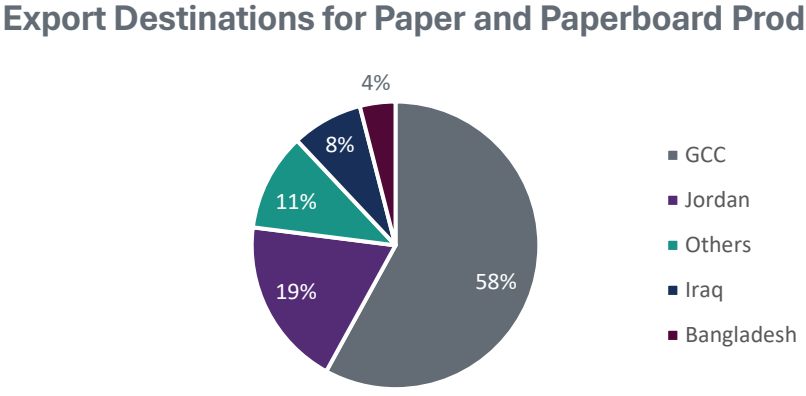


*Chart 17: Export Destinations for Paper and Paperboard Products (2024)**[48]

[47] NPC – Foreign Trade Data
[48] NPC – Foreign Trade Data

*The HS codes used for the figure come under "48 Paper and paperboard, articles of paper pulp, of paper or of paperboard"

Pricing Analysis

Chart 17 shows that Qatar's paper recycling factories primarily produce paper and cardboard packaging materials under HS code 4805. The export prices have fluctuated, such as the sharp surge of 51.6% in 2021 from the previous year. Prices continued to rise in 2022, peaking at QAR 2,314 per ton. Subsequently, they declined to the current level of QAR 1,517 per ton in 2024. This downward trend could potentially create a more stable pricing scenario.

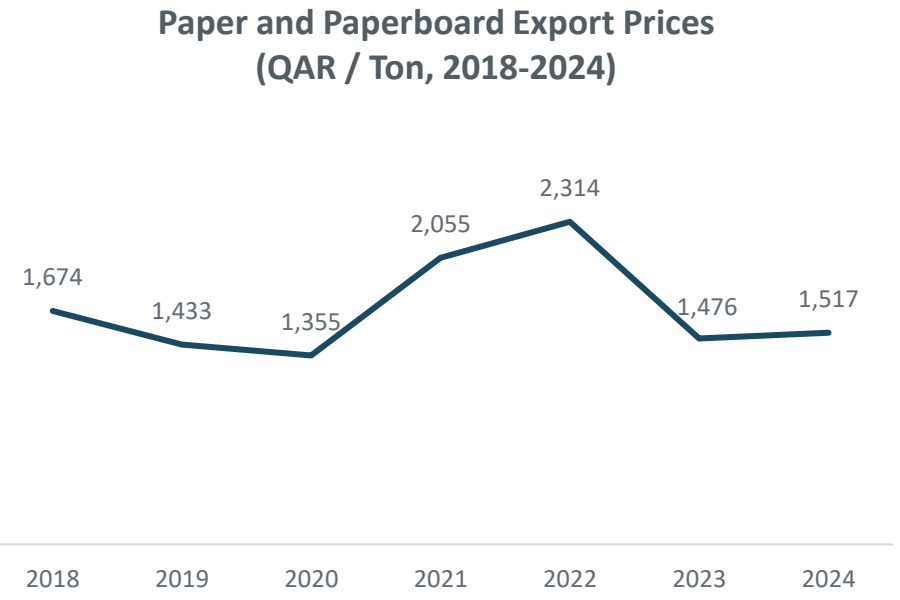


Chart 18: Paper and Paperboard Export Prices (QAR / Ton, 2018-2024)[49]

[49] NPC – Foreign Trade Data

5.3 Value Chain Overview

The following covers Qatar's paper recycling value chain, detailing its key stages and current players.

1 The **collection** stage in Qatar's paper recycling industry is led by Elite Paper Recycling and Al Suwaidi Paper Factory, which secure raw materials primarily through long-term agreements and MoUs with corporate clients. This direct sourcing model reduces dependence on intermediaries. However, collection from households remains underdeveloped, with limited direct mechanisms in place, impacting overall raw material availability.

*This is a **growth potential** phase as household collection remains underdeveloped, leaving room for new entrants. SMEs must establish efficient, well-coordinated logistics to capitalize on this opportunity*

2 **Sorting** processes are largely efficient for corporate-sourced paper waste, as it is clean and easier to process. However, domestic paper waste faces challenges due to insufficient sorting at source, resulting in contamination and lower-quality inputs. Improving household-level segregation and collection systems would enhance the quality and quantity of recyclable paper.

*This phase presents a **moderate potential**, as domestic paper waste sorting poses challenges due to poor segregation at source. Although this represents an opportunity for SMEs, recovering paper waste is difficult once contaminated.*

3 Elite Paper Recycling and Al Suwaidi Paper Factory dominate **material processing and recovery** operations, utilizing most of their combined 150,000-ton annual capacity and producing around 120,000 tons of recycled paper per year, around 50% of the total paper waste generated locally. Their high-capacity utilization is supported by steady corporate-sourced raw materials, but further capacity growth is limited by raw material shortages

*This is a **limited potential** because existing players are operating near full capacity, with further growth constrained by raw material shortages, limiting room for new entrants or significant expansion.*

4 Within the **downstream application** industry, despite the presence of packaging manufacturers such as Gulf Carton Factory, Liberty Packing and Galaxy Carton Factory, local material processing and recovery players generate about 60% of their revenue through exports to countries in the region such as Iraq, Bahrain and UAE. This is due to the efficiency of exporting cardboard products as semi-finished goods to companies to create final packaging products tailored to specific needs.

*This phase presents a **limited potential**, as the sector's reliance on export demand limits availability of recycled material in the domestic market.*

Figure 9: Paper Recycling Value Chain[50]

[50] NPC, Primary Research, Team Analysis and MM – Recycling and Waste treatment Department Manual

*Please note that the list of entities provided is not exhaustive

5.4 Market Sizing & Waste Drivers

Chart 18 illustrates the projected growth of the paper recycling market, based on estimated paper waste generation that includes both MSW and direct contributions from commercial and industrial sources.

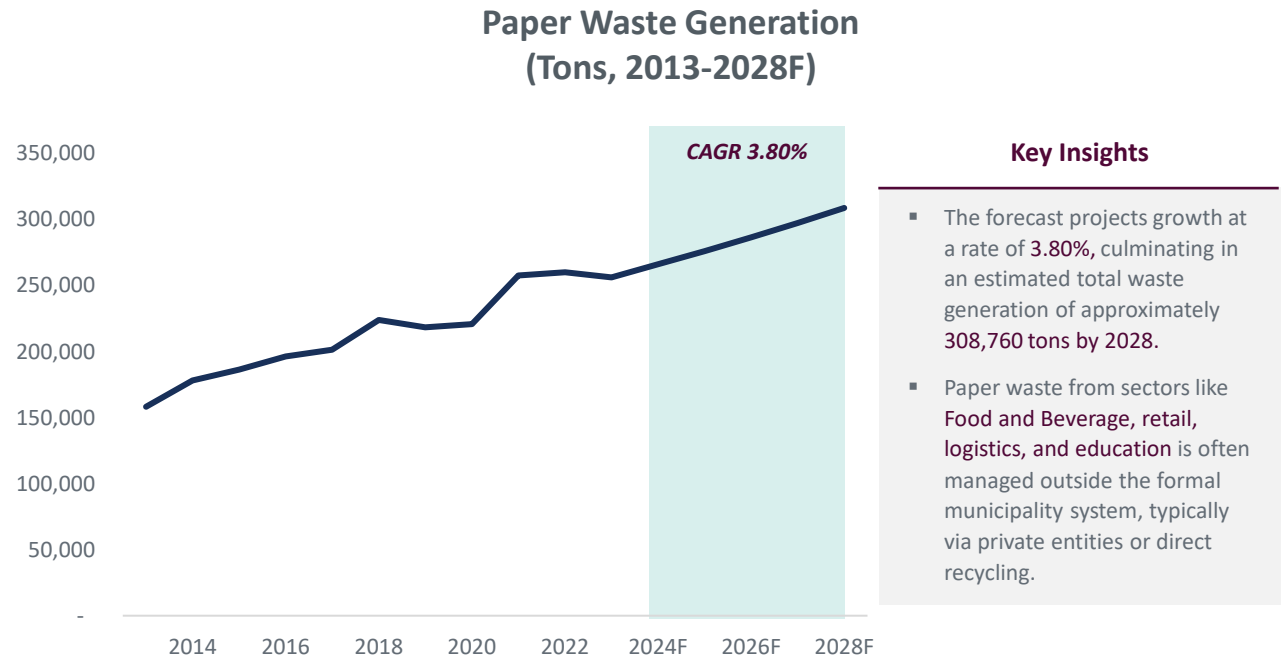


Chart 19: Plastic Waste Generation (Tons, 2013-2028F)[53]

This constant upward trend is indicative of the increasing consumption of paper products in Qatar and is driven by a combination of underlying factors that impact the industry. The forecasted figures underscore the need for expanding, as well as improving the efficiency of waste management and recycling solutions within the country.

The factors contributing to the growth potential of the paper recycling industry, are discussed below:

Key Drivers of Paper Waste Generation

	Qatar's steady **urbanization and population growth** plays a key role in paper waste generation. As the population rises, so does the consumption of paper and cardboard packaging for consumer goods, creating a direct link between population growth and paper waste.
	Qatar's **retail sector** has grown by 3.51% over five years, driving increased paper waste. Expanding retail activity and the rise of e-commerce have boosted demand for paper and cardboard packaging, with online shopping fueling a surge in cardboard box usage and waste.
	Direct collection and sorting by local recyclers are set to boost paper recycling, diverting more waste from landfills. These efforts will enhance collection efficiency and increase recycling volumes.

[53] NPC, Team Analysis

*Note: These projections are indicative estimates based on regional benchmarks and assumed paper waste shares; actual figures may vary due to data gaps and unreported private sector waste flows.

5.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis below highlights the concentrated nature of Qatar's paper recycling sector, offering insights for SMEs and startups navigating this market.

Supplier Power – High

Vertical integration of recyclers to perform collections directly from the source reduces their dependence on external suppliers of paper waste.

Threat of New Entrants – Moderate

The industry operates at a relatively high capacity, indicative of strong demand. Existing players have established strong collection networks and direct sourcing agreements.

Industry Rivalry – Low

The paper recycling market features few participants. Current level of waste generation is sufficient to sustain market incumbents, if new waste collection methods are implemented.

Threat of Substitutes – Moderate

OCC waste is easy to recover and economical to recycle. Threat of substitution from virgin pulp exists as market incumbents import paper pulp due to the insufficient availability of wastepaper.

Buyer Power – Low

The market is primarily served by two companies, giving buyers limited options and reducing their influence over pricing and supply conditions.

Figure 10: Porters Five Forces Analysis – Paper[52]

The paper recycling segment in Qatar operates within a relatively concentrated environment. Supplier power is High, as only two companies dominate the market, Elite Paper Recycling and Al Suwaidi Paper Factory, and vertical integration allows them to source wastepaper directly. The industry's high-capacity utilization and established collection networks create entry barriers; however, potential exists for entrants that can establish efficient waste collection systems and unlock untapped sources of waste.

Industry rivalry is also low, with only a few established participants in the sector. The threat of substitutes is moderate, as OCC waste is readily recyclable and cost-effective. However, the availability of virgin paper pulp as an alternative presents a substitution risk, particularly due to market reliance on imports to meet demand. Buyer power is low, as only two companies dominate the market, giving buyers limited options and reducing their influence over pricing and supply conditions.

[52] Team Analysis, Primary Research

5.6 SWOT Analysis

The SWOT analysis of Qatar's paper recycling sector reveals growth opportunities and challenges for SMEs:

Strengths

The industry operates at ~80% capacity, reflecting efficient resource utilization. Elite Paper Recycling and Al Suwaidi Paper Factory have secured collection agreements, ensuring a steady supply of raw materials. Additionally, the sector has a strong export focus, particularly to Bangladesh, Iraq, and GCC states.

Weaknesses

Limited wastepaper availability restricts the industry's full potential, while inefficient waste sorting leads to contamination, reducing the supply of recyclable materials. Additionally, the market's concentration around two major players limits competition and diversification, resulting in a narrow range of recycled products, primarily cardboard and kraft liner.

Threats

The industry's reliance on waste collection and sorting efficiency makes it vulnerable to disruptions. Additionally, volatile export prices for recycled paper products pose a risk to revenue stability, impacting market competitiveness.

Opportunities

Enhancing waste collection and sorting systems can improve recycling rates, boost production capacity, and unlock new export markets. Import substitution presents potential, as Qatar can replace imported virgin paper pulp with locally sourced materials like OCC. Additionally, new entrants can expand the market by producing recycled paper sheets and tissue paper, which are currently not manufactured domestically.

Figure 11: SWOT Analysis - Paper[53]

Qatar's paper recycling sector features a strong export market, domestic capacity utilization, and established players. Elite Paper Recycling and Al Suwaidi Paper Factory have secured collection agreements, ensuring steady material supply. Additionally, the sector benefits from significant exports, with exports increasing by 16% in the past year. Despite these strengths, the industry faces inefficiencies in domestic waste sorting, causing limited raw material availability. The low uptake of wastepaper restricts production potential, while inefficient sorting leads to higher waste contamination, increasing processing costs.

Global market fluctuations in recycled paper products, such as the 51.6% surge in 2021, create revenue volatility, impacting export competitiveness. However, several opportunities should be noted, including market expansion through improved waste collection and sorting systems to increase recycling rates. Furthermore, import substitution presents a viable growth avenue, as Qatar currently imports virgin paper pulp, which could be replaced with locally sourced alternatives like OCC. Lastly, new product development offers potential, such as recycled paper sheets and tissue products, which are not currently manufactured domestically.

[53] Team Analysis, Primary Research

5.7 Key Takeaways

Qatar's paper recycling sector features potential for companies entering the collection and recycling segments, and moderate opportunity in the sorting segment. Key takeaways for SMEs to consider are outlined below:

- **Strong Projected Growth:** The market is projected to grow steadily at a rate of 3.80%, resulting in an estimated total paper waste generation of approximately 308,760 tons by the end of 2028.
- **High Market Concentration:** The paper recycling sector in Qatar consists of two primary companies: Elite Paper Recycling and Al Suwaidi Paper Factory, with the industry operating at 80% of its total production capacity.
- **Vertical Integration:** Local paper recycling entities are also involved in waste collection activities, with several long-term MoUs in place with commercial entities. This helps them collect segregated paper waste directly from the source, enhancing efficiency and reducing costs. New entrants have potential to establish agreements with organizations to implement waste sorting at the source, streamlining collection processes and enhancing recycling efficiency.
- **Supply Constraints:** During 2021 and 2022, companies benefited from an abundant supply of waste cartons in the local market, often available at low or no cost due to heightened economic activity ahead of the FIFA World Cup. However, by 2023, input material availability declined as competition among existing players intensified.
- **Untapped Potential in Waste Collection:** A challenge for the industry is the addition of domestic paper waste to the recycling stream. At present, this waste remains unsegregated and is dumped in landfills. It is inefficient for companies to sort and collect this waste, and so it cannot be added to the recycling stream. The establishment of direct collection mechanisms for domestic users will enable improvements in the paper recycling rates in Qatar.
- **Export-Focused Industry:** The sector derives substantial revenue from international sales. Qatar primarily exports the majority of its recycled paper products, with cardboard product exports from virgin pulp as well as recycled waste growing at a CAGR of 50% since 2018. This trend presents SMEs with potential to explore international markets not only for paper products but also paper waste.
- **Downstream Industry:** Local paper recycling companies primarily focus on producing paper and cardboard (HS code 4805) for packaging. This is favored by low production costs and minimal need for virgin materials. This not only offers environmental benefits but also creates potential within the packaging industry.

6. Plastic

6.1 Overview of Plastic Waste

Plastic recycling refers to collecting and processing plastic waste to create new products, reducing the need for virgin materials. It involves sorting, cleaning, shredding, and melting the plastic into pellets (granules), which can then be molded into new items. Currently, Qatar has no comprehensive plastic recycling policy, but plans are underway to regulate plastic waste.

The output of plastic recycling primarily consists of granules of various plastics, including High-Density Polyethylene (HDPE), Low-Density Polyethylene (LDPE), Polyethylene Terephthalate (PET), and Polypropylene (PP).

Types of Plastic Waste	Recycled Plastic - Applications
High-Density Polyethylene (HDPE) – HDPE granules are known for their high strength-to-density ratio, making them ideal for producing durable goods.	***Recycled HDPE*** applications: 1. Pipes and fittings in water and gas distribution. 2. Shampoo, body wash and lotions bottles 3. Containers and shipping pallets for industrial storage and shipping.
Low-Density Polyethylene (LDPE) – LDPE granules are characterized by their low density, which make them suitable for flexible plastic products.	***Recycled LDPE*** applications: 1. Plastic bags and packaging films used for protective packaging. 2. Stretch films and shrink wraps. 3. Squeezable bottles.
Polyethylene Terephthalate (PET) – PET granules are valued for their strength, transparency, and impermeability to gases and liquids.	***Recycled PET*** applications: 1. Beverage bottles used in water and soda 2. Food packaging. 3. Synthetic fibers in clothing, upholstery and industrial fabrics.
Polypropylene (PP) – PP granules are known for their toughness and resistance to chemical solvents, acids, and bases.	***Recycled PP*** applications: 1. Automotive parts such as car bumpers, trims and battery cases. 2. Containers, toys and appliances. 3. Storage and consumer products.

Figure 12: Types of Plastic Waste[54]*

[54] Team Analysis, Primary Research

*Please note that the examples listed are illustrative and not exhaustive

Recovered Plastic Segmentation

Based on primary research, approximately half of Qatar's incoming plastic waste is PE (which includes HDPE and LDPE), 20% is PET, 15% is PP, and the remaining 15% consists of other minor polymers such as PVC and polystyrene. These can be more challenging to recycle due to issues such as contamination, mixed materials, or low economic value. The high share of PE waste can be attributed to its wide-ranging applications, including packaging and use in everyday household, commercial, and construction items.

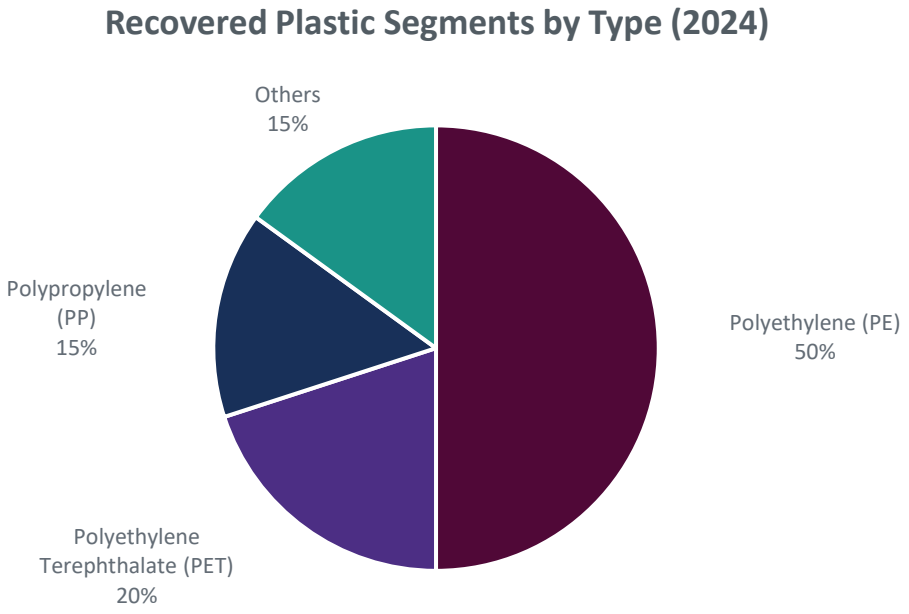


Chart 20: Recovered Plastic Segments by Type (2024)[55]

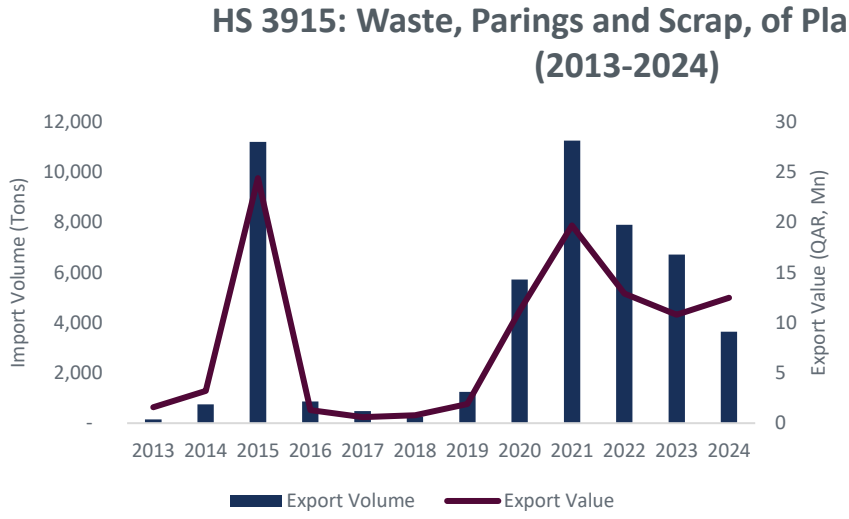
PE plastic accounts for the largest share of recovered plastic, constituting 50% in 2024.

[55] Primary Research

Note - Due to limited national-level data, the reported shares of recovered plastic are indicative and based on available estimates.

6.2 Trade Overview

Chart 20 below shows that exports of plastic waste have demonstrated significant growth over the past decade.



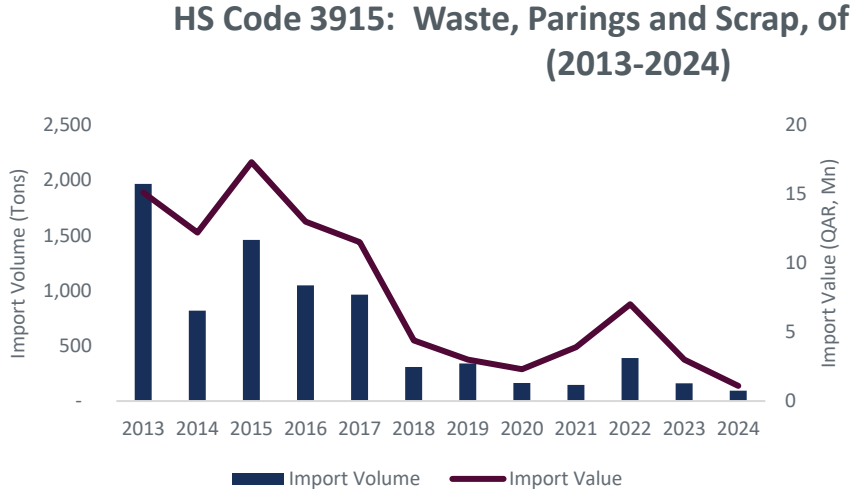
Key Insights

- Qatar's plastic waste exports from 2019 to 2024 have increased at a CAGR of 33.6%.
- After a peak of 11,196 tons at a value of QAR 24.4 Mn in 2015, exports declined, likely due to the blockade.
- Exports rose sharply from 1,243 tons (QAR 1.9 Mn) in 2019 to a peak of 11,248 tons (QAR 19.7 Mn) in 2021, suggesting that MM policies have bolstered the recycling sector and enhanced Qatar's export capacity.

Chart 21: HS 3915: Waste, Parings and Scrap, of Plastics Exports (2013-2024)[56]

In 2024, India and Pakistan were the primary destinations for Qatar's plastic waste exports, receiving approximately 1,999 tons and 3,974 tons, respectively, which accounted for around 26% and 52% of total scrap exports. The high volume of plastic waste exports suggests an efficient waste collection and sorting system; however, it also highlights limited local demand for recycling and processing plastic waste into value-added products.

Chart 21 below shows that the imports of plastic waste in Qatar have experienced a steady decline over the past decade.



Key Insights

- After peaking at 1,966 tons (QAR 15.1 Mn) in 2013, import volume fell consistently, reaching just 93 tons (QAR 1.1 Mn) in 2024.
- This decline reflects improved local scrap availability, driven by higher collection rates and policies introduced by MM.

Chart 22: HS Code 3915: Waste, Parings and Scrap, of Plastics Imports (2013-2024)[57]

[56] NPC – Foreign Trade Data
[57] NPC – Foreign Trade Data

Pricing Analysis

The export prices of Qatar's plastic granules, which constitute recycled materials as well as virgin granules, are illustrated in Chart 22. The prices of PE granules (HS Code: 3901) have shown moderate growth over the period and low volatility from 2019 to 2024.

The average price of PET granules (HS Code: 3907) in has decreased significantly over the past year, likely due to increased volume being diverted to export markets following slower local demand. In contrast, the average export price of PP granules (HS Code: 3902) rose by 961% in 2020 due to a surge in demand following the COVID pandemic, as the material is used extensively in medical packaging and protective equipment. Prices gradually declined over the subsequent two years, reaching QAR 4,752 / ton in 2022, after which Qatar did not export the product.

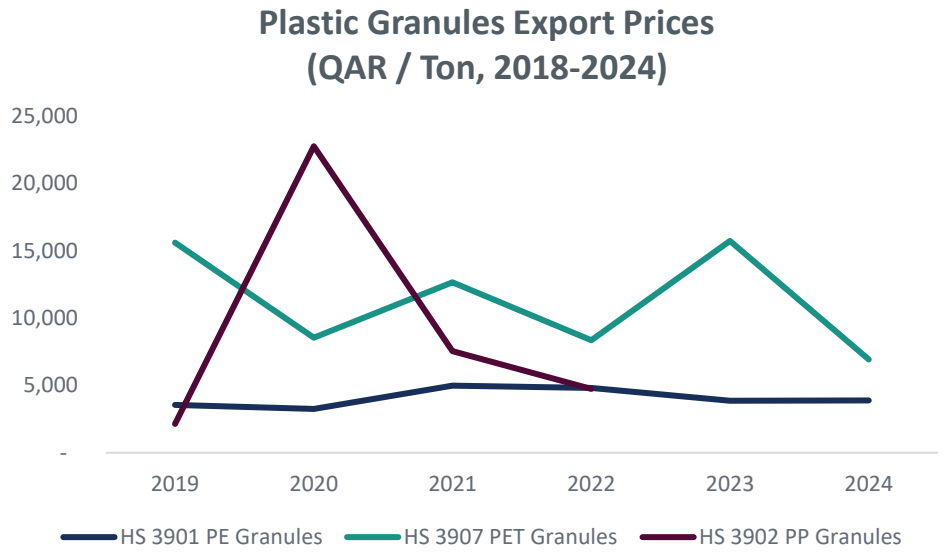


Chart 23: Plastic Granule Export Prices (QAR / Ton, 2018-2024)[58]

[58] NPC – Foreign Trade Data

6.3 Value Chain Overview

Qatar's plastic recycling sub-sector benefits from a developed ecosystem, with plastic factories serving as primary consumers. This creates a high-capacity market aligned with the country's sustainability goals[59].

1. The **collection** stage in Qatar's plastic recycling industry is underdeveloped, while industrial and commercial plastic waste is more easily collected, household plastic waste remains largely uncollected.

*This phase offers **growth potential**, as the lack of household waste collection leaves room for new entrants. SMEs must establish efficient, well-coordinated logistics to capitalize on this opportunity.*

2. The **sorting** process, which includes manual and float sorting, is underdeveloped in Qatar's plastic recycling industry, with limited segregation of domestic plastic waste at source, leading to contaminated inputs and supply constraints for recyclers. This shortage of properly sorted plastic restricts the availability of quality raw materials, despite the industry's potential to expand. Improving collection and sorting systems can help fully utilize locally generated plastic waste and enhance supply chain efficiency. In parallel, SMEs can explore advanced technologies that convert hard-to-recycle plastics into reusable molecular components, such as those developed by U.S.-based Eastman.

*This phase offers **moderate potential**, as there is potential for new entrants to introduce improved sorting infrastructure. Although this represents an opportunity for SMEs, recovering paper waste is difficult once contaminated.*

3. The plastic **material processing and recovery** sector is driven by key players such as Seashore Recycling, Doha Plastic, and Twyla Recycling, which operate with a vertically integrated model, combining plastic waste processing and manufacturing into high-quality recycled granules. This integration ensures a steady supply of raw materials, enhancing operational efficiency and reducing reliance on imports. Some plastics can undergo multiple recycling cycles, while others can be processed to extract oil from the waste.

*This phase offers **moderate potential**, as some potential exists for new entrants to introduce advanced processing technologies or expand capacity to meet growing demand for high-quality recycled plastic.*

4. **Downstream application** manufacturing is led by companies such as Sigma Plastic Factory and Twyla Plastic, which produce plastic sheets, bags, wraps, and films. Local players are export-oriented, capitalizing on the cost-efficiency of semi-finished products that are further processed into customized plastic goods for diverse applications. A significant portion of their sales also involves supplying local retailers and hypermarkets.

*This phase offers **moderate potential**, as existing players benefit from strong export demand, but there is still room for new entrants to introduce value-added processing and expand local applications for recycled plastic products.*

Figure 13: Plastic Recycling Value Chain[60]*

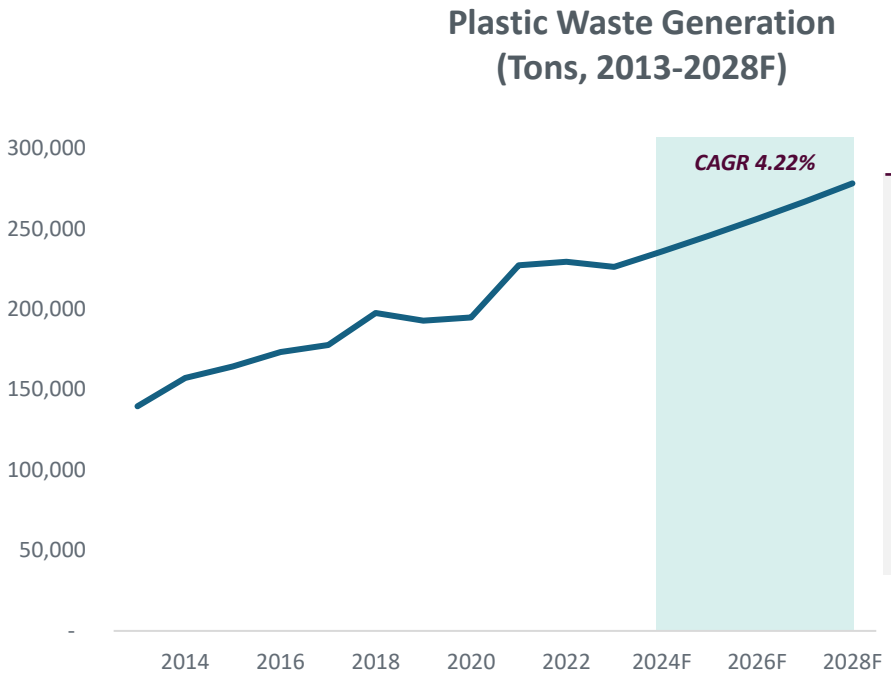
[59] MOCI – Recycling Industry

[60] Primary Research, Company Websites and MM – Recycling and Waste treatment Department Manual, Monsha'at Report Q4 2024

*Please note that the list of entities provided is not exhaustive, Qatar has 295 companies engaged in the production of various plastic products. Note that Sigma Plastic is set to open a new facility, Star Plastic, which will process large volumes of waste.

6.4 Market Sizing & Waste Drivers

Chart 23 below illustrates the projected growth of the plastic recycling market over the next 5 years, based on estimated plastic waste generation from MSW and other sources such as construction sites, industrial facilities, hospitality and agriculture sectors generating significant but underreported volumes.



Key Insights

- Plastic waste generation is expected to grow at a CAGR of 4.22%, reaching 278,122 tons by 2028.
- Growth is driven by rising domestic and commercial plastic consumption in Qatar.
- The projection emphasizes the need for waste collection, sorting, and recycling infrastructure to manage the increasing plastic waste from sources beyond MSW.

Chart 24: Plastic Waste Generation (Tons, 2013-2028F)[61]*

The plastic waste generation has witnessed impressive growth, with a CAGR of approximately 26% between 2017 and 2022. This increase can be attributed to a rise in recycling activity in 2021, coinciding with heightened industrial activity and construction projects in preparation for the 2022 FIFA World Cup.

The factors contributing to the growth potential of the plastic recycling industry, are discussed below:

Key Drivers of Plastic Waste Generation

Qatar's steady **population growth** contributes to the generation of plastic waste. An increase in population drives higher consumption of consumer goods with plastic packaging, beverages in PET bottles, PP containers, and PE waste which is used in everyday household, commercial, and construction items. This causes a direct correlation between population growth and plastic waste generation.

The **retail sector** in Qatar has experienced a growth rate of 3.51% over the past five years, which is a key driver of plastic waste. As retail activity expands, the demand for packaging materials, particularly PE bags and wrapping material, increases. The growth of retail activity is expected to grow at a higher pace due to the increasing adoption of e-commerce.

In 2022, **Government regulation** was introduced regulations to restrict plastic bags. This measure complements the "No for Plastic" campaign, a government-led initiative that encourages alternatives to single-use plastics. These initiatives are expected to reduce plastic waste generation while promoting the use of recyclable materials.[62]

[61] NPC, Team Analysis
[62] Qatar's Waste and Recycling Landscape: An Overview

*Note: Estimates are indictive and based on regional benchmarks and assumed metal waste shares.

6.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis highlights the concentrated nature of Qatar's plastic recycling sector, offering insights for SMEs and startups navigating this market.

Supplier Power – Moderate

The sector features a moderate number of participants, larger recycling players operate their own plastic manufacturing facilities, reducing dependence on external scrap suppliers. Local market is increasingly being met by local suppliers as opposed to imports, as reflected in the declining plastic scrap import volumes.

Threat of New Entrants – Moderate

Vertical integration and established local business relationships create some barriers to entry. Maintaining strong local business relationships is key to finding success in the market for new entrants.

Industry Rivalry – High

The market currently features a moderate number of participants. Based on primary research, new entrants are setting up to commence operations.

Threat of Substitutes – High

Virgin plastic granules are abundant in Qatar as they are by-products of the gas sector, making them a viable substitute to recycled plastic.

Buyer Power – Moderate to High

Buyers have some power due to the moderate number of plastic recycling companies in the local market, however, this is expected to increase as new players enter.

Figure 14: Porters Five Forces Analysis – Plastic[63]

The plastic recycling sector in Qatar operates within a competitive environment. Supplier power is shaped by larger recycling companies with integrated manufacturing facilities, reducing dependence on external suppliers. Additionally, the increasing reliance on local raw material sources further strengthens supplier influence. The threat of new entrants is moderate, with vertical integration and established industry relationships creating challenges for newcomers.

Industry rivalry remains high, as a moderate number of players compete for plastic waste sources, with new entrants seeking to gain market share. Virgin plastic granules—readily available as byproducts of Qatar's gas sector—offer a cost-effective alternative to recycled plastics. Buyer power is moderate and expected to increase as more players enter the market, providing greater options for buyers.

[63] Team Analysis, Primary Research

6.6 SWOT Analysis

The SWOT analysis of Qatar's plastic recycling sector reveals growth opportunities and challenges for SMEs:

Strengths

The plastic recycling subsector benefits from a strong local manufacturing base, providing a high-capacity market for recycled plastic. Potential exists to participate in a circular economy by recycling plastic waste and using recycled materials to manufacture finished goods, like some established players.

Weaknesses

The industry's success is dependent on efficient local waste collection systems, which require improvement. Many water bottles sold in Qatar contain dyes, reducing the amount of recyclable plastic

Threats

There is a lack of oversight on plastic recycling licenses in Qatar which may lead to poor quality control. The easy availability of virgin plastics could impact the demand for recycled materials.

Opportunities

There is potential for exporting recycled plastic granules to high-demand markets such as China, India, and Bangladesh. The sector is relatively small and in its growth stage, with only a few significant players dominating the market.

Figure 15: SWOT Analysis – Plastic[64]

Qatar's plastic recycling sector benefits from a strong local manufacturing base, creating a high-capacity market for recycled plastics. Established industry players contribute to a circular economy by repurposing plastic waste into finished goods. However, the sector faces weaknesses, particularly in waste collection efficiency. The market is still in its early growth stages, with a few dominant players, like Seashore Recycling and Doha Plastic, influencing supply. Additionally, the use of dyed plastic in water bottles reduces the availability of recyclable material.

Threats to the sector include the lack of regulatory oversight on plastic recycling licenses, which may lead to inconsistent quality control. The widespread availability of virgin plastics as a byproduct of Qatar's gas sector also presents a challenge, as it can reduce demand for recycled materials. Despite these challenges, potential exists for expansion, particularly through exports to high-demand markets such as China, India, and Bangladesh. Strengthening local waste collection and sorting infrastructure will provide an advantage to SMEs, allowing them to benefit from the sector's projected CAGR of 4.22%.

[64] Team Analysis, Primary Research

6.7 Key Takeaways

Qatar's plastic recycling sector features growth potential for companies entering the collection segment. Key takeaways for SMEs to consider are outlined below:

- **Projected Growth:** Plastic waste generation is forecasted to grow at 4.22%, with plastic waste generation expected to reach ~278,000 tons by 2028. This growth is primarily driven by an increase in consumption of single-use plastic through activities such as retail, food and beverages, etc.

- **Plastic Waste Segmentation:** Approximately half of Qatar's recovered plastic waste is PE (which includes HDPE and LDPE), 20% is PET, 15% is PP, and the remaining 15% consists of other materials like PVC and polystyrene. The high share of PE waste can be attributed to its wide-ranging applications.

- **Established Ecosystem:** Qatar's plastic recycling subsector has a collaborative ecosystem, driven by numerous plastic factories that consume recycled plastic, supporting sustainability objectives. SMEs can tap into strong local demand by forming partnerships with these factories.

- **Untapped Potential in Waste Collection:** Like the paper segment, plastic waste from domestic households remains unsegregated. The establishment of direct collection mechanisms for domestic users will enable improvements in recycling rates in Qatar. In addition, untapped volumes exist in sectors like construction (CDW), industry, hospitality, and agriculture. SMEs can carve a niche by targeting these under-addressed segments, such as collecting plastic film from construction sites or shrink wrap from logistics centers.

- **Rising Exports:** Plastic waste imports have decreased while exports have increased over the past 6 years, driven by improved local scrap availability. SMEs can thus benefit from reduced import competition and explore export potential.

- **Target Export Markets:** Target markets for the export of different forms of plastic granules are China and India, due to their high-volume demand. However, the expected demand generated from the development of the local plastic recycling infrastructure should not be overlooked.

- **Vertical Integration:** Local companies play key roles in recycling and converting waste into end use products. Within these players, vertical integration is common, with companies operating their own manufacturing facilities, producing end-use plastic sheets, wraps, packaging and films.

- **Non-Recyclable Materials:** Currently, many plastic bottles produced in Qatar contain dyed PET, which is non-recyclable.

7. Metal

7.1 Overview of Metal Waste

The metal recycling industry in Qatar encompasses the shredding and recycling of ferrous scrap, primarily iron and steel, and non-ferrous scrap, which primarily includes aluminum and copper. Given their similar composition and properties, iron and steel are both classified as ferrous metals in this analysis, however, the focus remains on steel. Iron ore is a key input in the primary (virgin) production of iron and steel; therefore, its imports have been included in the trade analysis section.

Types of Metal Waste	Recycled Metal – Applications
Ferrous Waste* • ***Construction*** – Recovered steel beams and bars from construction activities. • ***Vehicles*** – Scrap from engines and components of end-of-life vehicles. • ***Manufacturing*** – Scrap and shavings generated from manufacturing activities. • ***Machinery*** – Machinery, commercial equipment and consumer appliances.	***Pressed Steel*** – scrap metal, up to 6mm in thickness, used in household items. ***Heavy Melting Steel*** – scrap steel over 6mm in thickness, such as plates, beams and tools. ***Cast Iron Items*** – includes bathtubs, machinery, pipes, and engine structures. ***Reinforcement Bars (Rebars) and Structures*** – Used in the construction of infrastructure.
Copper Waste (Non-ferrous) • ***Electrical Wiring & Cables*** – Discarded electrical wiring and cables from construction and demolition projects. • ***Pipes, Fittings & Fixtures*** – Pipes, fittings and fixtures in buildings. • ***Machinery and Equipment*** – Copper-containing components such as motors, generators and transformers.	***Electrical Wiring and Cables*** – Used in residential, commercial, and industrial settings. ***Plumbing Pipes and Fittings*** – Used in construction for water and gas transportation. ***Heat Exchangers*** – Used in industrial processes for transferring heat efficiently.
Aluminum Waste (Non-ferrous) • ***Manufacturing*** – Scrap generated during the manufacturing process from extrusion and fabrication industries. • ***Construction & Demolition Waste*** – Scrap from demolished buildings or renovation projects. • ***End-of-life Vehicles (ELVs)*** – Recovered from vehicle components. • ***Consumer Waste*** – Discarded products like household appliances and packaging.	***Window Frames and Doors*** – Used as lightweight, durable building components. ***Beverage Cans and Food Containers*** – Used in the food industry for packaging. ***Electrical Conductors and Batteries*** – Used in power such as through transmission lines and cables. ***Automotive Components*** – Used in vehicles for body panels, wheels, and engine parts.

*Figure 16: Types of Metal Waste***[65]*

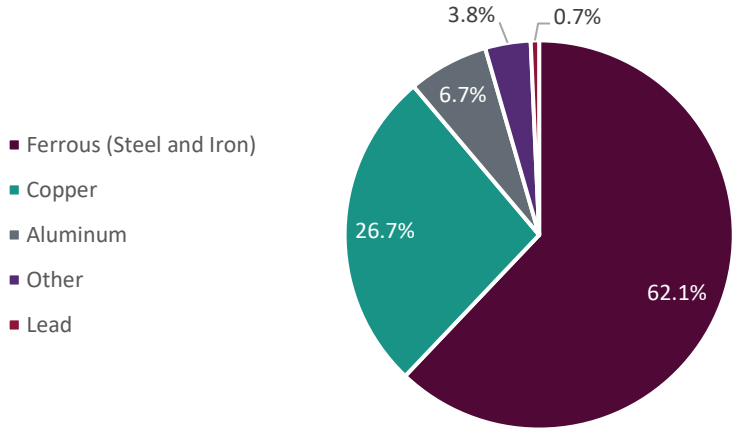
[65] Team Analysis, Primary Research and MM – Recycling and Waste treatment Department Manual

* Due to their similarities with sourcing, treatment and steel and iron have been grouped as Ferrous Waste
**Please note that the examples listed are illustrative and not exhaustive

Recovered Metal Segmentation

In Qatar, the construction sector is the largest generator of ferrous and non-ferrous scrap. During FIFA preparations, Gulf Organisation for Research & Development (GORD) worked in close coordination with the Ministry of Municipality and Ashghal (Public Works Authority) to promote more sustainable construction and waste management practices. These efforts focused on advocating source-level waste sorting, on-site reuse through prefabrication, and exploring ways to enhance SME and private sector involvement in scrap collection and processing.

Metal Waste Generation by Segment (2023)



Key Insights

- Ferrous scrap accounts for approximately 62% of total metal waste generated in Qatar, followed by non-ferrous metals at 34%. The remaining 4%, categorized as "Others," includes trace elements such as zinc, tin, nickel, and brass.
- Copper leads among non-ferrous metals, representing around 27% as it is widely used in electrical components.
- Mega construction projects are the most common source of ferrous scrap in the region.
- Aluminum scrap is commonly recovered from vehicle components and metal fabrication factories.

Chart 25: Metal Waste Generation by Segment (2023)[68]*

In Chart 24 above, the 'Other' metal segment is estimated using global and regional benchmarks that assess metal waste as a share of total waste. This category typically includes non-ferrous metals such as zinc, nickel, tin, and brass, as well as ferrous metals like stainless steel.

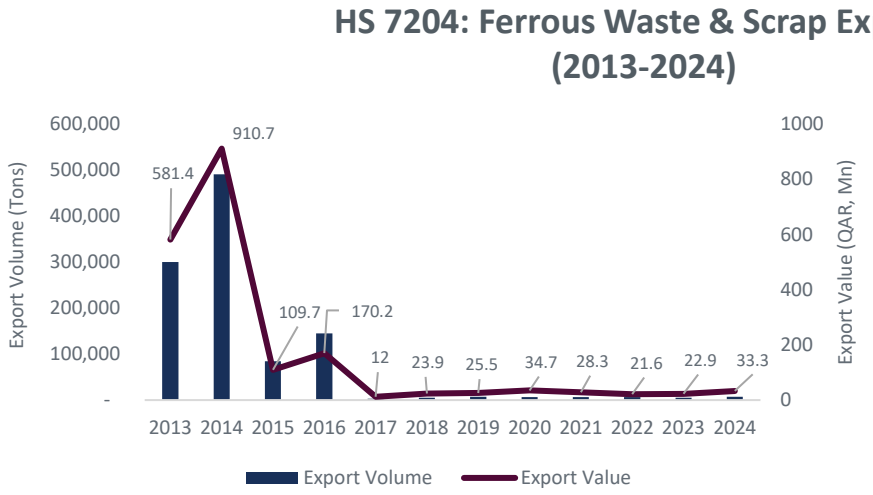
This section focuses on the three primary metal segments, ferrous, copper, and aluminum, which together account for over 95% of total metal waste generation. Lead is analyzed separately in the e-waste recycling section, as it is predominantly recovered from the processing of used lead-acid batteries, a major component of e-waste.

[68] Ministry of Municipality, NPC, World Bank, Team Analysis

*Precise data on ferrous & non-ferrous scrap shares remains limited, and current figures are indicative estimates.

7.2 Trade Overview

Historically, Qatar has been an exporter of ferrous scrap (HS code 7204). In contrast, imports of ferrous scrap (HS code 7204) have been limited, only beginning in 2019, peaking at 3,128 tons, and declining steeply to just 97 tons in 2024, indicating minimal reliance on imported scrap to supplement domestic supply.

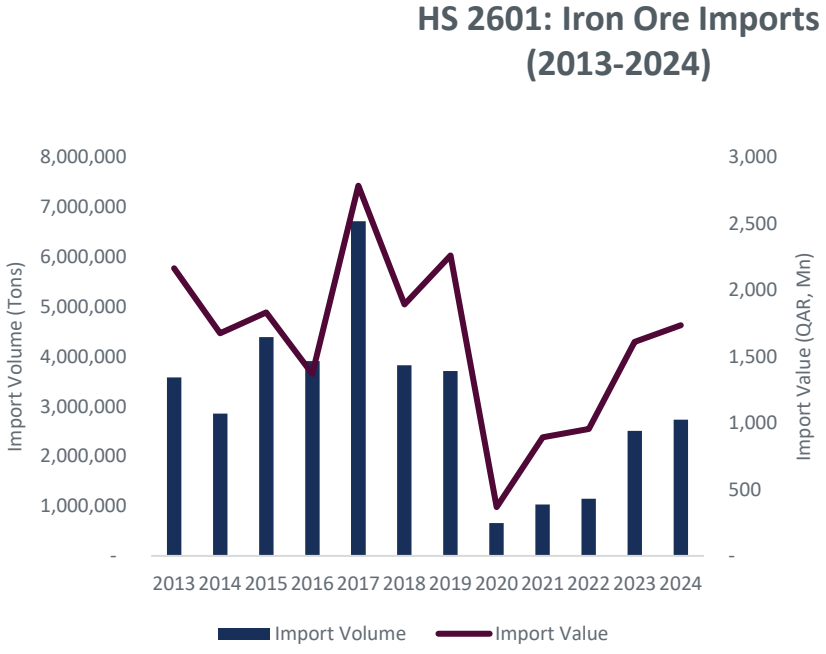


Key Insights

- Export volumes of ferrous scrap fell significantly around 2015 and again in 2017, falling by 83% and 98% respectively
- The decline in exports internal redirection of scrap toward local usage by Qatar Steel

Chart 26: HS 7204: Ferrous Waste & Scrap Exports (2013-2024)[67]

In contrast to the decline in ferrous scrap exports, Qatar imported 2.73 Mn tons of iron ore (HS code 2601) in 2024.



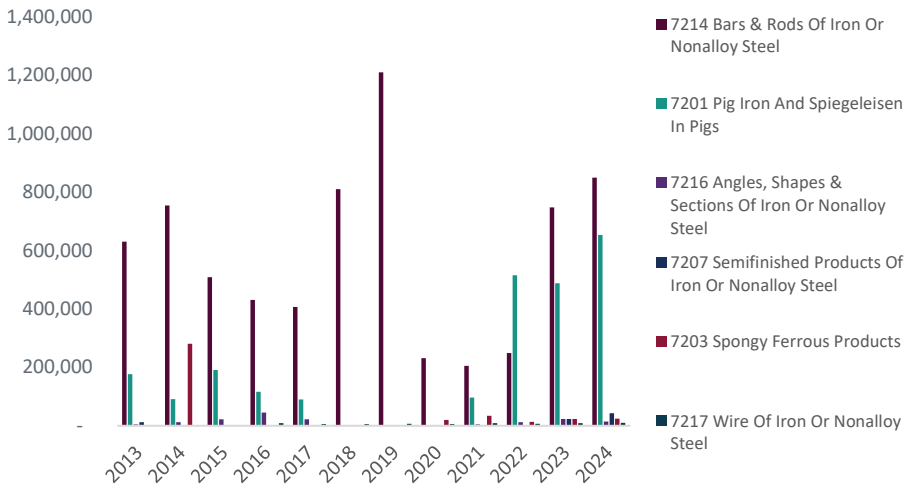
Key Insights

- Qatar's iron ore import volumes ranged between 3 to 7 Mn tons annually from 2013 to 2019. A decline followed in 2020–2021, likely driven by the economic slowdown resulting from the COVID-19 pandemic.
- Import volumes began recovering after 2021, nearly doubling in 2022 and showing steady growth through 2024, reaching approximately 3.8 Mn tons.
- The rising import volume highlights the continued need for raw materials in the country's steel production. However, it also underscores the potential for import substitution if Qatar's scrap collection and sorting processes are streamlined.

Chart 27: HS 2601: Iron Ore Imports (2013-2024)[68]

[67] NPC – Foreign Trade Data
[68] NPC – Foreign Trade Data

Ferrous Primary Product Exports Volume (Tons, 2013-2024)



Key Insights

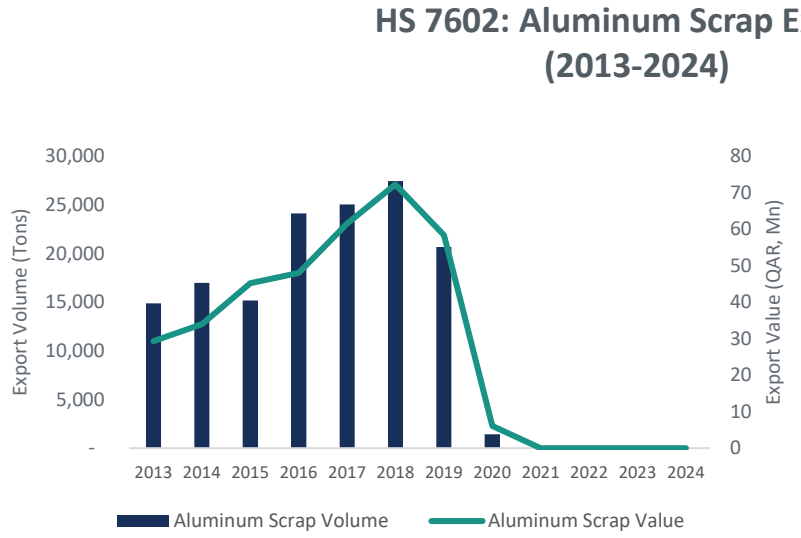
- Exports under **HS code 7214 (Bars & Rods of Iron or Non-Alloy Steel) consistently led Qatar's ferrous product exports**, peaking sharply in 2018 at over 1.2 Mn tons
- **Overall export volumes were largest in 2024**, driven by HS 7214 and HS 7201 exports.
- After a dip during 2020–2021, likely linked to COVID-19-related disruptions, **export volumes have shown gradual recovery** in recent years, particularly in 2022 and 2023.

Chart 28: Ferrous Primary Product Exports Volume (Tons, 2013-2024)[69]

Despite minimal scrap metal exports, Qatar's exports of processed ferrous metal products reached 1,595 Mn tons in 2024, and has increased at a CAGR of 5.94% over the past 10 years. Notably, exports of scrap ferrous materials require prior approval from Qatar Steel, which limits broader participation in ferrous scrap exports.

[69] NPC – Foreign Trade Data

As shown in Chart 28 below, Qatar has also stopped exporting aluminum scrap, which once amounted to ~24,000 tons (QAR 72.2 Mn) in 2018, indicating a shift towards domestic recycling. Additionally, there are no imports of non-ferrous scrap, further indicating that Qatar is focused on utilizing its domestic resources for value-added production.

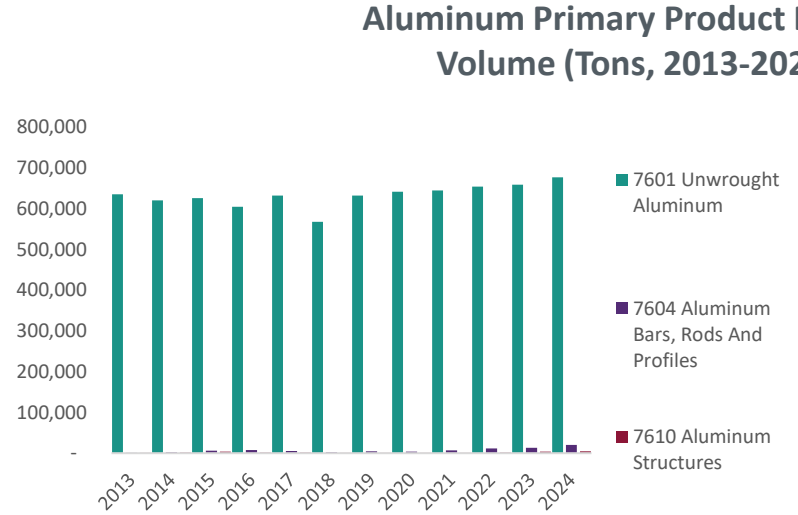


Key Insights

- Qatar's aluminum scrap export volume steadily increased from 2013 to a peak in 2018–2019, reaching close to 28,000 tons and a value of nearly QAR 75 Mn, indicating a period of strong external demand or higher domestic scrap recovery.
- Both volume and value dropped sharply starting in 2020, with 2021–2024 figures remaining very low, indicating a shift towards domestic recycling.

Chart 29: HS 7602: Aluminum Scrap Exports (2013-2024)[70]

Despite limited scrap metal exports, Qatar recorded 702,000 tons of aluminum product exports in 2024, indicating potential for exports of primary products. Exports of primary aluminum products grew modestly at a CAGR of 0.9% over the past 10 years



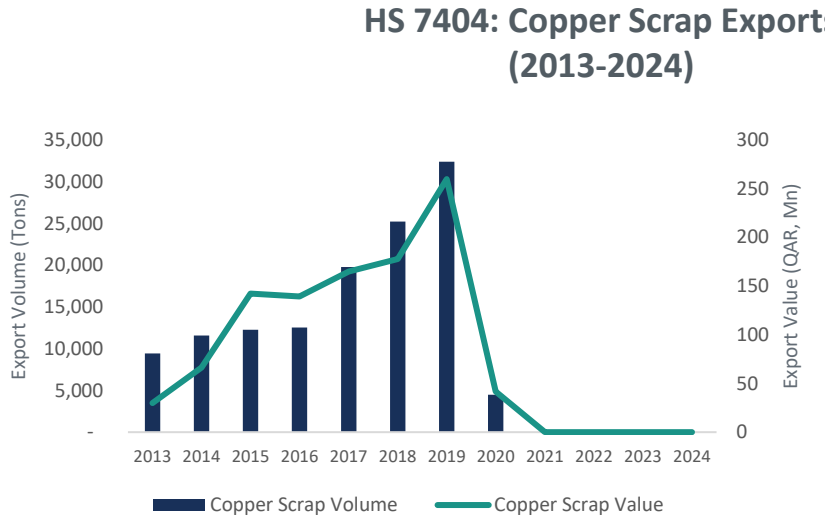
Key Insights

- Exports of unwrought aluminum consistently dominate, with annual volumes ranging from approximately 600,000 to 700,000 tons.
- While there were minor fluctuations, primary aluminum exports show a gradual upward trend over the period, especially from 2017 onward, suggesting strong export demand.

Chart 30: Aluminum Primary Product Exports (Tons, 2013-2024)[71]

[70] NPC – Foreign Trade Data
[71] NPC – Foreign Trade Data

Similar to aluminum scrap exports, Qatar has also stopped exporting copper scrap, which once amounted to ~32,000 tons (QAR 259.1 Mn) in 2019. Copper scrap exports over the past 10 years is shown in Chart 30 below.

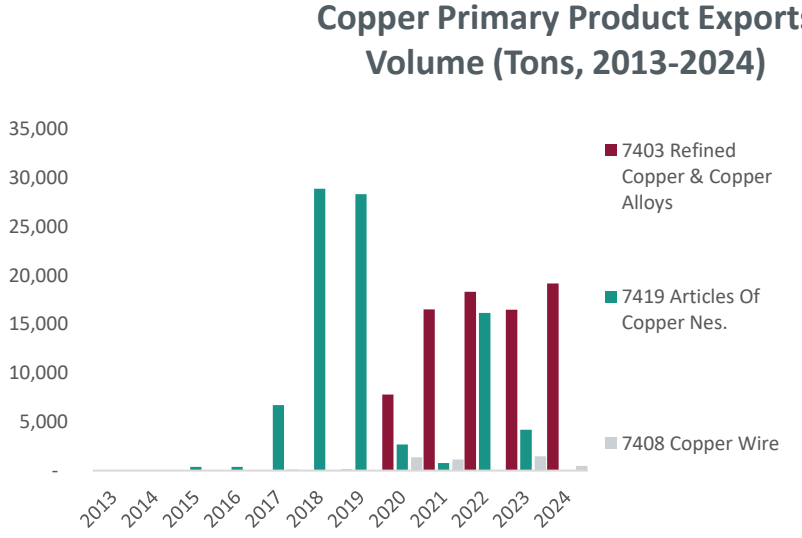


Key Insights

- Copper scrap export volumes increased steadily from ~7,000 tons in 2013 to a peak of over 30,000 tons in 2019, accompanied by a sharp rise in export value reaching nearly QAR 300 Mn.
- From 2020 onward, exports declined, with volumes dropping to below 5,000 tons and values falling near zero. In line with aluminum exports, this indicates a shift towards domestic material recovery.

Chart 31: HS 7404: Copper Scrap Exports (2013-2024)[72]

Qatar recorded 19,643 tons of copper products exports of primary non-ferrous metal products in 2024. In comparison to aluminum products, primary copper product exports grew at a greater CAGR of 73.4% over the past 10 years.



Key Insights

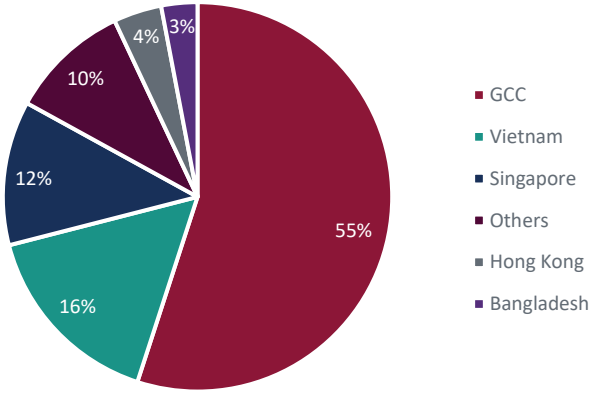
- Primary copper export volumes peaked around 2022 at around 30,000 tons, following a recovery from low export volumes in 2020.
- Data suggests a gradual movement from exporting unprocessed or semi-finished copper toward more value-added copper products, such as refined or fabricated items.

Chart 32: Copper Primary Product Exports (Tons, 2013-2024)[73]

[72] NPC – Foreign Trade Data
[73] NPC – Foreign Trade Data

The leading destinations for exported ferrous products in 2024 were GCC (55% of the total share), Vietnam (16%) and Singapore (12%).

Key Export Destinations – Ferrous Metals (2024)



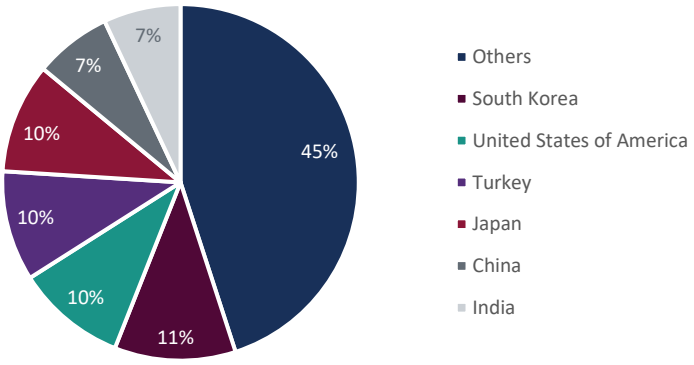
Key Insights

- The UAE accounts for the largest share of Qatar's ferrous metal exports in 2024, representing 23% of total volume.
- Singapore (12%), Hong Kong (4%), and Bangladesh (3%) highlight that Asian markets collectively account for 35%, excluding GCC.
- Roughly 65% of exports are directed to non-GCC countries, emphasizing Qatar's reliance on broader international markets

Chart 33: Key Export Destinations –Ferrous Metals (2024) [74]

As shown in chart 33 below, leading destinations for exported non-ferrous products in 2024 were distributed across a relatively wider range of countries including the United States (10%), Turkey (10%) and Republic of Korea (11%).

Key Export Destinations – Non-Ferrous Metals (2024)



Key Insights

- Non-ferrous metal exports from Qatar are distributed across a wide range of countries, with no single destination accounting for a dominant share
- Unlike ferrous metal exports, no GCC countries are among the top destinations for non-ferrous products.

Chart 34: Key Export Destinations – Non-Ferrous Metals (2024) [**75]

[74] NPC – Foreign Trade Data
[75] NPC – Foreign Trade Data

*The HS codes used for the figure include 7214, 7201, 7207, 7203, 7216 and 7217
** The HS codes used for the figure include 4403, 7408, 7419, 7601, 7604 and 7610

7.3 Value Chain Overview

The metal recycling value chain in Qatar involves 4 key stages as outlined in the figure below.

1. The **collection** stage in Qatar's metal recycling industry is driven by over 20 metal scrap processing factories, which collect industrial waste directly from producers or through intermediaries. Scrap yards also play a key role in gathering and consolidating various types of metal waste. Copper recycling tends to involve more competitive, vertically integrated supply chains, with players like NFCA collecting directly from industrial sources, while aluminum scrap is primarily supplied to Qatalum from local scrapyards.

   *This phase represents **moderate potential** as there is capacity to expand current collection networks, especially in sourcing from a broader range of industrial sources and enhancing collection efficiency.*

2. The **sorting** process in Qatar's metal recycling industry is well-established for steel and aluminum but remains fragmented for copper. Steel scrap is sorted through magnetic separation, shearing, and shredding, while aluminum scrap is sorted at scrapyards before reaching Qatalum. Copper sorting is less efficient, contributing to low domestic recycling rates, with only 10% of copper waste being recycled, highlighting potential for improvements in sorting systems.

   *This phase represents **moderate potential** as the steel and aluminum industries feature mature sorting processes due to the inefficiency in copper sorting, however, there is potential for SMEs to improve sorting systems.*

3. The **material processing and recovery** process is anchored by major players like Qatar Steel for ferrous metals, Qatalum for aluminum, and NFCA for copper and aluminum. Qatar Steel produced 1.08 Mn tons of steel billets in 2022, relying heavily on local scrap as input. Qatalum produced 677,000 tons of primary aluminum in 2023, but scrap accounts for only 1% of its input, with production relying predominantly on virgin aluminum. Copper recycling remains underdeveloped, with just 10% of domestic copper waste processed, though vertically integrated players like NFCA source directly from industries.

   *This phase presents **moderate potential**, there's potential for growth in copper recycling. Ferrous metals and aluminum industries are dominated by major players, and the aluminum sector's reliance on virgin material limits overall expansion.*

4. The **downstream application** segment is led by steel fabricators such as Qatar Technical Steel Fabrication, Venture Gulf Fabrication, Al Jaber Steel, Coastal Steel, and Al Khalid Steel, which convert steel billets into fabricated products for construction, oil & gas, and manufacturing sectors. In aluminum, players like Qatar Aluminum Extrusion and Integrated Extrusion produce extrusion ingots (HS code 760410), which are used in industrial components, frames, and profiles. Copper output is largely export-driven, with 69% sold as bullions and ingots internationally, and 31% used locally.

   *This phase presents **moderate potential**. While there is stable local demand for steel and aluminum products, copper's export-driven nature create an opportunity to expand into international markets. However, securing an export license allocation may present challenges.*

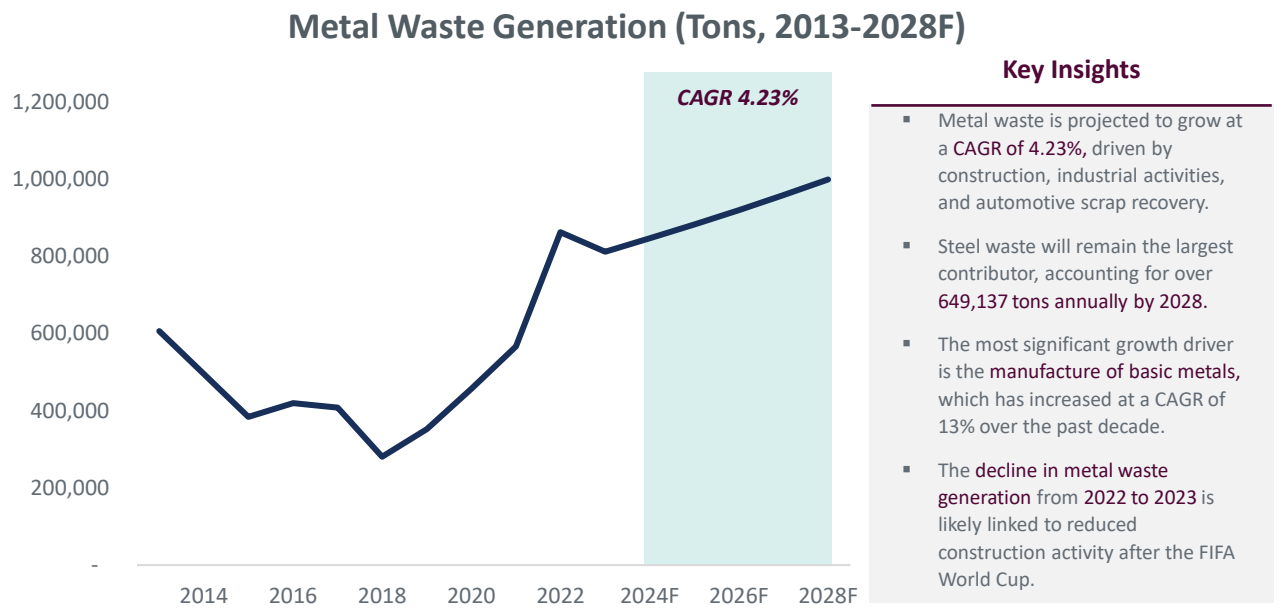
Figure 17: Metal Recycling Value Chain[76]*

[76] Primary Research, Company Websites and MM – Recycling and Waste treatment Department Manual

*Please note that the list of entities provided is not exhaustive

7.4 Market Sizing & Waste Drivers

Chart 34 below illustrates the projected growth of the metal recycling market over the next five years, based on ferrous and non-ferrous waste generation estimates from sources beyond CDW.



Key Insights

- Metal waste is projected to grow at a CAGR of 4.23%, driven by construction, industrial activities, and automotive scrap recovery.
- Steel waste will remain the largest contributor, accounting for over 649,137 tons annually by 2028.
- The most significant growth driver is the manufacture of basic metals, which has increased at a CAGR of 13% over the past decade.
- The decline in metal waste generation from 2022 to 2023 is likely linked to reduced construction activity after the FIFA World Cup.

Chart 35: Metal Waste Generation (Tons, 2013-2028F)[77]*

Metal waste generation is primarily driven by increasing construction, industrial activities, and end-of-life vehicle processing are often less regulated and under reported. The steady growth in metal waste underscores the increasing availability of recyclable materials in Qatar and highlights the potential for expanding metal recovery services.

The factors contributing to the growth potential of the metal recycling industry, are discussed below:

Key Drivers of Metal Waste Generation

	Growth forecasts are driven by a sustained level of **construction activity** in Qatar, primarily for the development of urban and tourism infrastructure. Expected construction activities will be driven by government initiatives that boost tourism and will grow at a reduced rate compared to the years leading up to the World Cup.
	Industrial activity in Qatar has grown rapidly over the past decade. Particularly, manufacturing of basic metals and machinery have grown at a CAGR of 13% and 9% respectively from 2018 to 2022. Steel, Copper and Aluminum scrap is expected to be generated as a result of such activities.
	Sustainability targets, such as Qatar Steel's commitment to sustainability and its target of increasing recyclable scrap's share of total inputs to 35% serve as a driver for the addition of the waste to the recycling stream.

[77] NPC, Team Analysis

*Note: Estimates are indictive and based on regional benchmarks and assumed metal waste shares.

7.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis of Qatar's metal recycling sector, is outlined in the figure below:

Supplier Power – Low

Prices of scrap are standardized due to the commoditized nature of the product and London Metal Exchange (LME) rates and a large number of metal scrap companies exist in the market as suppliers. For steel, suppliers are numerous but are legally obligated to sell their ferrous scrap to Qatar Steel.

Threat of New Entrants – Moderate

New entrants require significant capital and established networks. Capacity exists for new players in the copper and aluminum markets, however, the ferrous metal market is a monopoly, creating high barriers and NOC required for exporting ferrous scrap limits new entrants.

Industry Rivalry – Low

The ferrous recycling market contains a single authorized entity (Qatar Steel), effectively eliminating competition. Companies such as NFCA and QD Recycling are major players in the copper and aluminum markets.

Threat of Substitutes – Moderate

Qatar currently exports a large proportion of copper products, reducing substitutes for the local recycling and downstream industries. Qatalum incorporates minimal scrap in its production process and the centralization of the recycled ferrous market ensures consistency, reducing the immediate threat of substitutes.

Buyer Power – Low to Moderate

Prices follow LME rates, leaving local buyers with limited negotiating power and Qatar Steel dictates margins for scrap companies. In the copper sub-sector, larger companies are not heavily reliant on recycled bullions and ingots for their production. Some local players have their own secondary copper factories.

Figure 18: Porters Five Forces Analysis – Metal[78]

Qatar's metal recycling sector is well developed in Qatar, featuring some entry barriers and market competition. Within this segment, supplier power is low, as scrap metal prices are standardized due to LME rates and dominant players in the aluminum and ferrous metal sectors, which feature Qatalum and Qatar Steel respectively. The threat of new entrants is moderate, as significant capital investment and is required. While potential exists in copper and aluminum recycling, the ferrous metal market remains a monopoly.

This market dynamic results in low rivalry, with market competition primarily focused on sourcing scrap materials. The threat of substitutes is moderate, as some buyers prefer virgin metals, limiting demand for recycled metals. However, the concentration of the aluminum and steel markets ensures consistent product quality, reducing immediate substitution risks. Low market competition and LME-linked pricing limits local buyer influence.

[78] Team Analysis, Primary Research

7.6 SWOT Analysis

The SWOT analysis of Qatar's metal recycling sector reveals growth opportunities and challenges for SMEs:

Strengths

Construction activities drive significant domestic demand for metal scrap. High aluminum and steel market concentration creates stable demand, creating a predictable supply chain. Copper scrap is widely available in the market, making up 80% of non-ferrous waste.

Weaknesses

Fabrication and extrusion companies are currently operating at low capacity, creating potential for downstream activities but limiting recycling potential. The requirement for a No Objection Certificate (NOC) for scrap exports may create challenges for local SMEs.

Threats

The pricing of scrap products is heavily influenced by international markets, creating significant volatility and challenging the profitability of local scrap companies. Scrap processors have minimal leverage to negotiate better prices or seek alternative buyers within the domestic market.

Opportunities

The local recycling industry lacks the capacity to effectively recycle a large percentage of copper waste generated in Qatar, as the current capacity is only able to achieve a recycling rate of 10%. Qatar Steel aims to increase the share of scrap in its inputs to 35%, leaving a market opportunity of ~145,000 tons at the current production levels.

Figure 19: SWOT Analysis – Metal[79]

Projected growth in Qatar's metal recycling sector is driven by strong domestic demand, particularly from the construction industry, with a projected CAGR of 4.23%. The sector's strengths also lie in stable demand for aluminum and steel due to market concentration, ensuring a predictable supply chain. Additionally, copper scrap is widely available, comprising 80% of non-ferrous waste, creating opportunities for processing and reuse. However, weaknesses include low-capacity utilization among fabrication and extrusion companies and the requirement for a NOC for scrap metal exports may restrict SME participation in international markets.

Key threats stem from limited control over input prices, which can be volatile. As a result, scrap processors have limited bargaining power. Potential in this sector lies in copper recycling, where only 10% of generated waste is currently recycled. Additionally, Qatar Steel aims to increase scrap usage to 35%, creating a market opportunity of ~145,000 tons at current production levels. A focus on high recycling capacity and navigating regulatory requirements could unlock growth potential for SMEs in the sector.

[79] Team Analysis, Primary Research

7.7 Key Takeaways

Qatar's metal recycling sector features opportunities for companies entering the collection, sorting and recycling segments. Key takeaways for SMEs to consider are outlined below:

- **Market Growth:** The market is projected to grow steadily at a rate of 4.23%, resulting in an estimated total paper waste generation of approximately 1 Mn tons by the end of 2028.
- **Scrap Composition:** Metal scrap generated in Qatar consists of 65% ferrous scrap and 35% non-ferrous scrap. Unsegregated scrap is collected, sorted, and shredded by scrap companies that act as suppliers for recyclers.
- **Steel Market Monopoly:** The ferrous recycling industry features a monopoly with Qatar Steel at its core, ensuring a stable demand for ferrous scrap processors. SMEs looking to enter the market as metal scrap collectors and processors require agreements with Qatar Steel to become certified suppliers.
- **Upstream Market Gap for Scrap Suppliers:** Qatar Steel aims to increase scrap utilization to 35% of total inputs but is currently operating at 25%. Based on their latest production figures, this presents a market gap of ~145,000 tons for scrap suppliers.
- **High Local Demand from Construction:** In 2022, local sales of rebars constituted ~72% of Qatar Steel's total revenue, owing to the high demand from the local construction sector.
- **Downstream Potential:** Steel fabrication companies are currently operating at about 50% capacity, indicating underutilization and potential for value addition.
- **Low Recycling Rate:** Qatar's non-ferrous recycling industry produces 9,000 tons of primary products, covering 15% of total waste. Qatalum recycles 7,000 tons of aluminum scrap, just 1% of its total production. In 2023, 259,000 tons of copper waste were generated, with only 24,000 tons recycled, reflecting a 9.3% recycling rate and significant growth potential.
- **Market Competition:** The copper recycling market is less centralized than those of steel and aluminum, with players such as NFCA, QD Recycling, and Al Wajba Alloys. This allows for more competition and reduces barriers for SMEs to enter the market.
- **Copper Market Gap:** Potential exists in the market for new entrants to establish vertically integrated operations, which include collection, scrapping, and recycling activities, to cater to the domestic and international demand for copper ingots and bullions (HS code 740329).

8. Glass

8.1 Overview of Glass Waste

Glass recycling is the process of converting discarded glass waste from sources such as construction, demolition, and imported beverages. Unlike many other materials, glass can be recycled endlessly without any loss in quality or purity. The recycling process begins with sorting and cleaning to remove impurities and excess waste. The cleaned glass is then crushed into cullet, a high-quality raw material used in the production of new glass products alongside mineral raw materials.

Soda-lime glass is the most common type of glass waste and is fully recyclable. It is typically sorted by color into categories, as outlined below:

Types of Glass Waste	Recycled Glass - Applications
Clear (flint) glass – This glass is colorless and transparent; it is widely used for its aesthetic appeal and versatility in applications like food and beverage packaging and windowpanes.	***Beverage Bottling*** – **Flint, amber,** and **emerald** Glass is used by manufacturers and distributors of beverages for their bottling operations.
Green (emerald) glass – Emerald glass, with its distinctive green tint achieved through metal oxides, is used in high-end decorative pieces, luxury packaging, and jewelry displays for its vibrant, eye-catching appeal.	***Structural Glass*** – ***Flint*** glass is predominantly used in the production of windowpanes and doors. Recycled glass can also be combined with plastic to create fiberglass.
Brown (amber) glass – Amber glass, with its rich brown hue, blocks harmful UV light, making it ideal for bottling beverages, pharmaceuticals, and other light-sensitive products to preserve quality and shelf life.	***Medical Supplies*** – Pharmaceutical companies predominantly use recycled **amber** glass containers and ampules for their products.

Figure 20: Types of Glass Waste[80]*

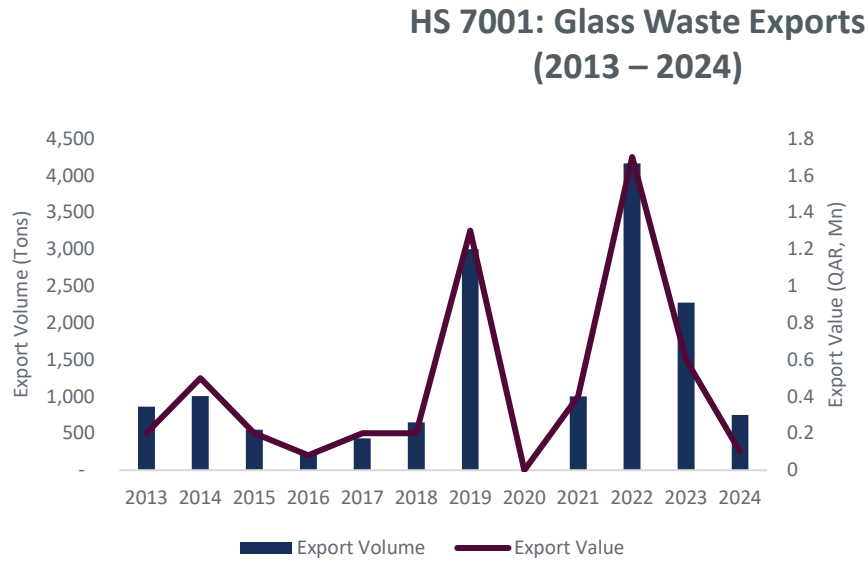
A key application of recycled glass is in the beverage bottling industry. Whilst glass bottles are being replaced by PET plastics for storing beverages, glass bottles still make up about 5% of the total packaging used by the industry[81]. Recycled glass is also used in the production of structural glass to manufacture products like windowpanes, glass doors, and partitions. Structural glass is a critical component in Qatar's construction industry, especially given the country's rapid urban and infrastructural development.

[80] Team Analysis, Primary Research, Glass Packaging Institute – Glass Recycling
[81] European Soft Drinks Association (UNESDA)

*Please note that the examples listed are illustrative and not exhaustive

8.2 Trade Overview

Chart 35 below highlights the growth trajectory of Qatar's glass waste exports over the past decade. In 2024, waste was primarily exported to the UAE, which constituted 42% of total exports.



Key Insights

- After fluctuating at relatively low levels, exports surged in 2019, reaching 3,001 tons (QAR 1.3 Mn).
- While there were no recorded exports in 2020, likely due to the COVID-19 pandemic, volumes rebounded significantly, peaking at 4,163 tons (QAR 1.7 Mn) in 2022 before declining to 750 tons (QAR 0.1 Mn) in 2024.
- This trend reflects a growing focus on exporting collected glass waste, driven by the absence of local recycling and strong export orientation within the sector.

Chart 36: HS 7001 Glass Waste Exports (2013-2024)[82]

Chart 36 below illustrates the trends in Qatar's imports of float glass, a critical raw material for structural glass production. Imports increased significantly from 26,618 tons (QAR 70.5 Mn) in 2013 to a peak of 54,980 tons (QAR 95.6 Mn) in 2021, before declining to 38,476 tons (QAR 66 Mn) in 2024. This reliance on imported float glass highlights potential for domestic manufacturers to substitute these imports with recycled glass, offering cost savings and reduced dependence on external suppliers.

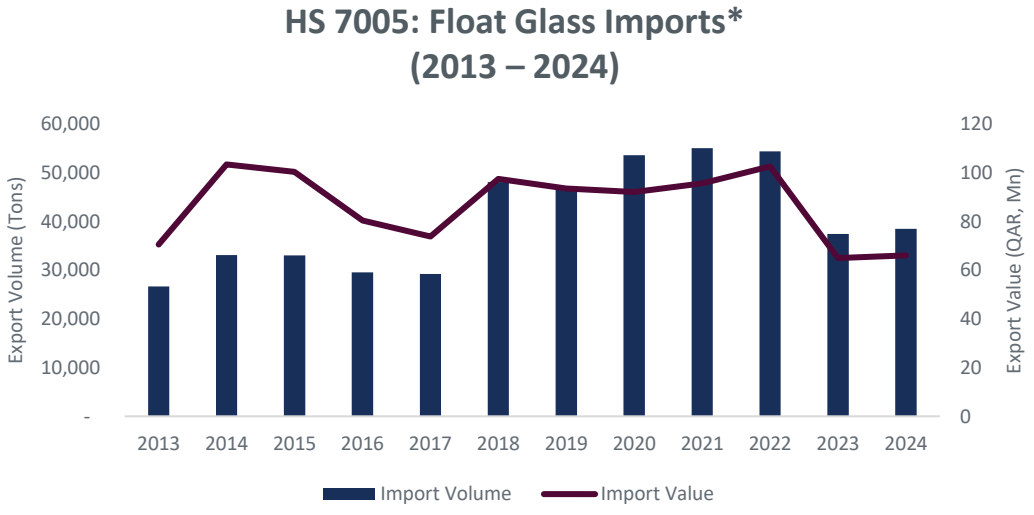


Chart 37: HS 7005 Float Glass Imports (2013-2024)[83]

[82] NPC – Foreign Trade Data
[83] NPC – Foreign Trade Data

*Qatar does not import glass waste due to the absence of recyclers. Instead, companies import float glass for glass pane production.

8.3 Value Chain Overview

The glass recycling value chain in Qatar involves 4 key stages as stated below illustrated in the figure below.

1. The **collection** process for glass waste in Qatar is managed by MM, alongside private sector companies such as MCC Waste Management and Seashore Waste Management. These organizations collect waste from both domestic and commercial sources across the country. Due to the lack of dedicated glass recycling infrastructure, most collected glass ends up in landfills, However, Glass Recycling Factory (GRF) has established agreement with MM to receive glass waste directly at their facilities.

   *This phase presents **moderate potential**, as it offers room for new entrants to establish glass collection systems. New entrants may need to partner with MM to secure direct access to glass waste and remain competitive.*

2. The **sorting** process for glass is currently absent in Qatar, as glass waste is often mixed with general waste, hindering the possibility of efficient recycling. The absence of dedicated sorting facilities limits the recovery of recyclable glass.

   *This phase presents **growth potential**, allowing new entrants to implement automated technologies such as optical sorting to efficiently sort recyclable glass.*

3. The **material processing and recovery** process is currently absent in Qatar's glass sector, with no established players actively recycling glass. The upcoming launch of Qatar's first glass recycling company, the GRF, is expected to fill this gap, opening opportunities for other SMEs to enter the market with minimal competition.

   *This phase offers **growth potential** due to the current lack of recycling infrastructure and the expected demand for glass recycling services, creating space for new players to establish operations and lead the market as it develops.*

4. **Downstream application** applications include the production of glass bottles, construction materials, and glass-based products, but this potential remains untapped due to the lack of upstream recycling infrastructure. The entry of GRF is expected to unlock these downstream possibilities, providing industries with a local source of recycled glass and reducing reliance on imports.

   *This phase currently offers **moderate potential** due to the absence of glass recycling operations in Qatar. However, since recycling maintains material quality, this phase holds potential once activities begin, offering advantages to recyclers with vertical integration.*

Figure 21: Glass Recycling Value Chain[84]*

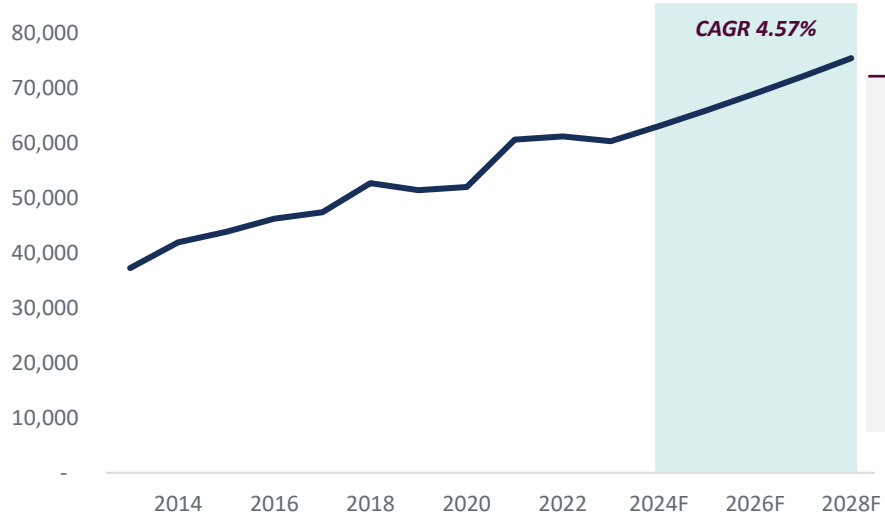
[84] Primary Research, Company Websites

*Please note that the list of entities provided is not exhaustive

8.4 Market Sizing & Waste Drivers

Chart 37 below illustrates the projected growth of the glass recycling market over the next five years, based on waste generation estimates from sources beyond MSW—particularly hotels and restaurants, which discard large volumes of glass beverage containers.

Glass Waste Generation (Tons, 2013 – 2028F)



Key Insights

- Glass waste is expected to grow at a CAGR of 4.57%, reaching 75,396 tons by 2028.
- Growth is fueled by the rising beverage servicing industry and restaurant activity in Qatar.
- The expanding glass waste stream highlights the need for advanced collection, sorting, and recycling systems to manage the growing volume efficiently.

Chart 38: Glass Waste Generation (Tons, 2013-2028F)[85]

Despite the increasing volume of glass waste, primary interviews reveal that no active glass recycling operations currently exist in Qatar. This presents potential to establish the glass recycling industry, leveraging the rising waste volumes to produce high-quality cullets for various industrial applications and reducing reliance on landfills.

The glass waste forecast is grounded in several key drivers, particularly the growth of the beverage servicing industry and restaurant activity, both of which are closely tied to glass waste production. The factors contributing to the increased generation of glass are discussed below:

Key Drivers of Glass Waste Generation

The **beverage servicing** industry's expansion, with a growth rate of 4.69% in Qatar, is a key driver of increased glass waste. As consumption of glass-packaged beverages like water, soft drinks, and energy drinks rises due to higher consumer demand, population growth, and tourism, more glass waste is generated.

The lack of glass recycling in Qatar has led to **large stockpiles of unrecycled waste** totaling more than 272,000 tons. These accumulated reserves offer new entrants in the recycling industry potential to start operations.

[85] Company Websites, NPC, Primary Research

*Note: Estimates are indictive and based on regional benchmarks and assumed glass waste shares.

8.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis of Qatar's glass recycling sector, is outlined in the figure below:

Supplier Power – Moderate

The limited number of suppliers dedicated to glass waste, such as MCC Waste Management and Seashore Recycling, provides them with some negotiating leverage.

Threat of New Entrants – High

High capital investment is required to establish recycling facilities, however, the market is still in its early stages, with only one new player entering.

Industry Rivalry – Low

The market currently lacks companies involved in glass recycling, with the first recycling facility, GRF, being set up at Al Afja.

Threat of Substitutes – Moderate

Alternative materials, such as plastic and aluminum, can substitute glass, but glass retains a strong position due to its recyclability and inertness.

Buyer Power – Moderate

Local glass factories rely on imports, while large companies like bottlers have some negotiating power due to their size.

Figure 22: Porters Five Forces Analysis - Glass [86]

The glass recycling sector in Qatar operates in a moderately competitive environment. Supplier power is moderate, driven by the limited number of suppliers specializing in glass waste, which gives them some negotiating leverage. These suppliers, such as MCC Waste Management and Seashore Recycling, contribute to the overall efficiency of the supply chain. The threat of new entrants is high as the market is in a nascent stage, with only one player preparing to enter the market.

Industry rivalry is low, as there are no established companies engaged in glass recycling yet, and the first facility is being set up at Al Afja. While the threat of substitutes is moderate, alternative packaging materials like plastic and aluminum can replace glass, the unique recyclability and inert properties of glass still maintain a strong market position. Buyer power is also moderate, as the primary buyers, local glass factories, rely on imports, while large companies, like Pepsi or Coca-Cola bottlers, may have more negotiating power due to their size.

[86] Team Analysis, Primary Research

8.6 SWOT Analysis

The SWOT analysis of Qatar's glass recycling sector reveals growth opportunities and challenges for SMEs:

Strengths

Glass is infinitely recyclable without quality loss, and the high-quality output from recycling in Qatar can support specialized applications like medical-grade products.

Weaknesses

The market is still in its early stages with limited infrastructure, no recycling factories, a lack of standardized glass collection systems, and heavy reliance on imported glass products.

Threats

Glass bottles are gradually being replaced with PET plastic and aluminum cans in the beverage industry. Glass waste exports have recently surged, presenting a threat to the local recycling industry.

Opportunities

Recycled glass can reduce import dependence for local manufacturers, while Qatar's growing tourism and beverage sectors are expected to increase glass waste generation, creating recycling demand.

Figure 23: SWOT Analysis – Glass[87]

Qatar's glass recycling sector is poised for growth, with a CAGR of 4.57%, driven by the endless recyclability of glass, which ensures its sustainability. Additionally, the high-quality output from glass recycling in Qatar can be used for applications such as medical products, providing further market potential. However, the market remains in its nascent stages, with limited infrastructure and a lack of recycling factories. The absence of standardized glass collection systems in public and commercial spaces also poses a challenge, alongside the heavy reliance on imports for glass products in Qatar. Key threats to the sector include material substitution, as glass bottles are increasingly being replaced by PET plastic and aluminum cans in the beverage industry.

Moreover, a rising trend in exporting glass waste, with exports surging from 1,000 tons in 2021 to 9,867 tons in 2023, threatens to undermine the local recycling industry, although more recently, exports decreased to 750 in 2024. In contrast, the growing tourism sector and increasing beverage consumption offer promising prospects for higher glass waste generation and enhanced recycling activities.

There is potential to reduce dependence on imports by utilizing recycled glass for beverage bottling and structural glass manufacturing. Since glass recycling preserves material quality, SMEs should consider establishing recycling capabilities while vertically integrating downstream activities.

[87] Team Analysis, Primary Research

8.7 Key Takeaways

Qatar's glass recycling sector features potential for companies entering the sorting and recycling segments. Key takeaways for SMEs to consider are outlined below:

- **Market Growth:** The market is projected to grow at a CAGR of 4.57% until 2028, with generated glass waste reaching 80,000 tons, driven by increased restaurant activity, beverage servicing and increased tourism in Qatar.

- **Sustainable, High-Quality Material:** Glass can be recycled endlessly without losing quality, making it a sustainable material. The glass produced from recycling can be used in applications such as beverage bottles, panes, and medicine.

- **Current Market Participants:** The current market participant, GRF, receives glass waste directly through an agreement with MM. New SMEs may need similar arrangements to compete in the collection segment.

- **Untapped Market:** The glass recycling market is untapped, with no recyclers operating in the sector at present. Companies across the value chain provide waste collection services, which can be leveraged by new market entrants to source waste.

- **Large Stockpiles:** Qatar's landfills contain large stockpiles of glass waste which can be utilized by recyclers as a readily available raw material source.

- **Vertical Integration Potential:** SMEs looking to enter the glass recycling space and set up facilities can establish partnerships with commercial entities that generate glass waste for direct collection, thereby increasing supply chain efficiency and lowering costs due to vertical integration.

- **Downstream Demand:** The demand for recycled glass is generated from the following industries:

    - Bottlers and distributors of beverages such as Pepsi and Coca-Cola.
    - Manufacturers of glass structures (windowpanes, doors, etc.) and fiberglass, such as Almuftah, Qatar Glass, and Gulf Glass Factory.
    - Pharmaceutical industry for bottles and ampoules of medicine.

9. Rubber

9.1 Overview of Rubber Waste

Rubber recycling involves reclaiming and reprocessing waste rubber into new products or raw materials. The tire industry, accounting for 65% of global rubber production, generates the largest amounts of rubber waste: the primary source of rubber scrap is end-of-life tires, which are tires that cannot be used anymore due to damage or wear. Rubber scrap constitutes 70% of an end-of-life tire's total weight[88]. Therefore, For the scope of this report, rubber recycling is examined specifically as tire recycling. Recyclable Rubber is classified into the following types and uses:

Types of Rubber Waste	Recycled Rubber - Applications
Tire Scrap – Waste tires are cut into three pieces and mainly exported. This involves a cutting and segmenting the tires, which is often used to reduce the volume of tires for easier handling, transportation, and further processing.	***Sports and Recreation*** – Recycled rubber is used in running tracks and gym flooring, as well as in playground mats and fitness equipment. These products offer excellent cushioning and shock absorption.
	Agriculture – Recycled rubber is used to produce items such as rubber mulch for landscaping and soil erosion control. This helps conserve moisture, reduce weed growth, and promote sustainable land management.
Rubber Scrap – Tire scrap is further shredded and processed to make rubber granules and powder, which is used in surfaces and insulation.	***Construction*** – Recycled rubber is used to create products such as rubberized asphalt, playground surfaces, and roofing materials.
	Automotive – Utilized in making various components like tires, floor mats, and seals. There are currently no tire manufacturing facilities in Qatar.

Figure 24: Types of Rubber Waste[89]*

Tires are typically recycled through mechanical recycling, where rubber products are shredded into smaller pieces. The shredded rubber is then separated from other waste generated during the shredding process, such as steel, and further processed into rubber granules, which can be used as raw material for new rubber applications. It should be noted that recycling used tires is a challenge compared to other waste types, mainly due to the large volume of tires produced, their durability and environmental issues associated with these materials.

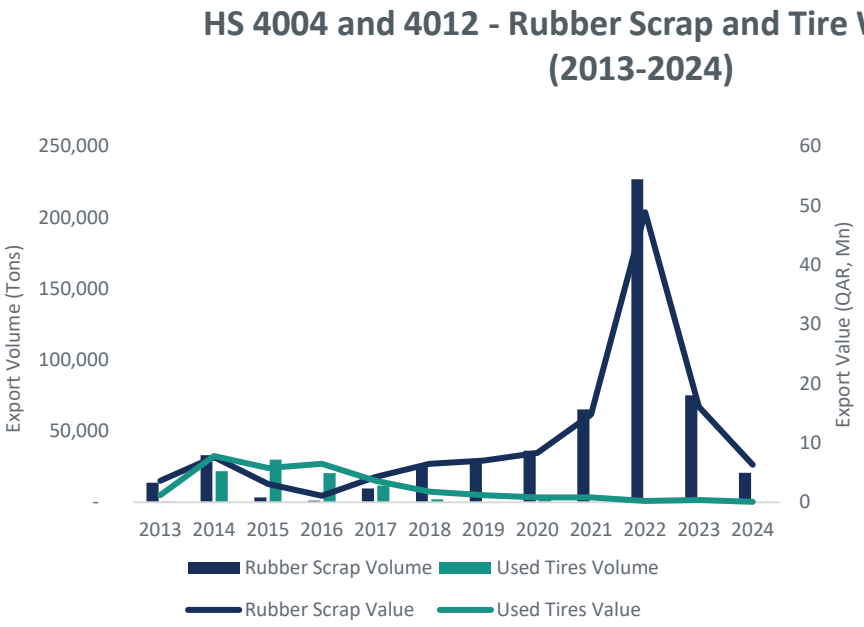
[88] MDPI – End-of-Life Tires

[89] Company Websites, Team Analysis, Primary Research and MM – Recycling and Waste treatment Department Manual

*Please note that the examples listed are illustrative and not exhaustive

9.2 Trade Overview

Qatar's rubber recycling efforts are reflected in its tire and rubber scrap export trends, shown in chart 38 below.

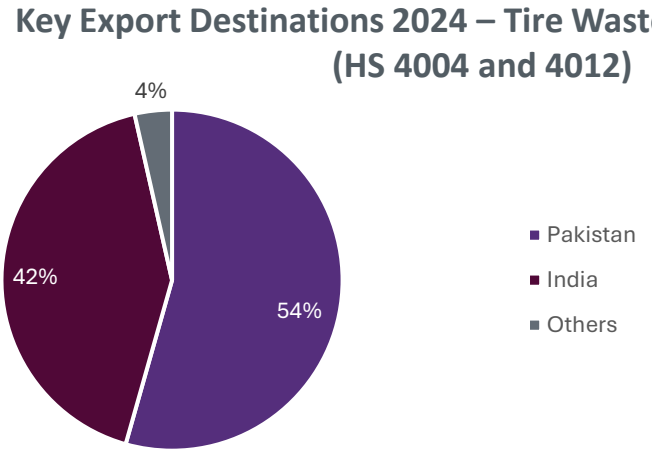


Key Insights

- The share of used tire exports has declined over the years as recycling companies increasingly convert end-of-life tires into rubber scrap for export.
- This shift is evident in the rising absolute volumes of rubber scrap exports and their growing share of total rubber-related exports.
- The correlation between tire treatment and rubber scrap exports is most prominent in 2022, when a record 125,000 tons of tires were treated, resulting in approximately 226,875 tons (QAR 48.9 Mn) of rubber scrap exported.

Chart 39: HS 4004 and 4012 - Tire Waste and Rubber Scrap Exports (2013-2024)[90]

Pakistan and India remain the primary export markets for Qatar's rubber scrap and tire waste, accounting for 54% and 42% of exports in 2024, respectively. These export trends highlight the country's focus on improving tire recycling efficiency and its strong reliance on key regional trade partners.



Key Insights

- Pakistan is the primary export destination, accounting for 54% of total exports, followed by India at 42%.
- Combined exports to "Other" destinations, including Brazil, Indonesia, Kuwait, and Saudi Arabia, make up only 4% of the total.

*Chart 40: Key Export Destinations – Tire Waste and Rubber Scrap (2024)***[91]

[90] NPC – Foreign Trade Data
[91] NPC – Foreign Trade Data

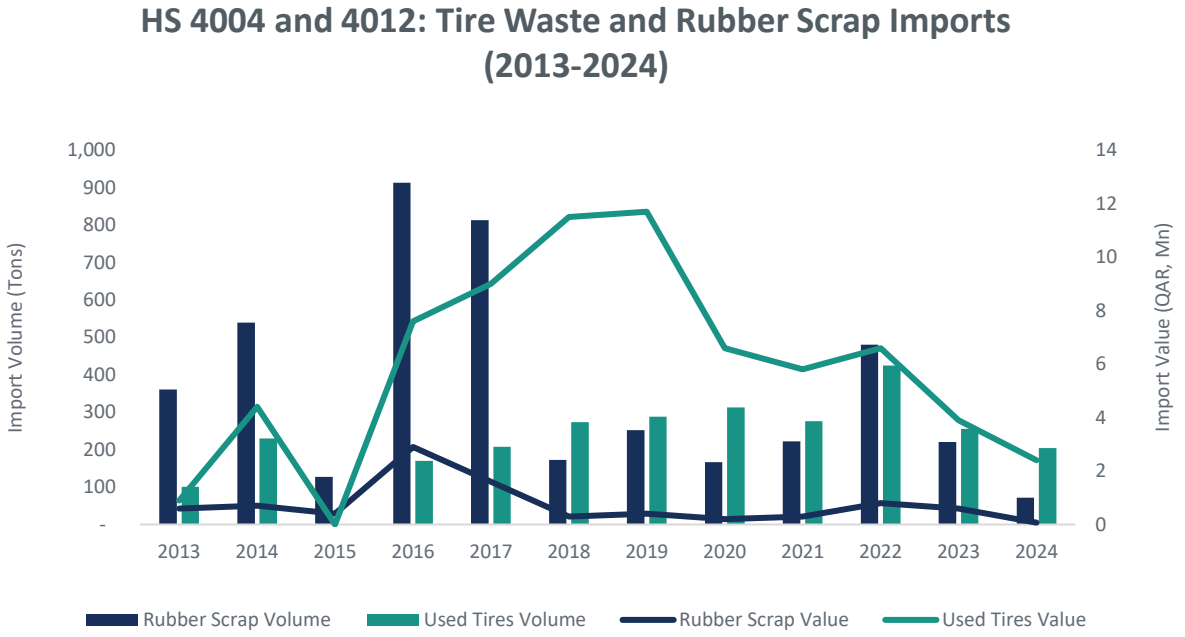


Chart 41: HS 4004 and 4012: Tire Waste and Rubber Scrap Imports (2013-2024)[91]

Chart 39 highlights historical trends in Qatar's rubber scrap and used tire imports. Rubber scrap imports dominated the landscape until 2017, reflecting strong local demand. Despite a notable surge in 2016 and 2017, imports remained relatively steady before declining significantly after 2017. This decline, coupled with increasing export volumes, suggests that Qatar is meeting local demand through the treatment of domestic tire waste.

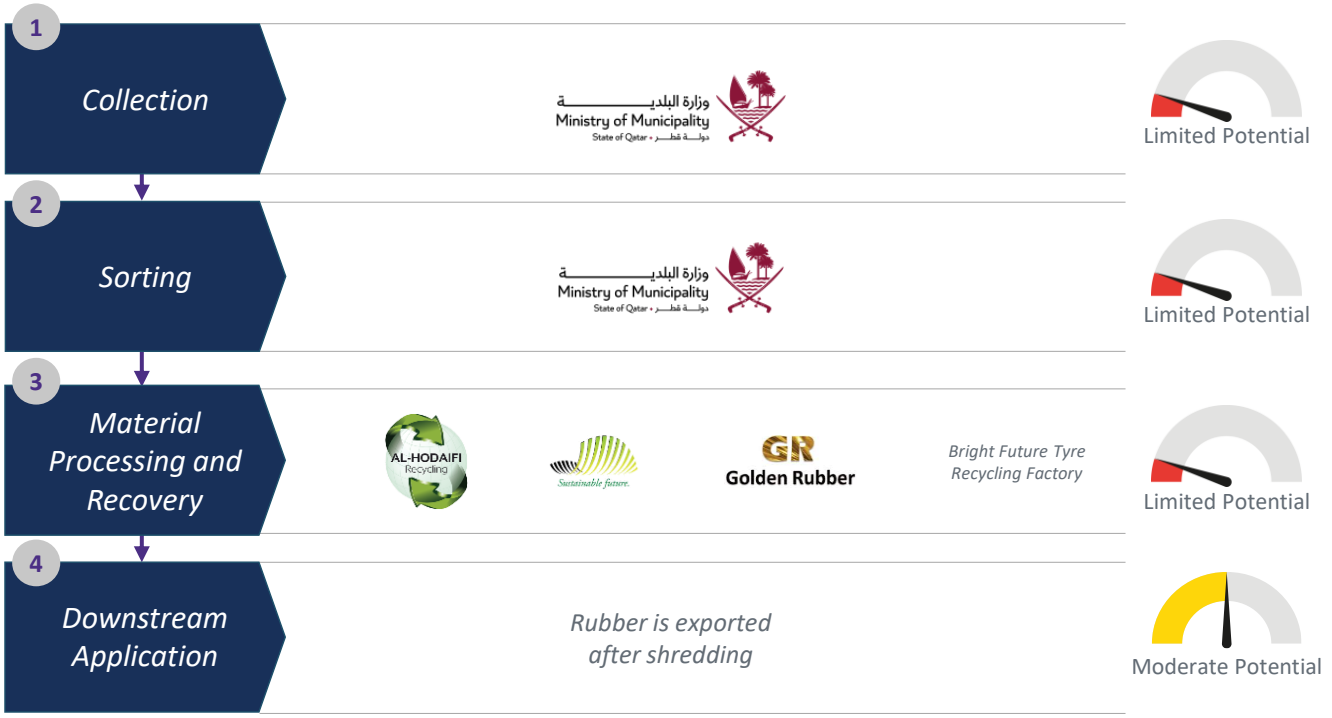
In contrast, used tire import volumes have shown minimal variation over the past decade, despite fluctuations in price (reflected by total Used Tires Value in Chart 38), indicating stable demand for imported used tires within the local market. These trends reflect Qatar's progress in improving tire recycling practices and reducing reliance on imports.

Rubber scrap exports have increased steadily over the past 10 years, sharply increasing in 2022 at 226,875 tons (worth QAR 48.9 Mn), likely due to the increased economic activity caused by the Qatar world cup.

[91] NPC – Foreign Trade Data

9.3 Value Chain Overview

The rubber recycling value chain in Qatar involves 4 key stages as stated below illustrated in the figure below.



1. The **collection** of rubber waste in Qatar is managed by MM, with rubber waste primarily being disposed of at three key landfill sites: Umm Al Afai, Rawdat Rashid, and Mesaieed. However, with the exhaustion of the stockpile at Umm Al Afai, and dwindling stockpiles at the remaining two sites, recycling companies now face a raw material shortage, removing a critical input for their operations.

   *This phase offers **low potential**, due to the exhaustion of stockpiles at one of the three major tire disposal sites.*

2. The **sorting** process for rubber waste is carried out at recycling facilities, where waste tires are segregated into appropriate categories for processing. He sorting process includes shredding, screening for metals via a magnetic separator and separation of Rubber crumbs and textile through sieving. The industry relies on minimal sorting, with standardized outputs being the norm, and there is limited opportunity for innovation in this area due to low material differentiation.

   *This phase offers **low potential** due to the lack of variety in rubber waste and simple sorting process, limiting opportunity for innovation.*

3. The **material processing and recovery** process in Qatar is led by key players such as Modern Recycling, Bright Future, Golden Rubber, and QMFT, who compete in a saturated market to produce recycled rubber in the form of tire scrap, granules, and powder for use in various rubber products. With the depletion of stockpiles at two of the three major tire disposal sites, recycling companies are now facing a raw material shortage, limiting their operations and access to a critical input for their processes.

   *This phase offers **low potential** as the market is already saturated and constrained. The challenges in sourcing sufficient input leave little room for significant expansion or new entrants in the recycling process.*

4. The **downstream application** market for recycled rubber in Qatar primarily involves the use of recycled rubber products like granules and powder in industries such as construction and manufacturing. However, the post-World Cup slowdown in development and construction activities has significantly reduced the demand for these recycled rubber products. As a result, the growth potential of the rubber recycling sector is diminished, with insufficient new rubber waste generation making it difficult to sustain or expand the market.

   *This phase offers **moderate potential**. While the market is saturated and facing raw material shortages, there is still room for recycled rubber exported to be diverted to local use.*

Figure 25: Rubber Recycling Value Chain[92]*

[92] Company Websites, Primary Research and MM – Recycling and Waste treatment Department Manual

*Please note that the list of entities provided is not exhaustive

9.4 Market Sizing & Waste Drivers

Chart 40 below illustrates the projected growth of the rubber recycling market over the next 5 years, based on waste generation of used rubber tires.

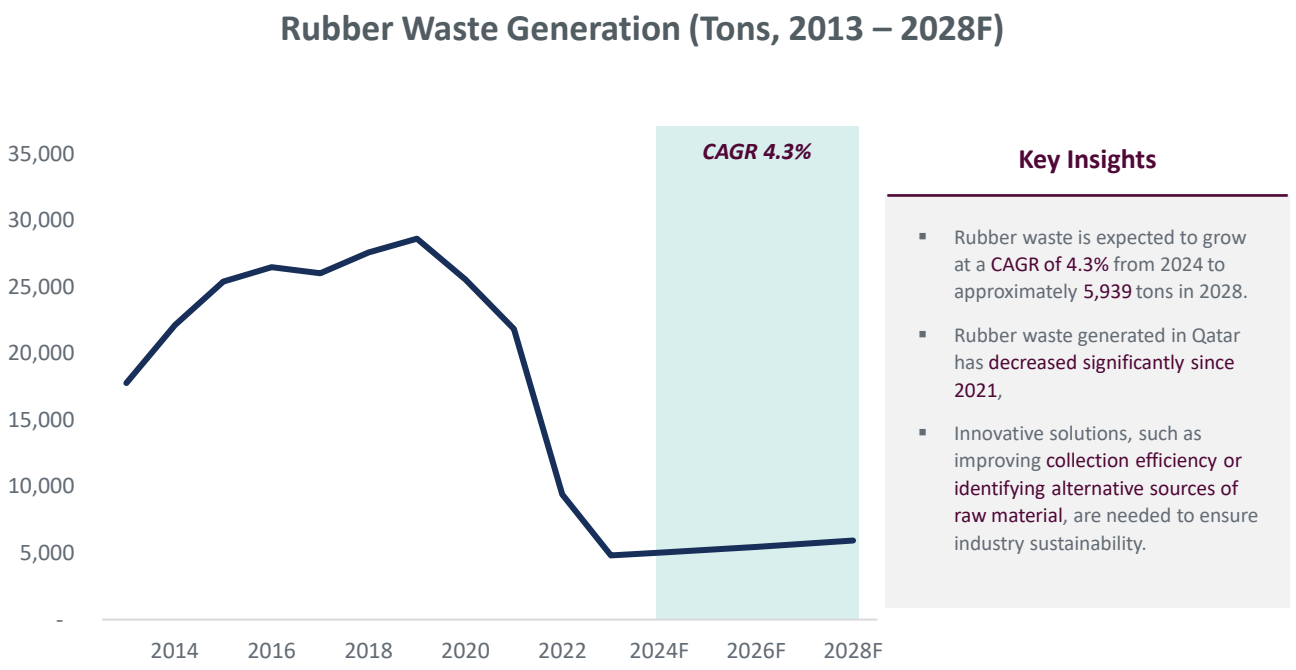


Chart 42: Rubber Waste Generation (Tons, 2013-2028F)[93]*

The largest source of rubber scrap in Qatar is end-of-life tires, which are primarily disposed of in three landfill sites: Umm Al Afai, Rawdat Rashid, and Mesaieed. While the rate of tire waste generation has declined rapidly, the treatment rate has seen exponential growth from 2020 to 2022. During these years, the volume of treated tire waste surpassed the annual generation rate, reflecting efforts to address legacy stockpiles and improve recycling practices. This progress demonstrates significant advancements in Qatar's tire waste management and sustainability initiatives.

Despite the steady growth forecasted for the industry, the limited volume of newly generated waste poses challenges for the recycling industry. The key drivers of rubber waste in Qatar are discussed below:

Key Drivers of Rubber Waste Generation

One of the primary drivers of rubber waste growth is the **increasing number of vehicles** in Qatar. Over the past decade, the number of vehicles per capita has shown a steady increase of 2.4% annually. This trend, coupled with modest population growth, suggests that the total number of vehicles on the road will continue to rise.

Rubber recycling in Qatar relies heavily on depleted stockpiles of **waste tires**, previously boosted by government incentives. With limited annual waste generation, the industry faces sustainability challenges moving forward.

[93] NPC, Team Analysis

*Note: Estimates are indictive and based on regional benchmarks and assumed rubber waste shares.

9.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis of Qatar's rubber recycling sector, is outlined in the figure below:

Supplier Power – Moderate

Suppliers, mainly scrap dealers, have limited bargaining power due to the presence of only a few key players in the recycling market.

Threat of New Entrants – Moderate

Entry into the sector is challenging due to declining raw material availability, intense competition, and product standardization.

Industry Rivalry – High

High competition exists among 4–5 established players who source waste from the same scrap yards, with minimal product differentiation.

Threat of Substitutes – High

The export of rubber scrap poses a major challenge to local recycling facilities, especially with low domestic demand.

Buyer Power – Low

Buyers have low bargaining power because most rubber scrap is exported due to low local demand for rubber granules after the World Cup.

Figure 26: Porters Five Forces Analysis - Rubber [94]

Qatar's tire recycling sector operates in a highly competitive environment with moderate supplier power. Scrap dealers collect used tires and either supply them to local recycling facilities or export the rubber waste, but the presence of only a few key players limits their bargaining power. The threat of new entrants is moderate, as the sector is facing a decline due to the limited availability of raw materials. Additionally, high competition among existing players and product standardization create further barriers to entry.

Industry rivalry is high, with four to five established players sourcing waste from the same scrap yards. The lack of product differentiation and the relatively simple process of converting tire waste into rubber scrap further intensify competition. The threat of substitutes is significant, as exporting rubber scrap remains a major challenge for local recyclers, particularly due to low domestic demand. Buyer power is low, as most rubber scrap is exported due to low local demand for rubber granules after the World Cup.

[94] Team Analysis, Primary Research

9.6 SWOT Analysis

The SWOT analysis of Qatar's rubber recycling sector reveals growth opportunities and challenges for SMEs:

Strengths

Government incentives have historically supported the sector, and export-driven sales to markets like India and Pakistan provide a revenue stream beyond Qatar's limited domestic demand.

Weaknesses

The industry relies heavily on previously untreated tire stockpiles, and low ongoing waste generation prevents recycling facilities from operating at full capacity.

Threats

Depleting local tire stockpiles and growing competition from international buyers for scrap tires threaten the sector's long-term raw material security.

Opportunities

Importing waste tires from neighboring countries can help recycling companies secure a consistent raw material supply and sustain operations.

Figure 27: SWOT Analysis – Rubber[95]

Qatar's rubber recycling sector has historically benefited from government support, with financial incentives like the QAR 250 per ton scheme significantly driving waste tire processing efforts. The sector also maintains an export-oriented focus, with a large share of recycled rubber products such as granules, powder, and tire scrap being sold to markets in India and Pakistan, helping sustain business despite limited domestic demand. However, the industry heavily depends on previously untreated tire stockpiles from key sites such as Umm Al Afai, Rawdat Rashid, and Mesaieed, which are rapidly depleting, causing low-capacity utilization as ongoing waste generation is insufficient to keep facilities running at optimal levels.

The sector faces critical threats, including the depletion of raw material sources, as Umm Al Afai's stockpile is already exhausted, and other sites are nearing depletion, posing long-term sustainability concerns. Additionally, competition for scrap tire exports is rising, meaning SMEs entering the market must compete with international buyers to secure raw materials.

Despite these challenges, potential exists for Qatari recyclers to import waste tires from neighboring countries like Saudi Arabia to ensure a steady raw material supply, helping sustain operations and mitigate the local shortage.

[95] Team Analysis, Primary Research

9.7 Key Takeaways

Qatar's rubber recycling sector features moderate potential for companies entering the downstream segment. Key takeaways for SMEs to consider are outlined below:

- **Market Growth:** Rubber waste generation is projected to grow at a CAGR of ~4.3%, reaching ~5,939 tons of rubber waste generated by 2028.
- **Locally Sourced Waste:** Qatar has imported minimal quantities of rubber waste since 2020. The industry currently relies exclusively on local stockpiles of waste tires at the Umm al Afai, Rawdat Rashid, and Mesaieed yards.
- **Low Domestic Demand:** Following the slowdown in development and construction activity post-World Cup, the demand for rubber granules has fallen.
- **Low Supply:** Out of the three waste disposal sites, the rubber waste at Umm al Afai has been depleted. The supply of waste from the other two sites is also expected to finish in the upcoming years. Despite the expected growth, Qatar does not generate enough rubber waste on an annual basis to sustain current players.
- **Export Focus:** Players in the rubber recycling value chain have identified potential in shredding tire scrap and exporting it, rather than supplying it to local recyclers. Although this approach involves a relatively low initial investment, the current scarcity of tires poses a challenge for new SMEs looking to establish operations.
- **End Use:** Due to the lack of tire manufacturing facilities in Qatar, rubber granules are mainly utilized in sports and recreational applications. The primary products made from these granules are various types of rubber floor mats. However, the volume of rubber utilized by this industry is quite low due to a lack of demand.
- **Import Potential:** SMEs can set up trading operations and import used tires and rubber scrap to supply waste to Qatari recycling companies, as domestic rubber waste sites are depleting. However, the slowdown in domestic demand reduces the viability of this segment.

10. E-Waste

10.1 Overview of E-Waste

Rapid advancements in technology combined with the relative affordability of electronic devices have led to e-waste becoming the fastest-growing solid waste stream in the world. E-waste has increased at triple the pace of population growth with 62 Mn tons of e-waste produced globally in 2022. Despite the importance of recycling E-waste owing to this high rate of waste generation, only 12.8 Mn tons, or ~22.3% of total generated e-waste, was formally collected and recycled in an environmentally sound manner[96].

In Qatar, recycling facilities recycle e-waste to generate the following materials:

Types of E-Waste

Electrical and Electronic Equipment – E-waste is generated when electrical and electronic devices are discarded.

- ***Precious Metals:*** Metals such as gold, silver, and platinum can be found in circuit boards, hard drives and other electrical equipment waste.
- ***Base Metals:*** Copper, aluminum, iron, steel, and other base metals are found in electronic components such as wires, casings, and heat sinks.
- ***Plastic:*** Plastics are extracted from casings, cables, and insulation materials.
- ***Glass:*** Glass is primarily found in monitors and screens.

Lead-Acid Batteries

- ***Battery Materials*** – Lead-acid batteries are broken down to collected lead, mercury, cadmium and other materials.

Recycled E-Waste - Applications

Lead Metal – Extracted by smelting the lead components of the lead-acid batteries. It is used in the production of new batteries, lead-based alloys, and radiation shielding.

Sulfuric Acid – Neutralized and treated during lead-acid battery recycling; it can be reused in industrial processes or converted into sodium sulfate, which is used in detergents and glass manufacturing.

Polypropylene (PE) Granules – Retrieved from the plastic casing of lead-acid batteries, cleaned, and reprocessed into granules.

Figure 28: Types of E-Waste[97]*

In Qatar, e-waste recycling primarily consists of lead-acid batteries, while the recycling of electrical and electronic equipment remains minimal.

[96] United Nations

[97] Suhail Battery Recycling Factory , Team Analysis, Primary Research

*Please note that the examples listed are illustrative and not exhaustive

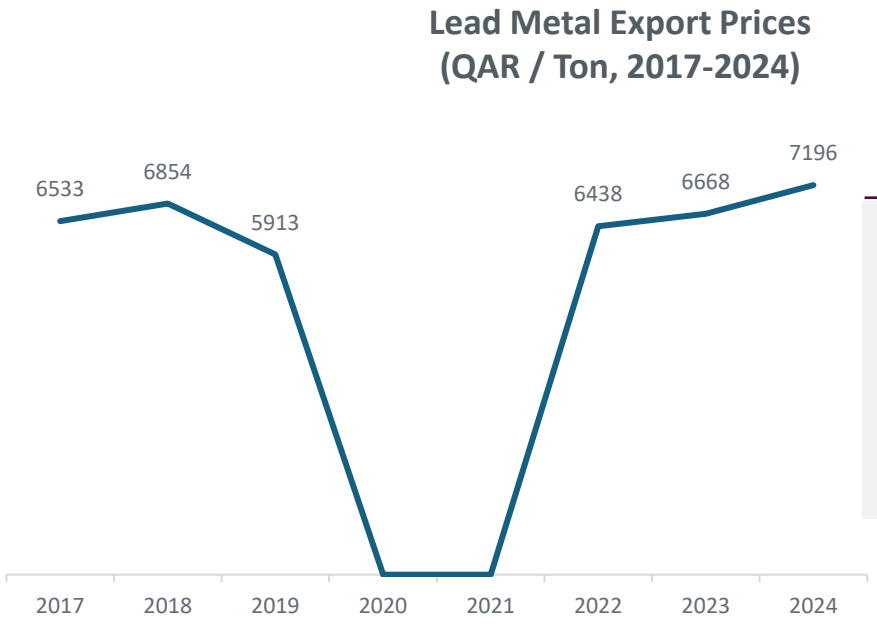
10.2 Trade Overview

Trade analysis of e-waste and battery materials in Qatar reveals limited activity in the trade of these materials under HS codes 8548 (E-waste) and 8549 (lead acid Battery Waste). In 2018, exports of e-waste ceased and import volumes were immaterial[98], suggesting that either WEEE is either internally disposed of, stockpiled, or their trade is limited due to the Basel Convention, which restricts the trade of many types of e-waste.

In contrast, while there are no notable imports or exports of lead-acid battery waste, the downstream market for lead metal (HS code 7801)—the primary and most valuable output of battery recycling—is more dynamic. Recyclers in Qatar export recovered lead primarily to India, the UAE, and Pakistan. This suggests that material recovery, particularly lead, is functioning as an export-driven market, even as the broader recycling ecosystem for other e-waste and battery materials may remain underdeveloped.

Pricing Analysis

Chart 41 below illustrates Qatar's export prices for lead metal (HS code 7801), showing relative stability from 2017 to 2024, except in 2020 and 2021 when no exports occurred. This price stability presents favorable conditions for SMEs aiming to export this product.



Key Insights

- There were no recorded exports in 2020 and 2021, likely due to pandemic-related disruptions, shutdowns in local processing, or export restrictions.
- Lead export prices rebounded to QAR 6,438/ton in 2022, rising steadily to QAR 6,668 in 2023 and QAR 7,196 in 2024 indicating growing value of lead exports

Chart 43: Lead Metal Export Prices (QAR / Ton, 2017-2024)[99]

[98] ITC Trademap
[99] NPC – Foreign Trade Data

10.3 Value Chain Overview

The e-waste recycling value chain in Qatar involves 4 key stages as stated below illustrated in the Figure below.

1. The **collection** of e-waste in Qatar is primarily led Suhail Battery Recycling Factory (formerly Rassas Battery Recycling Factory). This company collects end-of-life batteries from landfills and auto scrapyards. However, the infrastructure for collecting WEEE remains underdeveloped, and the scale of collection operations is limited. The collection process is primarily focused on batteries, with WEEE scrap generally being exported or discarded after sorting.

*This phase offers **growth potential**. The limited infrastructure for WEEE collection leaves room for new entrants to capture more waste locally. SMEs must establish efficient, well-coordinated logistics to capitalize on this opportunity.*

2. Once collected, e-waste undergoes **sorting** to separate valuable components, such as lead metal, from other materials. In the case of batteries, sorting identifies recyclable metals and components, but limited advanced technology in Qatar reduces efficiency and volume. Lead metal, being the most valuable output, is segregated for further processing, while the remainder is typically exported or discarded after sorting due to the absence of local downstream infrastructure for recycling parts.

*This phase offers **moderate potential** due to the lack of collection and sorting mechanisms in Qatar. Investing in sorting systems could enhance material recovery, however, e-waste is difficult to recover once contaminated.*

3. Qatar's **material processing and recovery** process focuses on lead-acid batteries, recovering lead metal for battery production and industry use. Only 17% of lead waste from batteries has been recycled in the last five years, highlighting a market gap. Recycling of other WEEE remains undeveloped due to the lack of local capability to convert e-waste into reusable components, limited downstream applications, and insufficient volumes for scalable operations.

*This phase offers **limited potential** due to the lack of demand for recycled e-waste and insufficient volume of e-waste to justify scalable operations.*

4. The **downstream application** segment for lead-acid batteries includes Suhail Battery Factory, Q Power Battery, and Qatar Battery Factory, with a combined annual production capacity of approximately 900,000 batteries[100]. However, no local player converts recycled lead metal into battery plates, a critical input for battery production, resulting in its export to countries like India and the UAE for further processing. This bottleneck in the value chain, limits the development of a fully integrated battery manufacturing ecosystem, while low demand and technological gaps further hinder downstream applications for recycled e-waste.

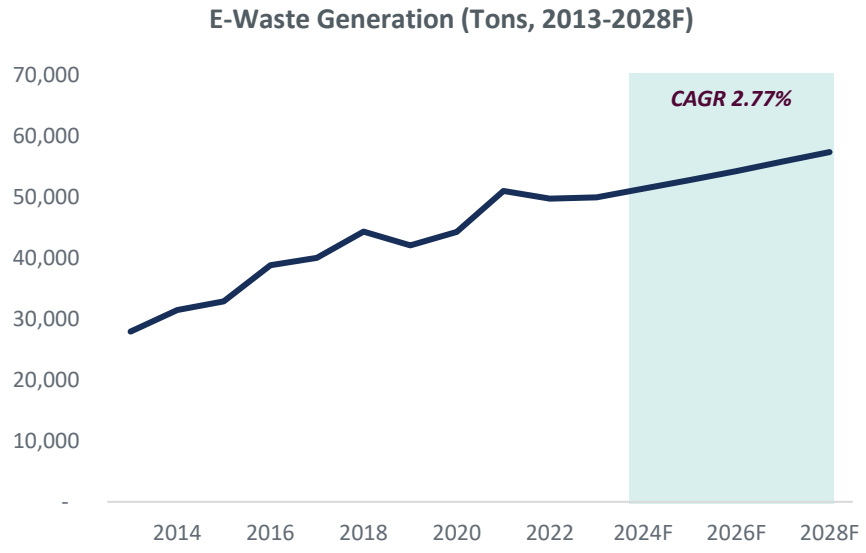
*This phase offers **moderate potential**, as the gap in local lead plate production creates a potential market for new players, while the lack of demand for recycled e-waste materials limits the overall growth of the sector.*

Figure 29: E-Waste Recycling Value Chain[101]*

[100] Company Websites, Primary Research
[101] Company Websites, Primary Research
*Please note that the list of entities provided is not exhaustive

10.4 Market Sizing & Waste Drivers

Chart 42 below illustrates the projected growth of the E-Waste recycling market over the next 5 years, based on waste generation forecasts.



Key Insights

- WEEE and lead waste is forecasted to grow at a CAGR of 2.77%, to 50,430 tons and 3.16% to ~6,900 tons by 2028, respectively.
- WEEE volumes previously grew from 30,000 tons in 2013 to nearly 50,000 tons in 2023.
- With the adoption of Industry 4.0 and smart automation, industrial electronic waste is on the rise.
- The growing e-waste stream is driven by expected increase in the automotive sector and GDP per capita growth.

Chart 44: E-Waste Generation (2013-2028F)[102]*

In Qatar, e-waste recycling remains a nascent industry. According to the UN, Qatar produced 16.2 kg per capita of e-waste in Qatar for a total of 44,000 tons or 3% of total domestic waste. This percentage has remained consistent over the historical period considered.

The factors driving the generation of e-waste in Qatar are discussed below:

Key Drivers of E-Waste Generation

One of the primary drivers of e-waste growth, is the **increasing number of vehicles** in Qatar. Over the past decade, the number of vehicles per capita has increased 2.4% annually and is expected to continue growing at 1.7%. Since vehicles require a battery replacement every three years, the steady increase in vehicles directly translates to a higher volume of disposed batteries.

Another driver of e-waste generation is the **expected increase in Qatar's GDP per capita** over the next five years, as there is a direct correlation between GDP per capita and per capita WEEE generation. High rates of consumer electronic usage and rapid technological advancement leads to increased disposal of outdated of devices.

[102] NPC, Team Analysis

*Note: Estimates are indictive and based on regional benchmarks and assumed e-waste waste shares. Many organizations discard or store old electronics outside formal e-waste channels, leading to stockpiling, data security concerns, or informal dumping.

10.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis of Qatar's E-Waste recycling sub-sector, is outlined in the figure below:

Supplier Power – High

The lack of a formal e-waste collection system gives suppliers, such as e-waste producers and scrapyards, strong bargaining power.

Threat of New Entrants – Moderate

Entry barriers exist due to specialized equipment and regulatory compliance, but the sector's nascent stage attracts new players.

Industry Rivalry – Moderate

The battery recycling segment has few competitors vying for waste from scrapyards, while the WEEE segment involves a small number of players focused on collection and sorting.

Threat of Substitutes – Low

There are limited substitutes for e-waste recycling, though lead plate imports act as a partial alternative in battery recycling.

Buyer Power – Low

Local demand for recycled e-waste is low, with most output exported, giving buyers little bargaining power.

Figure 30: Porters Five Forces Analysis – E-Waste [103]

Qatar's e-waste recycling sector operates in a developing environment with high supplier power. Due to the absence of a formal collection system, e-waste producers and scrapyards hold significant bargaining power over recyclers. The threat of new entrants is moderate, particularly in the battery recycling segment, where specialized equipment and compliance with Basel Conventions create entry barriers. Handling WEEE also involves hazardous materials, but the industry's early stage encourages new players to enter.

Industry rivalry is moderate, with only a few players competing for e-waste collection and sorting, especially in the battery segment, where competition is focused on sourcing from scrapyards. The threat of substitutes is low, as there are limited alternatives to recycling e-waste in Qatar; however, lead plate imports act as a substitute in battery recycling. Buyer power is low, as local demand for recycled e-waste is minimal, with consumers favoring new products.

[103] Team Analysis, Primary Research

10.6 SWOT Analysis

The SWOT analysis of Qatar's e-waste recycling sub-sector reveals growth opportunities and challenges for SMEs:

Strengths

Qatar generates a high volume of e-waste per capita, and the availability of waste batteries from scrapyards and vehicles provides a steady supply of recyclable materials.

Weaknesses

Collection rates remain low due to lack of awareness and formalized collection systems. The absence of local lead plate production means recycled lead metal cannot be utilized domestically.

Threats

The presence of established international markets with advanced recycling infrastructure, such as China and India, presents a challenge for SMEs looking to establish themselves in the market.

Opportunities

Potential exists for SMEs to establish lead plate production facilities, develop better collection mechanisms for WEEE, and partner with international markets like Japan and South Korea to export e-waste for recycling.

Figure 31: SWOT Analysis – E-Waste[104]

The SWOT analysis highlights several strengths for SMEs in the WEEE and battery recycling sector, including high per capita e-waste generation (16.2 kg) and a steady supply of waste batteries from the country's large vehicle base, ensuring a consistent availability of recyclable materials. However, challenges persist, such as low collection rates driven by poor public awareness and limited formal collection systems, which hinder waste recovery. The market also features an incomplete value chain, as there are currently no local factories producing lead plates for battery manufacturing, preventing the full utilization of recycled lead metal. Furthermore, high initial investment costs create an entry barrier for SMEs looking to enter the sector.

Opportunities exist for SMEs to fill the downstream gap by establishing lead plate production facilities and developing formal collection systems. Export partnerships with countries like Japan and South Korea also present a viable route to leverage their advanced recycling infrastructure. However, Qatar faces strong competition from established international recycling hubs like China, Vietnam, and India, which benefit from technical expertise, economies of scale, and well-developed processing capacity, making it difficult for Qatar to position itself competitively as a large-scale recycling hub.

[104] Team Analysis, Primary Research

10.6 Key Takeaways

Qatar's e-waste recycling sector features potential for companies entering the collection segment. Key takeaways for SMEs to consider are outlined below:

- **Key Players:** Recycling facilities for lead acid batteries include Suhail Battery Recycling Factory and Volta for Battery Recycling, which primarily produce lead metal. There are no recyclers of WEEE in Qatar.
- **Vertical Integration in Battery Recycling:** Disposed batteries are collected by recycling companies from scrapyards, after which they are recycled.
- **Downstream Battery Applications:** Qatar has a number of companies producing lead acid batteries, which include Suhail Battery Factory, Qatar Battery, and Q-Power Battery. However, these companies are engaged in assembly activities and import individual battery components, including lead plates, from countries such as Saudi Arabia.
- **Battery Recycling Market Gap:** The lead metal produced as a result of battery recycling is exported as there are no manufacturers in Qatar who can utilize recycled lead to produce lead plates that can be used in batteries. SMEs looking to enter the market can take advantage by bridging this gap in the value chain.
- **WEEE Collection Efforts:** Companies like MCC Waste Management and Al Haya Waste Management handle e-waste collection and sorting, for exports. Non-waste management entities such as Al Meera Commercial Group also contribute to collection efforts. However, due to the market lacking a formalized mechanism for the collection and processing of e-waste, the waste collection volumes are low and inconsistent.
- **WEEE Global Trade Dynamics:** Global trade data shows that Japan, India, and South Korea account for ~56% of total global WEEE imports. These countries have a high degree of technological sophistication which allows them to scale operations to recycle large volumes of electronic waste.
- **Export Potential for SMEs:** Potential exists for SMEs in the collection and sorting segments of the value chain. Establishing partnerships between e-waste collection companies and trading companies can help SMEs integrate effectively into the market by setting up operations focused on exporting e-waste to markets such as India and Japan due to their existing infrastructure for recycling this waste.
- **Emerging Opportunities:** Critical metals recovery from waste are gaining traction, particularly in electronics, such as indium, gallium, rare earth elements[105].

[105] Qatar's Waste and Recycling Landscape: An Overview

11. Recycled Aggregates

11.1 Overview of Recycled Aggregates

Aggregates, or concrete aggregates, are materials used in construction, such as sand, gravel, crushed stone, and asphalt. This is primarily generated from construction and demolition activities and constitutes a significant portion of construction waste worldwide.

This section analyses CDW, which includes concrete, asphalt, blocks, and other materials generated during the construction and demolition of buildings, roads, and other structures. CDW makes up most aggregate waste in Qatar. The main categories of CDW materials available and currently processed in Qatar and their applications are outlined below:

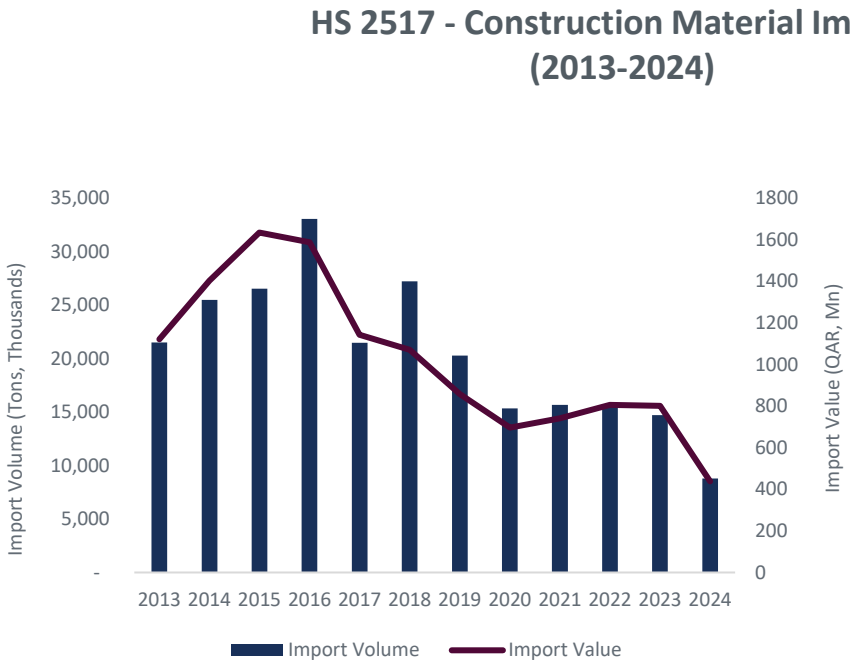
Types of Recycled Aggregates (CDW)	Recycled Aggregates (CDW) - Applications
Recycled Concrete Aggregate (RCA) – Generally, comprises crushed stone aggregate partially coated with mortar or cement paste.	***Construction*** – Recycled aggregates are commonly used in construction for producing concrete, road base materials, and fill. They provide a sustainable alternative to virgin aggregates, reduce construction costs, and help divert waste from landfills.
Recycled Asphalt Pavement (RAP) – A relatively clean granular asphalt aggregate that is crushed and graded into various sizes. It is generated from Ashghal infrastructure projects, such as the milling of existing roads and full-depth pavement removal.	***Road Building*** – In road construction, recycled aggregates are utilized for base layers, sub-base materials, and asphalt mixtures. RAP is a relatively clean granular asphalt aggregate that is crushed and graded into various sizes.
Mixed Materials – Consists of mixed construction waste aggregate that is crushed and graded into different sizes. It includes a wide variety of materials such as metals, timber, ceramics, polymers, and more.	***Mining & Quarrying*** – In the mining and quarrying industries, recycled aggregates can be used as backfill material and for stabilizing mine shafts.

Figure 32: Types of CDW in Qatar[106]*

[106] MECC – Recycled Aggregate in Construction, Team Analysis, Primary Research

*Please note that the examples listed are illustrative and not exhaustive

11.2 Trade Overview



Key Insights

- From 2013 to 2018, aggregate imports rose significantly, peaking at 33 Mn tons (QAR 1.5 Bn) in 2016. This surge corresponded with development leading up to the FIFA World Cup 2022.
- In 2023, Ashghal reported using 10 Mn tons of recycled construction materials in road projects and 720,000 tons in expressway projects. These figures provide a more accurate reflection of market activity than trade data, given this segment's controlled nature.

Chart 45: HS 2517 - Construction Material Imports (2013-2024)[107]

Chart 43 shows that the demand for construction aggregates in Qatar is closely tied to the country's construction activities. While the demand for aggregates will continue, it is expected to remain below the levels seen during the World Cup preparation period, reflecting a shift to more sustainable and measured construction activities.

Qatar does not export construction aggregates, as ongoing government-led infrastructure projects create strong domestic demand.

[107] NPC – Foreign Trade Data

Pricing Analysis

The key outputs and pricing from the recycling process for transforming recycled aggregates into functional products used in various construction projects are as follows:

Product	Usage	Price per Ton
Reclaimed asphalt pavement (RAP)	Used in the production of new asphalt pavements. By incorporating RAP into fresh asphalt mixes, the material reduces the need for new asphalt binder and virgin aggregates, thereby lowering costs.	QAR 49.5
Road base and subbase	The road base provides a strong and stable foundation for the pavement surface, ensuring durability and resistance to traffic loads. The subbase acts as an additional support layer, enhancing the road's ability to withstand heavy loads and preventing deformation or settlement over time.	QAR 25-26
Gabbro aggregates	Commonly used in the production of concrete and asphalt, where their strength and durability enhance the performance of these materials.	QAR 20-49.5

Figure 33: Aggregates Recycling Products and Pricing[108]

The pricing for recycled aggregates is jointly determined by Qatar Primary Materials Company (QPMC) and Ashghal. Although buyers, including ready-mix concrete manufacturers, do not have negotiating power over these prices, recycled aggregates are priced lower than virgin materials, enhancing the economic viability of using recycled aggregates and promoting sustainability within the construction sector.

[108] QPMC, Ashghal

11.3 Value Chain Overview

The recycled aggregates recycling value chain in Qatar involves 4 key stages as stated below illustrated in the figure below:

1. Construction waste in Qatar is primarily **collected** by the MM and Ashghal, with waste being disposed of in landfill sites such as Rawdat Rashid and other locations under Ashghal's jurisdiction. However, there is no segregation of construction waste at these landfill sites, instead, segregation occurs at the recycling facilities' processing units.

*This phase offers **moderate potential**. The presence of processing units for segregation at recycling facilities suggests potential for improvement in collection systems, providing room for entrants to optimize these processes.*

2. **Sorting** of construction waste is done at recycling facilities, as there is no segregation at landfill sites. The waste collected at the landfills is brought to processing units, where it is sorted into different categories, such as aggregates, metals, and other recyclable materials. QPMC-assigned private contractors, assist in the sorting process, which is monitored by an Ashghal-approved third-party laboratory to ensure the quality of recycled materials.

*This phase offers **limited potential** as the sorting process is already established and overseen by approved contractors. The sorting systems are well-regulated, ensuring quality but offering minimal space for innovation or growth in this segment.*

3. The **material processing and recovery** process is primarily managed by QPMC, a government entity responsible for aggregate recycling. QPMC has signed long-term contracts with MM and Ashghal to manage the recycling of waste generated by construction and demolition activities. QPMC also collaborates with private contractors and the third-party laboratory to ensure the quality of recycled aggregates is suitable for further use in construction projects. QPMC produced 660,000 tons of recycled aggregates per month in 2021, translating to an annual total of 7.92 Mn tons.

*This phase offers **limited potential.** It features long-standing government and private sector collaboration, alongside established quality control, leaving limited room for new entrants or growth in this segment.*

4. The **downstream application** segment of the construction waste recycling value chain involves the use of recycled aggregates in construction projects. Recycled aggregates produced by QPMC and its partners are used in construction projects, ensuring a sustainable supply of materials for building infrastructure. The most common downstream application of recycled aggregates is in infrastructure projects managed by Ashghal, including the construction of roads and bridges.

*This phase offers **limited potential**. The downstream market is limited to government projects, and the use of recycled aggregates is largely confined to public infrastructure, with little room for private ventures.*

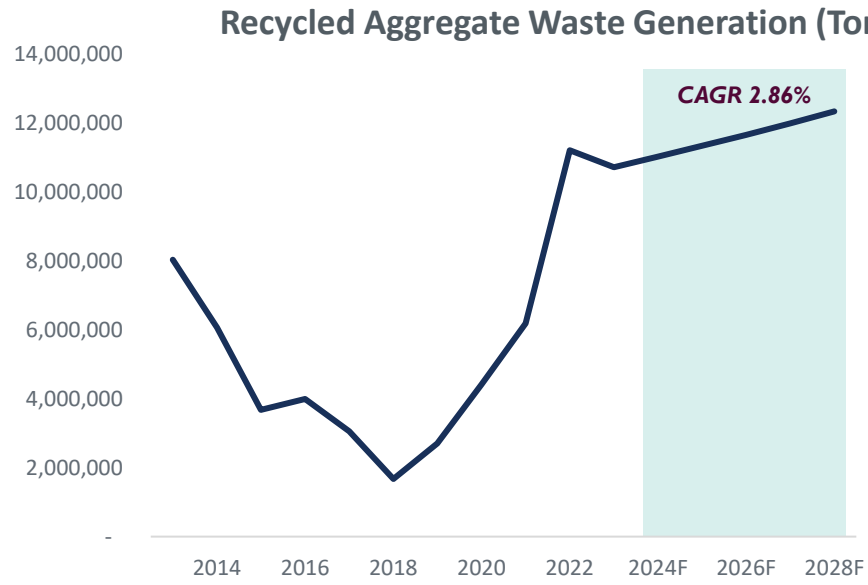
Figure 34: Recycled Aggregates Value Chain[109]*

[109] Company Websites, Primary Research

*Please note that the list of entities provided is not exhaustive

11.4 Market Sizing & Waste Drivers

Chart 44 below illustrates the projected growth of the recycled aggregates recycling market over the next 5 years, based on waste generation estimates from aggregate waste.



Key Insights

- Recycled aggregate waste generation is expected to grow at a CAGR of 2.86% from 2023 to 2028.
- Waste volume growth peaked during 2018-2022, driven by FIFA World Cup-related construction.
- The waste levels are projected to stabilize, aligning with a more sustainable pace of construction activity in Qatar.

Chart 46: Aggregate Waste Generation (Tons, 2013-2028F)[110]*

Annual waste volumes have fluctuated historically, driven by variations in construction activity. A significant increase in waste generation occurred between 2018 and 2022, fueled by accelerated construction projects ahead of the FIFA World Cup 2022. The comparatively slower forecasted growth rate reflects the anticipated cooling of the construction sector post-World Cup, influenced by challenges such as labor shortages and rising construction costs[111].

The factors driving the generation of aggregate waste, and ultimately the recycled aggregates industry, are discussed below:

Key Factors Affecting Recycled Aggregate Waste Generation

Following the 2022 FIFA World Cup, Qatar's construction sector is **expected to experience a marked slowdown**. The rapid growth observed over the past five years will taper off, resulting in a slower increase in construction aggregate waste as fewer new projects are initiated.

Despite the broader construction slowdown, **government-backed infrastructure projects** will continue to drive waste generation. Ashghal's planned tenders' worth over QAR 59 billion by the end of 2024 will ensure steady infrastructure development, contributing to ongoing construction waste[112].

[110] NPC, Team Analysis
[111] Turner & Townsend – Qatar Market Intelligence
[112] Ashghal

*Note: Estimates are indictive and based on regional benchmarks and assumed recycled aggregate waste shares.

11.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis of Qatar's recycled aggregates sector, is outlined in the figure below:

Supplier Power – Low

Suppliers have limited bargaining power due to long-term contracts and centralized control by QPMC.

Threat of New Entrants – Low

Significant barriers to entry exist due to QPMC's dominance and long-term agreements, though potential for private contractors exists under its management.

Industry Rivalry – Low

The market is effectively a monopoly with multiple players acting as suppliers to a single entity.

Threat of Substitutes – Low

A clear price difference between recycled aggregates and virgin materials reduces the risk of substitution.

Buyer Power – Low

Buyers have little influence as QPMC, supported by government bodies, dictates prices and purchasing terms.

Figure 35: Porters Five Forces Analysis – Recycled Aggregates [113]

Analysis of the recycled aggregates sector highlights QPMC's long-term contracts with private contractors, which ensure a steady supply of materials and stable market conditions. However, low competition and high barriers to entry exist due to QPMC's established dominance and contractual control, limiting potential for new players. Additionally, the relatively low collection rates for recycled aggregates, along with the high initial investment required, present significant challenges for SMEs seeking to enter the market.

Industry rivalry is minimal, as the market operates as a monopoly with multiple suppliers working under QPMC's centralized control. The threat of substitutes is low since recycled aggregates are significantly cheaper than virgin materials, reducing substitution risk. Finally, buyer power is low, as QPMC, along with government entities like MM and Ashghal, exerts strong control over pricing and purchasing decisions.

[113] Team Analysis, Primary Research

11.6 SWOT Analysis

The SWOT analysis of Qatar's recycled aggregates reveals growth opportunities and challenges for SMEs:

Strengths

Government support through QPMC's partnership with MM, combined with the significant cost advantage of recycled aggregates, strengthens the sector's position.

Weaknesses

Reliance on aggregate imports and inconsistencies in recycling operations highlight gaps in local production capacity and operational stability. High barriers to entry exist due to QPMC's monopoly over the market.

Threats

A potential slowdown in construction activity and competition from imported aggregates could limit demand and market growth.

Opportunities

Cost competitiveness and sustained demand from ongoing infrastructure projects create strong growth potential for recycled aggregates.

Figure 36: SWOT Analysis – Recycled Aggregates[114]

The recycled aggregates segment in Qatar benefits from strong government involvement, with QPMC holding a long-term contract with MoM to manage aggregate recycling, ensuring stability and regulatory support. Additionally, cost advantage plays a key role, as recycled aggregates are priced significantly lower (QAR 20 per ton) compared to imported aggregates (QAR 50 per ton), providing a strong financial incentive for their use. However, dependence on imports remains a weakness, with Qatar still importing 8 – 15 Mn tons of aggregates annually, indicating an insufficient local recycling capacity, alongside inconsistent treatment rates, which reflect operational challenges in maintaining steady recycling processes.

There are opportunities for growth, particularly through cost-driven demand, as the price advantage of recycled aggregates presents a chance to replace imports and strengthen local supply. While ongoing infrastructure development after the World Cup continues to generate demand, creating a market for recycled products. Threats persist, however, including a potential slowdown in the construction sector, which may reduce both waste supply and demand. Competition from imports are persistent as foreign aggregates maintain reliable quality standards, despite being more expensive.

[114] Team Analysis, Primary Research

11.7 Key Takeaways

Qatar's aggregates recycling sector features potential for companies entering the collection segment. Key takeaways for SMEs to consider are outlined below:

- **Market Growth –** The market is forecasted to grow at a steady rate of 2.86%, culminating in an estimated total aggregate waste generation of ~ 12 Mn tons by the end of 2028.
- **Import Reliance –** Qatar has diverse sources of local and recycled aggregates. However, the volume of available aggregates in the form of quarried limestone is not enough to meet market demand. Therefore, Qatar relies heavily in imports to meet this gap.
- **Waste Sources –** The largest source of recycled aggregates in Qatar is construction and demolition waste. This is found in three forms: RCA, RAP, and Mixed CDW materials.
- **Market Potential –** There is a strong market for recycled aggregates due to their cost advantage over imported materials. SMEs can capitalize on this by focusing on high-quality recycling processes to meet local demand.
- **Market Monopoly –** Despite strong market potential, the recycled aggregates sector provides limited potential for SMEs as recyclers. This is primarily due to a 2020 agreement between the MECC and QPMC, a state-owned enterprise. Under this contract, QPMC is designated to oversee the production of recycled aggregates at the Ministry and Ashghal waste sites for 20 years.
- **Supply Chain Participation –** Potential Opportunities for SMEs may evolve through partnerships with QPMC in waste collection and aggregation, serving as local feeders into QPMC's recycling operations.

12. Waste Oil

12.1 Overview of Waste Oil

Waste oil recycling involves the process of reclaiming used oil, either mechanical lube oil or cooking oil, to produce reusable products or raw materials.

The figure below outlines the types of waste oil and its uses:

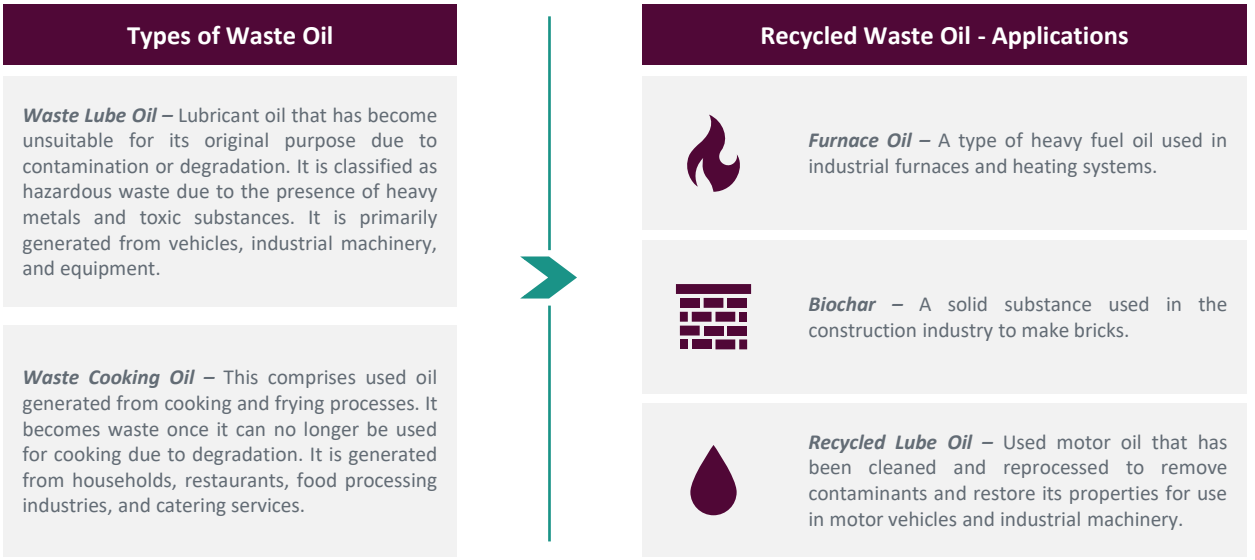


Figure 37: Types of Waste Oil[115]*

Due to the lack of a formalized collection mechanism for the collection and recycling of waste cooking oil, there is limited data available to analyze waste cooking oil. Therefore, it is not included in this report. This sector primarily focuses on waste lubricant oil, which represents the largest share of waste oil in Qatar[116].

Waste lubricant oil is recycled into base oil by processing facilities. The recycled base oil is then used to produce new lubricants for automotive, industrial, and machinery applications. These facilities also produce smaller volumes of furnace oil and biochar as by-products.

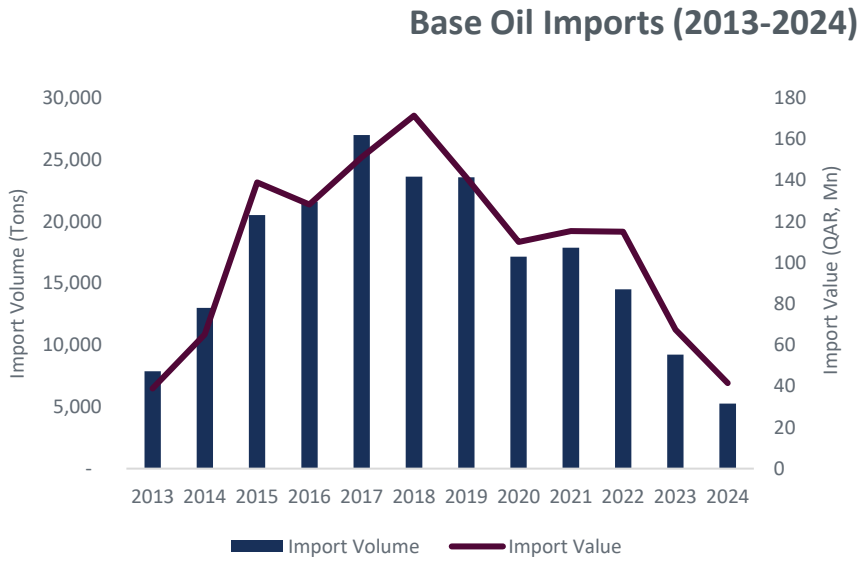
Waste lubricating oil (WLO) refers to various lubricants used in automobiles and machinery. Approximately half of all lubricating oil becomes waste oil, while the rest is lost due to leakages or usage. In Qatar, waste oil is predominantly generated by the automotive and transportation sectors, industrial and manufacturing processes, and maritime activities. Since lubricating oil becomes contaminated during use, it must undergo treatment before it can be reused.

[115] Vira Petroleum – Types of Waste Oil, Team Analysis, Primary Research
[116] Primary Research

*Please note that the examples listed are illustrative and not exhaustive

12.2 Trade Overview

Qatar does not export all types of waste oil due to a ban on the export of hazardous waste by the Organization for Economic Cooperation and Development (OECD) countries implemented by the Basel Convention[117]. Instead, waste oil companies produce base oils, which are then sold to lubricant manufacturers. Therefore, an analysis of base oils has been undertaken to provide further insight into the state of the landscape.



Key Insights

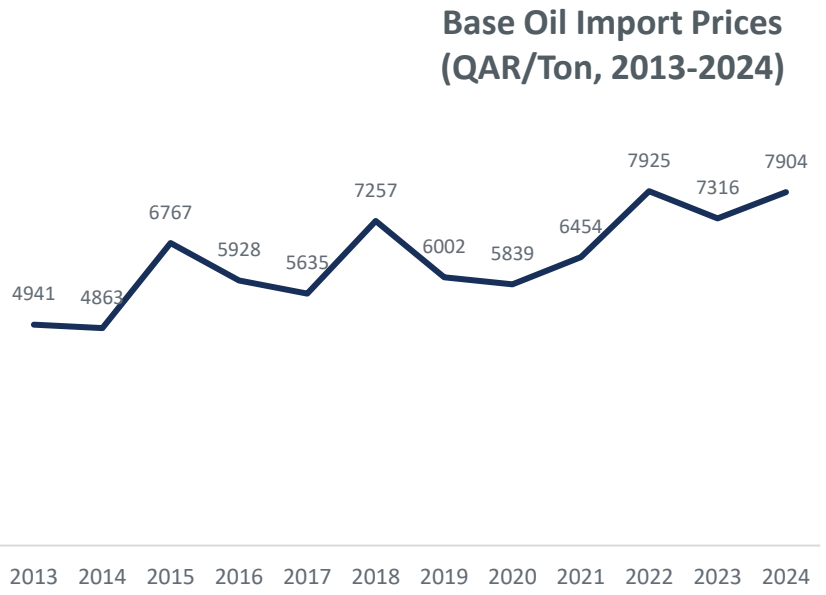
- Base oil imports (HS Code 27101911) in Qatar have steadily declined since 2018/19, falling at a CAGR of -25%.
- This decline indicates local efforts towards waste oil processing to meets domestic demand for base oils through recycled production.

Chart 47: Base Oils Imports (2013-2024)[118]

Historically, imports originated from South Korea, Singapore, and the Netherlands. However, the reliance on imports has reduced significantly due to advancements in local recycling capabilities. Some local companies, such as Geo Green Shield, export a large share of their recycled base oils. Overall, oil exports have grown at a CAGR of 4.3% over the past decade*.

[117] NPC – Foreign Trade Data
[117] The Basel Convention – Ban Amendment
*This represents exports under HS Code 2710, which covers oil trade more broadly. Due to data limitations, specific export figures for base oils have not been included

Pricing Analysis



Key Insights

- The average price of base oil imports has shown significant fluctuation over the 2013–2024 period, peaking at 7,925 QAR/ton in 2022, a 60% increase compared to 2013 (4,941 QAR/ton).
- The average price over the period was approximately 6,403 QAR/ton, underscoring long-term price variability influenced by global market dynamics and regional demand.

Chart 48: Base Oils Import Prices (QAR/Ton, 2013-2024)[119]

Chart 46 indicates that while prices of waste oil have fluctuated in the past 10-year period, they have still witnessed an overall increase. Continuation of this trend would prove to be a positive development for SMEs, improving the overall effectiveness of the waste oil sector for SMEs.

[119] NPC – Foreign Trade Data, Team Analysis

12.3 Value Chain Overview

The waste oil recycling value chain in Qatar involves 4 key stages as stated below illustrated in the figure below:

1. The **collection** process in Qatar's waste oil recycling sector is managed by several key players, including Seashore Recycling, the National Petroleum Products Company and Al-Haya Waste Treatment Factory, which collects around 8.7 tons of waste oil annually. These companies have established reliable supply chains by securing waste collection agreements with businesses across various industries, ensuring steady access to waste oil as a raw material. These waste oil collectors focus on gathering used oils from various sources, such as industrial operations, automotive services, and maritime activities.

*This phase offers **moderate potential**, as there is potential for growth in expanding collection networks or improving the efficiency of collection to better serve diverse industries, creating further supply chain opportunities.*

2. The **sorting** process in the waste oil recycling industry involves separating waste oil from contaminants. Sorting is conducted as part of the pre-recycling process to ensure that the waste oil is free from impurities, making it suitable for efficient recycling. Al-Haya Waste Treatment Factory stands out with its zero waste-to-landfill process, which ensures that no part of the waste is discarded, and all materials are either recycled or repurposed.

*This phase offers **limited potential**, as existing processes are in place with established players like Al-Haya, leaving limited room for disruption or improvement.*

3. The **material processing and recovery** process in the waste oil sector primarily focuses on converting used oil into base oil. Companies like Al-Haya Waste Treatment Factory, Seashore Recycling, and the National Petroleum Products Company use advanced recycling techniques to further refine waste oil, removing contaminants and restoring its properties. Al-Haya Enviro further innovates by producing a wide range of products from recycled oil.

*This phase offers **moderate potential**. While there is potential for growth through product diversification, the market for recycled oil remains niche, limiting the scale of expansion in comparison to other recycling sectors.*

4. The **downstream application** segment in Qatar's waste oil recycling industry includes lubricant manufacturers like Qatar Lubricants Co. (QALCO), who purchase base oil produced through the recycling process for the production of new lubricants. Additionally, Al-Haya Waste Treatment Factory supplies various recycled waste oil to various industries. Some companies, such as Geo Green Shield, export a significant share of their recycled waste oil products.

*This phase offers **moderate potential**. The downstream market for waste oil products is established, but it remains limited by low demand for recycled products.*

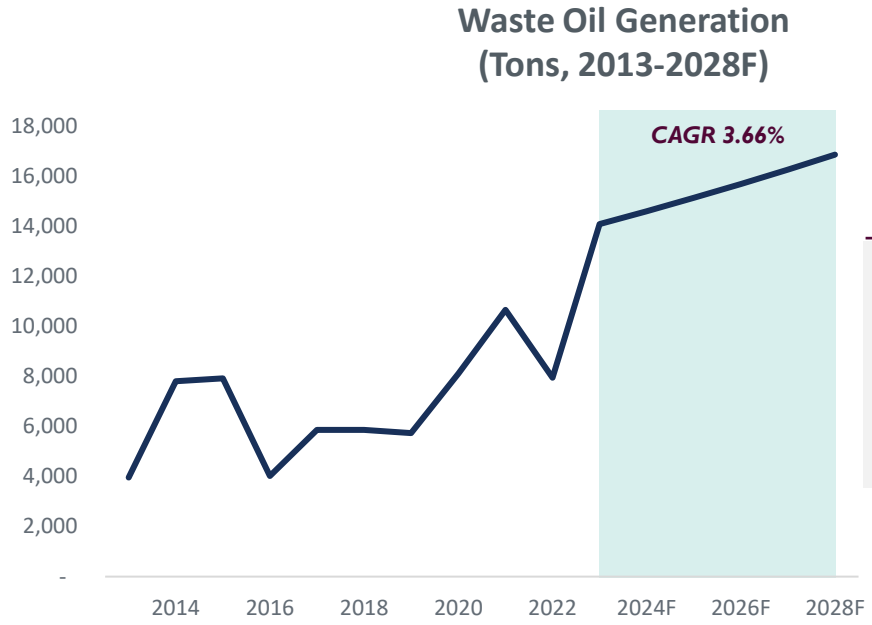
Figure 38: Waste Oil Recycling Value Chain[120]*

[120] Company Websites, Primary Research

*Please note that the list of entities provided is not exhaustive

12.4 Market Sizing & Waste Drivers

Chart 47 below illustrates the projected growth of the waste oil recycling market over the next 5 years, based on waste generation forecasts.



Key Insights

- Waste lubricant oil generation is projected to grow at a CAGR of 3.66%, reaching 16,847 tons by 2028.
- Growth is driven by the hydrocarbon-dependent economy and high vehicle ownership rates.

Chart 49: Waste Oil Generation (Tons, 2013-2028F)[121]*

In certain regions like Europe, waste lubricant oil typically constitutes 4-5% of total hazardous waste[122]. However, for Qatar, we have assumed a higher waste lube oil generation rate of approximately 10% of hazardous waste. This adjustment reflects the hydrocarbon-dependent nature of Qatar's economy, where extensive use of lubricants in the oil and gas sector results in greater waste generation. Additionally, Qatar has a higher number of vehicles per capita compared to many other countries, further contributing to the increased proportion of waste lube oil.

The key drivers of waste oil generation are discussed below:

Key Factors Affecting Waste Oil Generation

The **number of vehicles** in Qatar has been growing at a steady rate of 2.4% annually[123]. As the number of vehicles increases, the frequency of oil changes due to regular maintenance rises, directly contributing to higher volumes of waste lubricant oil. Additionally, **growth in manufacturing activities** further drives waste oil generation. Together, these factors indicate a continuous upward trend in waste oil volumes.

Qatar's steady **population growth** contributes to the generation of waste oil. An increase in population drives higher consumption of both cooking oil through increased restaurant and domestic activities, and lubricant oil, through increased number of vehicles in the region.

[121] NPC, Team Analysis
[122] EUStat
[123] NPC Vehicle Statistics

*Note: Estimates are indictive and based on regional benchmarks and assumed waste oil shares.

12.5 Porter's 5 Forces Analysis

The Porter's Five Forces analysis of Qatar's waste oil recycling sub-sector, is outlined in the figure below:

Supplier Power – Low

The large number of players and vertical integration within the industry reduces individual suppliers' bargaining power.

Threat of New Entrants – Low

The fully vertically integrated existing players create significant barriers to entry for new competitors.

Industry Rivalry – High

With 4-5 competitors in the waste oil recycling space and product standardization, there is intense price competition.

Threat of Substitutes – Moderate

Although substitute products like virgin base oil are available, the cost and environmental benefits of recycled base oil help maintain its competitiveness.

Buyer Power – Moderate

Export market potential exists and local buyers like Qatar Lubricants Co. rely on recycled base oil, but the presence of multiple recycling companies provides them with bargaining power.

Figure 39: Porters Five Forces Analysis – Waste Oil [124]

Analysis of the waste oil recycling sector reveals a market that is relatively stable but highly competitive. Supplier power is low due to the large number of players in the industry and the vertical integration of existing companies, which reduces their dependence on external suppliers. The threat of new entrants is also low, as current players are fully integrated, making it difficult for new competitors to break into the market without significant investment and resources. Industry rivalry is high, with 4-5 companies vying for market share in a sector where product standardization leads to fierce price competition.

The threat of substitutes is moderate, as virgin base oil remains available and generally preferred by downstream players, however recycled base oil maintains some competitiveness due to its cost and environmental benefits. Buyer power is moderate, as key buyers like Qatar Lubricants Co. depend on recycled base oil, but the presence of multiple recycling companies provides them with options, slightly balancing their bargaining power. Despite being a competitive market, the sector presents viable potential. Companies can gain a competitive edge by exploring prospects in the base oil export market.

[124] Team Analysis, Primary Research

12.6 SWOT Analysis

The SWOT analysis of Qatar's waste oil recycling sub-sector reveals growth opportunities and challenges for SMEs:

Strengths

The sector benefits from established supply chains, vertical integration across the value chain, local production of base oils, and consistent demand for recycled lubricating oils, ensuring operational efficiency and self-sufficiency.

Weaknesses

Challenges in the waste oil segment include contamination issues requiring additional treatment, restrictions on trade of certain types of waste oil and price volatility in the waste oil market.

Threats

The sector faces threats from global oil price volatility, which impacts local operations, and competition from virgin oils, which could reduce the demand for recycled oils in the market.

Opportunities

SMEs can benefit from opportunities in the export market and collaboration with local lubricant manufacturers, securing steady demand for recycled base oils and establishing consistent waste oil supply chains at lower costs.

Figure 40: SWOT Analysis – Waste Oil Recycling[125]

The SWOT analysis of Qatar's waste oil recycling sector reveals a market with some potential, driven by its moderate growth (CAGR of 3.66%). The sector benefits from established supply chains, vertical integration, and steady local demand for recycled oils, which provide a foundation for operational efficiency and self-sufficiency. However, SMEs face obstacles such as contamination issues in waste oil and price volatility, which can impact profitability.

Opportunities exist within the export market and through collaborations with local manufacturers to secure consistent supply and demand for recycled oils. Despite this potential, the sector is also vulnerable to global oil price fluctuations and competition from virgin oils, which could disrupt the market and affect SMEs' ability to compete. Overall, the sector offers some growth potential, but SMEs will need to navigate both internal operational challenges and external market dynamics.

[125] Team Analysis, Primary Research

12.7 Key Takeaways

Qatar's waste oil recycling sector features potential for companies entering across the value chain. Key takeaways for SMEs to consider are outlined below:

- **Market Growth:** The market is projected to grow at a CAGR of 3.66% until 2028, reaching ~17,000 tons of waste oil generated.

- **Industry Scope:** The waste oil recycling sector in Qatar focuses on recycling lubricating oils used in various industries, including automotive, industrial, and maritime activities. Waste lubricant oil is converted to base oil, which is then used to form recycled lubricant oil.

- **Falling Imports:** The sector produces primarily recycled lube oil, processed into base oil for manufacturing new lubricating oils. Local production of base oils through recycling has led to a steady decline in base oil imports since 2019, with a CAGR of -20%.

- **Active Sector:** Qatar's waste oil recycling ecosystem is well-developed, dominated by key players such as Al-Haya Enviro, Seashore Recycling, and National Petroleum Products Company. These companies are vertically integrated, handling the entire value chain, from collection to recycling, and have established reliable supply chains through industry agreements.

- **Demand Dynamics:** Local and export demand for recycled waste oil remains steady, with companies like Geo Green Shield exporting a notable portion of their output, and local manufacturers such as QALCO contributing to domestic consumption. SMEs can consider partnering with local lubricant manufacturers to ensure demand for recycled base oils, secure a steady market, and establish themselves as waste oil suppliers to recyclers by collecting waste oil from garages.

13. Success Story – Al Haya Enviro

Established in 2003, Al Haya Enviro has become a prominent name in providing comprehensive and innovative waste management and recycling solutions in Qatar. The company offers a wide range of services focused on waste management and waste reutilization, having obtained a patent for its zero waste-to-landfill process.

In addition to being one of the first companies of its kind in the local market, Al Haya's success lies in the diversification of its operations across market segments, its vertical integration across the recycling value chain, and its innovation in developing solutions for the Qatari market.

Segment Diversification

A key factor in Al Haya's success is its diversified services across multiple market segments, including waste collection, segregation and recycling of commercial plastic and e-waste, and waste oil recycling. This approach enables Al Haya to access multiple revenue streams and serve a broad customer base. Segregated plastic is sold to local recyclers, supporting Qatar's circular economy, while e-waste is exported to international markets, expanding its reach. Al Haya's recycling operations have the following capacities:

- Plastic (2,100 tons per month)
- Furnace oil for industries and lubricant oil for automotive use (1,200 tons per month)
- Wax (300 tons per month)

This multi-faceted approach not only maximizes resource utilization but also enhances Al Haya's market presence across different sectors.

Vertical Integration

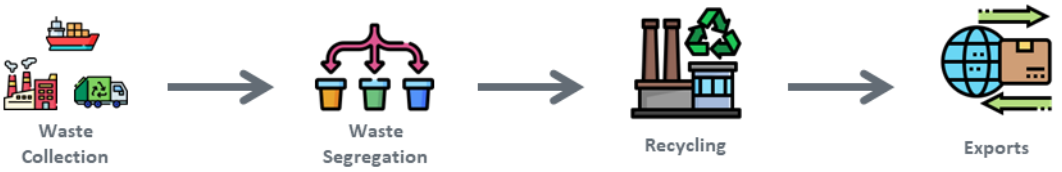


Figure 41: Al Haya Contribution to Recycling Value Chain[126]

Another factor for Al Haya's success is its vertical integration. By being involved in every stage of the waste management process, Al Haya ensures complete control over the efficiency of its operations, allowing it to streamline processes, reduce costs, respond swiftly to market demands and regulatory changes, making it well-placed in the industry.

Innovation

Al Haya has also managed to implement a zero waste-to-landfill process developed by their in-house R&D team to convert waste into building products. These products are environmentally friendly, stronger, and longer lasting than conventional bricks.

[126] Primary Research

14. Strategic Recommendations & Way Forward

Material recovery segments have been analyzed on a variety of metrics, which can be broadly classified into "Market Attractiveness" and "Barriers to Entry". Due to their varying characteristics, aluminum, copper and ferrous metals have been included separately.

Figure 42: Material Recovery Segment Potential for SMEs[127]

Based on the analysis, the material segments can be broadly classified into four categories based on their overall outlook. The outlook and recommendation for each material segment is discussed below.

[127] Team Analysis

Nascent Market with High Growth Potential

Glass recycling is unexplored in Qatar presenting SMEs with some potential to take advantage of the lack of competition in the market. Additionally, waste generation is projected to rise 4.57% annually, reaching 75,396 tons by 2028. Additionally, glass waste has stockpiled in landfills since 2018, providing a substantial raw material supply for SMEs.

Glass Segment Recommendation: SMEs should focus on two waste streams: stockpiles at landfills and direct collection from commercial entities. Establishing vertically integrated operations, covering collection, sorting, and recycling, will streamline the supply chain. The local bottling and structural glass industries present strong demand, though separate production facilities are needed for each application. By targeting these opportunities, SMEs can enter this promising market and meet the growing local demand for recycled glass.

Established Markets with Untapped Potential

Qatar's **Copper** and **Aluminum** recycling sectors produce 9,000 tons of primary products, covering 15% of total waste. Qatalum recycles 7,000 tons of aluminum scrap, just 1% of its total production. In 2023, 259,000 tons of copper waste were generated, with only 24,000 tons recycled, reflecting a 9.3% recycling rate and strong growth potential.

Copper and Aluminum Segment Recommendation: SMEs can enter the market by optimizing copper waste collection and targeting the downstream demand for locally recycled copper products. While the aluminum recycling segment has similar market dynamics to copper, the potential present in the value chain are of a smaller scale as Qatalum dominates the segment.

For the **paper** recycling sector, waste is forecasted to grow at 3.8% per year, reaching nearly 308,760 tons by 2028. The industry focuses on producing low-cost products like cardboard and kraft liner but operates at high capacity, constrained by limited access to segregated paper waste.

Paper Segment Recommendation: SMEs can unlock further potential by establishing direct collection mechanisms for segregated paper, particularly from corporate clients. Additionally, partnering with waste management companies to access domestic paper waste can help reduce the need for imported pulp, which amounted to 4,060 tons in 2023.

The **plastic** recycling sector is projected to generate 278,122 tons of waste by 2028, with PE, PET, and PP comprising the majority of the waste. Qatar imports large volumes of plastic granules, creating potential for import substitution.

Plastic Segment Recommendation: SMEs should prioritize PE and PET recycling, targeting PE sources like films, sheets, and plastic bags, and PET sources such as plastic bottles. Focusing on these products will enable SMEs to tap into local demand and reduce reliance on imported plastic granules, offering growth potential in the recycling market.

Markets with Limited Downstream but Untapped Upstream Potential

In the **lead acid battery** recycling segment, companies like Suhail Battery recover lead metal from waste batteries, generating around 9,173 tons of lead annually. However, there is a gap in Qatar's capability to convert this lead into lead plates, which are required for battery production. This gap forces local battery assemblers to import lead plates. For **WEEE**, there is no recycling infrastructure in Qatar due to limited downstream demand. Countries like Japan and South Korea dominate the WEEE recycling industry due to their established ecosystems.
E-waste Segment Recommendation: SMEs can capitalize on the lead acid battery recycling segment opportunity by not only engaging in battery recycling but also establishing facilities to manufacture lead plates, filling a crucial market void. For WEEE, SMEs can focus on upstream activities by setting up collection mechanisms targeting commercial sources, where 50,000 tons of WEEE waste was generated in 2023. By organizing the collection and sorting of this waste, SMEs can either export it directly to countries with advanced recycling systems or partner with trading companies to do so.

In the **steel** recycling market, while Qatar Steel monopolizes steel recycling, upstream activities such as waste collection, and sorting hold some potential. Steel waste generation is projected to reach 650,000 tons by 2028. Moreover, Qatar Steel aims to increase its scrap inputs from 25% to 35%, creating a gap of 145,000 tons.
Steel Segment Recommendation: SMEs can serve as suppliers to meet this rising demand by improving scrap collection and processing activities.

Markets with Limited Potential for SMEs

Rubber recycling in Qatar experienced growth between 2020 and 2022, however, this was largely driven by the utilization of existing waste stockpiles at three main waste sites, one of which is depleted. Current annual waste generation volumes are insufficient to sustain existing participants in the market. Furthermore, the downstream demand for recycled rubber is low, with most shredded rubber scrap being exported.
Rubber Segment Recommendation: SMEs can set up trading operations and import used tires and rubber scrap to supply waste to Qatari recycling companies, as domestic rubber waste sites are depleting. However, the slowdown in domestic demand reduces the viability of this segment.

The **recycled aggregates** market in Qatar is controlled by QPMC. The company holds a long-term contract with Ashghal, the Public Works Authority, to source construction and demolition waste, giving it a dominant position in the market. This arrangement creates high barriers to entry for any new players, effectively limiting the opportunities for SMEs to participate in this sector.
Recycled Aggregates Segment Recommendation: Due to the nature of the market, opportunities for SMEs can only exist if they manage to form partnerships with QPMC where they recycled construction waste on its behalf or if they perform waste collection and segregation, serving as suppliers to QPMC.

Although **waste oil** generation is projected to reach approximately 16,847 tons by 2028, the market is saturated, making it challenging for new entrants. Additionally, the local downstream applications for recycled waste oil are limited, with QALCO being the primary producer of lubricant oil in the country.
Waste Oil Segment Recommendation: Qatar's waste oil recycling companies are vertically integrated and have established reliable supply chains through industry agreements. Furthermore, these companies sell to QALCO and rely on exports.

GLOSSARY

- **Al Afja**: An area in Qatar designated for recycling facilities.
- **Ashghal:** Qatar's Public Works Authority, which integrates recycled materials into infrastructure projects, promoting sustainability in construction.
- **Commercial Waste:** Waste generated from businesses, industries, and institutions, such as offices, restaurants, retail stores, and factories.
- **Construction and Demolition Waste (CDW):** Waste materials produced during construction, renovation, or demolition of buildings, roads, and other structures. Includes debris such as concrete, wood, metals, bricks, glass, and plastic.
- **Domestic Solid Waste Management Center (DSWMC):** Qatar's main facility for waste processing, located in Mesaieed, responsible for recycling and waste-to-energy processes.
- **Downstream Applications:** The use of recycled materials to create new products.
- **Electric Arc Furnace (EAF):** A furnace that heats and melts metal, primarily scrap steel, using an electric arc. EAFs are widely used in steel recycling, conserving energy and raw materials compared to traditional methods.
- **End-of-life Tire (ELT):** Tires that are no longer usable, which Qatar recycles into products such as rubberized asphalt for infrastructure.
- **End-of-life Vehicle (ELV):** A vehicle no longer operational or economical to repair. ELVs are dismantled for parts and materials like metal, plastic, and rubber, which can be recycled or repurposed.
- **Ferrous:** Metals that contain iron, such as steel.
- **Hazardous Waste:** Waste that poses threats to public health or the environment due to toxic, flammable, corrosive, or reactive properties. Includes electronic waste, batteries, and waste oil.
- **Inorganic Waste:** Non-biodegradable waste materials that do not decompose naturally, typically consisting of items like plastics, metals, glass, paper, and rubber.
- **Mesaieed:** Industrial area in Qatar, home to key waste management and recycling facilities, including the DSWMC.
- **Ministry of Environment and Climate Change (MECC):** Governs environmental protection and sustainability initiatives in Qatar, driving recycling policies and waste management.

- **Ministry of Municipality (MM):** Oversees urban planning and municipal services, including waste collection, disposal, and recycling strategies.
- **Municipal Solid Waste (MSW):** Waste generated from domestic sources, typically collected and managed by municipal authorities.
- **National Environment & Climate Change Strategy (QNC):** Qatar's comprehensive strategy for addressing environmental challenges, including waste management and recycling goals.
- **Non-ferrous:** Metals that do not contain iron, such as aluminum, copper, and their alloys.
- **Qatar Aluminum (Qatalum):** Major aluminum producer in Qatar, contributing to the recycling of aluminum scrap, reducing reliance on raw aluminum.
- **Qatar Construction Specifications (QCS):** Governs the construction sector with standards that support the use of recycled materials in construction projects.
- **Qatar Lubricants Company (QALCO):** Manages the recycling and disposal of waste lubricant oil, preventing environmental harm through proper processing.
- **Qatar Primary Materials Company (QPMC):** Qatar's primary aggregates recycler. It supplies raw materials for construction and promotes the recycling of CDW into reusable products.
- **Rawdat Rashid:** A landfill site in Qatar, mostly used for CDW.
- **Recycling Value Chain:** The full process of waste collection, sorting, and recycling into new products, supported by policies and industry in Qatar.
- **Umm al Afai:** A landfill site in Qatar.
- **Upstream Applications:** Early-stage processes of collecting and preparing materials for recycling, including gathering waste in Qatar for processing.
- **Waste Collection:** The process of gathering and transporting waste materials from the source to recycling or treatment facilities.
- **Waste Electrical and Electronic Equipment (WEEE):** Discarded electrical or electronic devices like computers, phones, refrigerators, and televisions, which contain valuable materials and hazardous substances requiring proper recycling.

- **Waste Lubricant Oil:** Used oil from vehicles and machinery, collected for recycling in Qatar to avoid pollution and resource waste.
- **Waste Shredding:** The mechanical process of cutting or tearing waste materials into smaller, more manageable pieces.
- **Waste Sorting / Segregation:** The process of separating waste materials into different categories based on type and grade, is crucial for efficient recycling and safe disposal.

Appendix: Product HS Codes

The report analyzes trade data to explore Qatar's potential to export recycled products and substitute imports, aiming to enhance net exports and strengthen its trade position. The following HS codes will be analyzed under each of the aforementioned market segments:

Paper

HS Code	Product Type	Description
470710	Paper scrap	Paper or paperboard; waste and scrap, of unbleached kraft paper or paperboard or corrugated paper or paperboard.
470720	Paper scrap	Paper or paperboard; waste and scrap, paper or paperboard made mainly of bleached chemical pulp, not colored in the mass.
470730	Paper scrap	Paper or paperboard; waste and scrap, paper or paperboard made mainly of mechanical pulp (e.g. newspapers, journals, and similar printed matter).
470790	Paper scrap	Paper or paperboard; waste and scrap, of paper or paperboard n.e.c. in heading no. 4707 and of unsorted waste and scrap.
480519	Paper and paperboard	Other uncoated paper and paperboard, for corrugating purposes.
480591	Paper and paperboard	Other uncoated paper and paperboard, in rolls/sheets, weighing ≤150 g/m².
480592	Paper and paperboard	Other uncoated paper and paperboard, in rolls/sheets, weighing >150 g/m² but ≤225 g/m².
480593	Paper and paperboard	Other uncoated paper and paperboard, in rolls/sheets, weighing >225 g/m².

Plastic

HS Code	Product Type	Description
391500	Plastic scrap	Plastic scrap
391510	Plastic scrap	Ethylene polymers; waste, parings, and scrap
391520	Plastic scrap	Styrene polymers; waste, parings, and scrap
391530	Plastic scrap	Vinyl chloride polymers; waste, parings, and scrap
391590	Plastic scrap	Plastics n.e.c. in heading no. 3915; waste, parings, and scrap
390110	PE granules	Polyethylene with a specific gravity <0.94, in primary forms
390120	PE granules	Polyethylene with a specific gravity ≥0.94, in primary forms
390210	PP granules	Polypropylene, in primary forms
390220	PP granules	Propylene copolymers, in primary forms
390230	PP granules	Polyisobutylene, in primary forms
390710	PET granules	Polyacetals, in primary forms

Plastic (Cont'd)

HS Code	Product Type	Description
390730	PET granules	Epoxide resins, in primary forms
390740	PET granules	Polycarbonates, in primary forms
390750	PET granules	Alkyd resins, in primary forms

Glass

HS Code	Product Type	Description
700100	Glass scrap	Glass; cullet and other waste and scrap of glass, glass in the mass
700510	Float glass	Non-Wired Glass, Having An Absorbent, Reflecting Or Non-Reflecting Layer
700521	Float glass	Glass Coloured Throughout The Mass (Body Tinted), Opacified, Flashed Or Merely Surface Ground
700529	Float glass	Float Glass, Other

Metal

HS Code	Product Type	Description
260111	Iron ore	Iron ores and concentrates, non-agglomerated
260112	Iron ore	Iron ores and concentrates, agglomerated
720410	Ferrous scrap	Ferrous waste and scrap; of cast iron
720421	Ferrous scrap	Ferrous waste and scrap; of stainless steel
720429	Ferrous scrap	Ferrous waste and scrap; of alloy steel (excluding steel)
720430	Ferrous scrap	Ferrous waste and scrap; of tinned iron or steel
720441	Ferrous scrap	Ferrous waste and scrap include turnings, shavings, chips, milling waste, sawdust, fillings, trimmings, and stampings, whether or not bundled
720449	Ferrous scrap	Ferrous waste and scrap; n.e.c. in heading no. 7204
720450	Ferrous scrap	Ferrous products; remelting scrap ingots
740311	Copper alloy	Refined copper, cathodes and sections of cathodes
740319	Copper alloy	Other refined copper
740329	Copper alloy	Other copper alloys
740400	Copper waste	Copper; waste and scrap
760110	Unwrought aluminum	Aluminium, not alloyed
760120	Unwrought aluminum	Aluminium alloys
760200	aluminum waste	Aluminum; waste and scrap

Rubber

HS Code	Product Type	Description
400400	Rubber scrap	Rubber; waste, parings and scrap of rubber (other than hard rubber) and powders and granules obtained therefrom
401220	Tire scrap	Rubber; used pneumatic tires

Construction Aggregates

HS Code	Product Type	Description
251710	Construction aggregates	Pebbles, Gravel, Broken Or Crushed Stone, Of A Kind Commonly Used For Concrete Aggregates, For Road Metaling Or For Railway Or Other Ballast, Shingle And Flint, Whether Or Not Heat-Treated
251720	Construction aggregates	Macadam Of Slag, Dross or Similar Industrial Waste, Whether Or Not Incorporating The Materials Cited In Subheading No. 251710
251730	Construction aggregates	Pebbles, Tarred Macadam
251741	Construction aggregates	Pebbles, Of Marble
251749	Construction aggregates	Pebbles, Other

E- waste

HS Code	Product Type	Description
780110	Unwrought lead	Refined lead
780191	Unwrought lead	Unwrought lead, containing by weight antimony as the principal other element
780199	Unwrought lead	Other unwrought lead
854810	E-waste	Waste and scrap of primary cells, primary batteries and electric accumulators; spent primary cells, spent primary batteries and spent electric accumulators
854890	E-waste	Electrical parts of machinery or apparatus; n.e.c. in chapter 85

Waste Oil

HS Code	Product Type	Description
271091	Waste Oil	271091 - Waste oils containing polychlorinated biphenyls [PCBs], polychlorinated terphenyls [PCTs] or polybrominated biphenyls [PBBs]