I-REC Market Evolution

Renewable Energy Procurement Moves Beyond Heavy Industries

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Executive Summary

The I-REC market is undergoing a clear transition from its early-stage adoption, initially led by energy-intensive sectors such as Metals & Mining, toward a more widely adopted, cross-industry instrument. This reflects a maturing market in which I-RECs are becoming both a significant instrument for industrial players and a scalable mechanism enabling renewable energy accounting across multi-tier global supply chains, with increasing relevance for Scope 2 and emerging Scope 3 applications.

Analysis of 2023–2025 procurement trends indicates that demand continues to be anchored in corporate sustainability commitments, Scope 2 voluntary reporting, and alignment with global reporting frameworks such as the GHG Protocol, SBTi, and RE100.

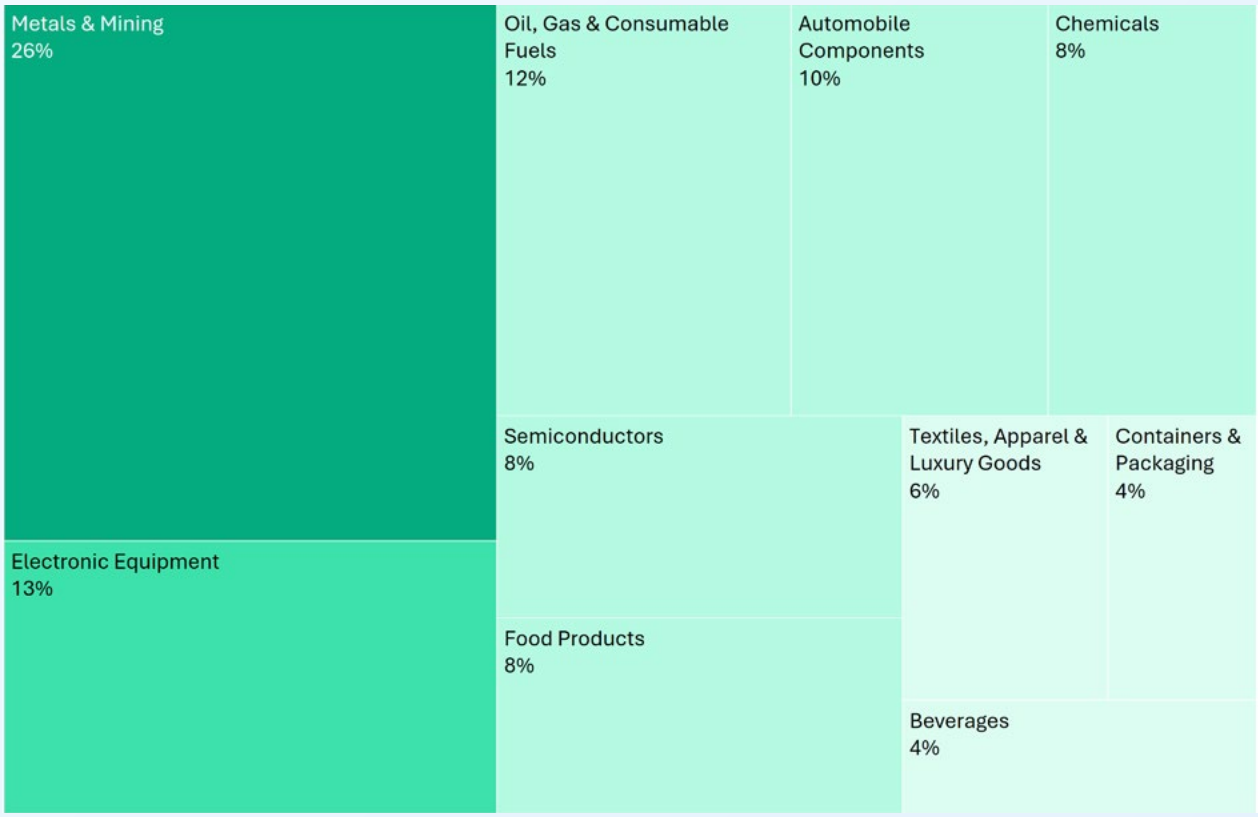
Demand and sectoral diversification (2023-2025)

During the last three years, I-REC demand remains anchored in Metals & Mining, which consistently represents the largest share of I-REC adoption globally (Figure 1). However, the market composition is broadening, with increasing participation from:

- Automotive and industrial manufacturing
- Chemicals, electronic equipment, and semiconductors
- Food production and consumer-linked sectors
- Oil & Gas and other energy-intensive industries

This diversification signals a structural shift: I-RECs are increasingly used in sectors with high energy demand, limited decarbonization pathways, and rising decarbonization expectations across the supply chain.

FIGURE 1: DEMAND AND SECTORAL DIVERSIFICATION (2023-2025)



Momentum shifts indicate transition to structural demand

An in-depth analysis of I-RECs adoption trends over the past three years (Figures 2 and 3) indicates that the most meaningful signal lies not in static market share, but in directional shifts in sectoral momentum.

The 2023 mix was more concentrated among the top three industries, with Metals & Mining (22%), Electronic Equipment (18%), and Oil, Gas & Consumable Fuels (14%) dominating. By 2024, Metals & Mining expanded sharply to 28%, while Electronic Equipment fell to 12% and Oil & Gas moderated to 11%. In 2025, Metals & Mining remained structurally dominant at 27%, but the supporting cast changed: Automobile Components rose to 11%, Food Products reached 10%, Electronic Equipment settled at 10%, and Oil & Gas held 12%, Chemicals remained steady at 7–9% through the full period.

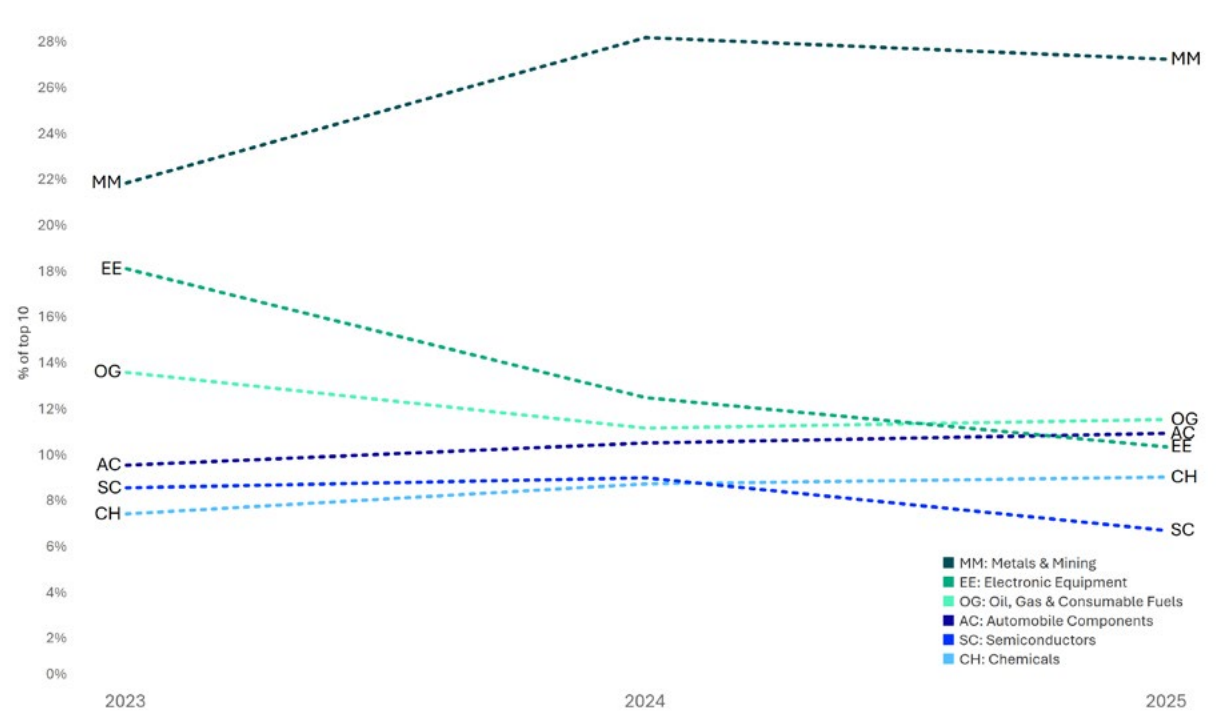
To provide further insight into demand trends, I-REC demand has been categorized into two key segments: leading industries, where demand is structurally anchored, and emerging industries, where demand is primarily driven by supply chain dynamics. The following sections set out these segments in more detail and present the observed demand patterns.

Leading Industries

The I-REC leadership cohort is now clearly established, concentrated in energy-intensive, globally integrated sectors such as Metals & Mining, Oil & Gas, Automobile Components, Chemicals, and Electronic Equipment and Semiconductors.

Across these leading sectors, a consistent pattern emerges: I-RECs are a leading instrument where energy consumption is significant, and operations are geographically distributed. In this context, I-RECs provide a scalable, standardized, and globally applicable mechanism to address Scope 2 emissions, enabling companies to implement consistent renewable energy strategies across diverse markets.

FIGURE 2: I-REC DEMAND TRENDS: LEADING INDUSTRIES (2023-2025)



1. Metals & Mining

Metals & Mining maintains a persistent number one position across the I-REC market over 2023–2025, representing the largest aggregate share (approximately 22–28%). This sustained leadership reflects the strong alignment between I-RECs and the requirements of high-load, energy-intensive industrial operations. Overall, the sector's continued dominance reinforces the role of I-RECs as a core instrument for industrial decarbonization, supporting consistent, auditable, and globally applicable renewable energy accounting in some of the most energy-intensive segments of the economy.

2. Oil & Gas

Oil & Gas maintains a stable and material presence within the I-REC market (approximately 12–14% over 2023–2025), underscoring the significant role of I-RECs in carbon-intensive industries where decarbonization pathways remain constrained and capital-intensive.

3. Automobile Components

Automobile Components show a stable to increasing trajectory (10% to 11%), signalling growing maturity driven by value chain integration and supplier requirements. As automotive OEMs increasingly embed decarbonization targets into procurement, suppliers are required to demonstrate renewable electricity usage, making this sector a clear example of supply chain–driven demand expansion.

4. Chemicals

Chemicals demonstrate steady growth (7% to 9%), reflecting the sector's energy-intensive, process-driven operations and long decarbonization timelines. The need for consistent renewable energy procurement strategies across global production networks positions this sector as a structurally stable and recurring source of demand.

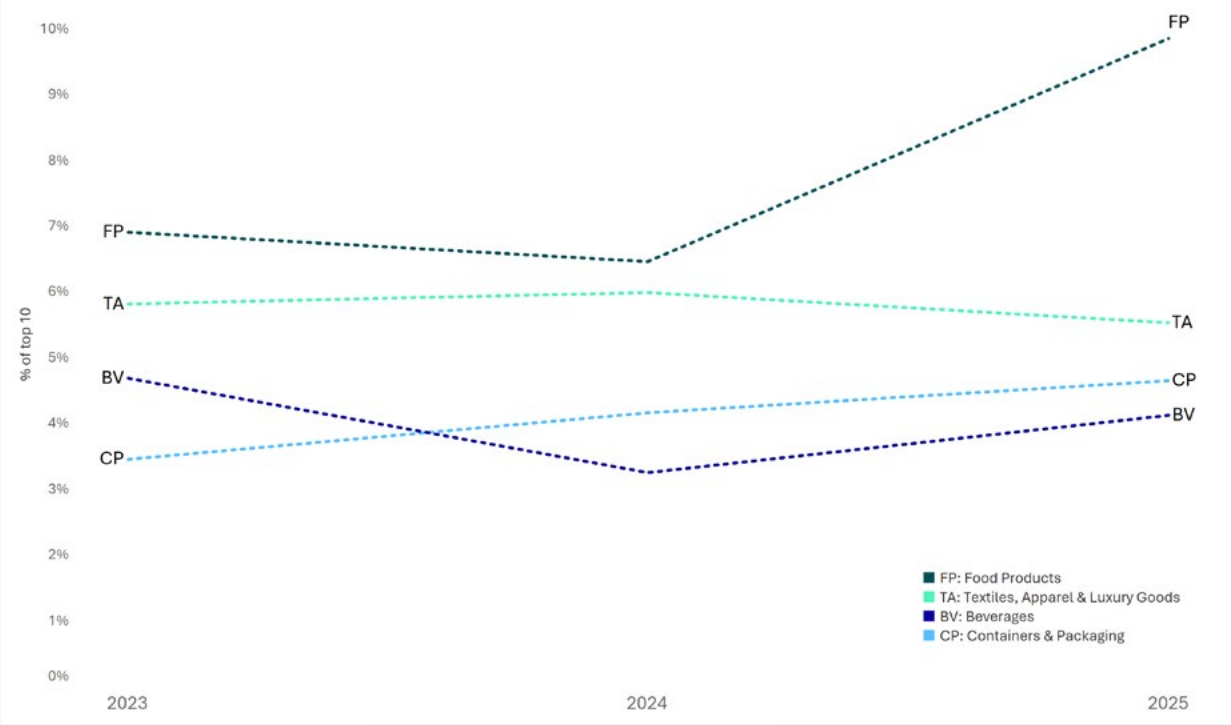
5. Electronic Equipment and Semiconductors

Electronic Equipment and Semiconductors remain structurally significant, reflecting their high electricity intensity and globally distributed manufacturing footprint. While both segments show a decline (Electronic Equipment: 18% to 10%; Semiconductors: 9% to 7%), this is primarily driven by geographical constraints—most notably the exclusion of China —rather than reduced underlying demand. Demand in these sectors remains fundamentally intact but constrained by market accessibility.

Emerging Industries

A second wave of I-REC adoption (Figure 3) is emerging across consumer-facing and supply chain–driven sectors, where demand is increasingly shaped by procurement requirements, Scope 3 decarbonization strategies, and competitive positioning within global value chains.

FIGURE 3: I-REC DEMAND TRENDS: EMERGING INDUSTRIES (2023-2025)



1. Food and Beverage

Food Products and Beverages segments represent one of the most notable growth signals in the I-REC market over the past three years, increasing from 12% in 2023 to 14% in 2025. This growth is primarily driven by a combination of renewable energy procurement requirements, Scope 2 reporting obligations, and increasing supplier and value-chain pressure, particularly in globally traded and consumer-facing segments.

2. Containers & Packaging

Containers & Packaging (4–5%) shows consistent growth and increasing relevance, reflecting its role as a critical intermediary within global supply chains, particularly between industrial production and consumer-facing sectors. As sustainability expectations move downstream, packaging suppliers are increasingly required to demonstrate traceable and standardized renewable energy usage as part of broader procurement criteria.

3. Textiles, Apparel & Luxury Goods

Textiles, Apparel & Luxury Goods (approximately 6%) remains a structurally important segment, characterized by highly fragmented, multi-tier, and globally distributed supply chains. In this sector, renewable electricity usage is increasingly linked to supplier qualification, sourcing decisions, and export competitiveness, particularly for suppliers operating in emerging markets.

Across these emerging sectors, a consistent pattern is evident: demand is increasingly driven by value chain dynamics rather than standalone corporate action. Large buyers are extending decarbonization requirements upstream, embedding renewable energy into procurement criteria, supplier engagement models, and competitive positioning.

In this context, I-RECs provide a scalable, standardized, and globally applicable mechanism that enables companies of all sizes to participate in renewable energy markets, regardless of geographic or structural constraints.

Collectively, these trends demonstrate that I-RECs are becoming integral to how industries operationalise Scope 3 decarbonization, supporting consistent, auditable, and transferable renewable energy claims across multi-tier global supply chains.

Evolving Demand Dynamics Expanding Beyond Heavy Industry: The Rise of Supply Chain Demand

Over 20,000 beneficiaries have redeemed across all 74 GICS industries between 2023-2025. The I-RECs volume vs. number of Beneficiaries (Corporate Buyers) distribution highlights a clear bifurcation in I-REC demand structure across industries.

On one end, sectors such as Metals & Mining and Oil & Gas demonstrate high volume with relatively concentrated end user bases, indicating that demand is driven by a smaller number of large, energy-intensive buyers with significant electricity loads. On the other end, sectors such as Textiles, Food Products, and Electronic Equipment show higher corporate buyer counts with comparatively lower volume per entity, reflecting broader adoption across fragmented, supply chain–driven industries. This pattern confirms that I-REC demand is evolving along two parallel tracks: scale-driven decarbonization by large industrial players and distributed adoption across global value chains.

From a market perspective, this reinforces the role of I-RECs as a flexible and scalable decarbonization instrument capable of serving both concentrated and fragmented sectoral demand profiles. The parallel expansion of total corporate end-users and participating sectors across 74 GICS industries further indicates that I-RECs are not confined to niche use-cases but are increasingly embedded across the real economy. Importantly, the dispersion of sectors across both axes (from low to high I-REC procurement volumes (Figure 4) demonstrates that I-RECs enable consistent renewable energy accounting regardless of company size, geography, or market maturity, supporting both large-scale industrial decarbonization and multi-tier supply chain integration.

FIGURE 4: DEMAND DYNAMICS (I-RECS DEMAND VOLUME VS NUMBERS OF CORPORATE BUYERS)

Takeaway

The in-depth analysis of I-RECs (2023–2025) indicates a clear inflection point: I-RECs have moved beyond early-stage, voluntary application and are becoming embedded within the operational and commercial fabric of global industry, particularly across energy-intensive and supply chain–exposed sectors.

This evolution reflects a broader structural shift. I-RECs are increasingly deployed not only as instruments of corporate sustainability, but as practical mechanisms to operationalize decarbonization at scale, enabling organizations to address Scope 2 emissions consistently across geographies, while also supporting the growing integration of Scope 3 requirements into procurement and supply chain strategies. The market is simultaneously expanding along two parallel tracks, high-volume adoption by large industrial players and distributed uptake across multi-tier supply chains, reinforcing both scale and breadth of demand.

As a result, I-RECs are solidifying their role as a foundational component of global renewable energy markets, providing:

- A standardized and credible mechanism aligned with leading frameworks such as GHG Protocol, RE100, and SBTi
- A scalable pathway for decarbonization in hard-to-abate and energy-intensive industries
- A market-based solution that expands renewable energy access across fragmented and developing energy systems
- A practical tool for enabling value chain decarbonization, supporting supplier engagement and procurement alignment

I-RECs are no longer peripheral to the transition; they are increasingly part of the infrastructure enabling it, supporting both corporate climate strategies and the continued development and integration of renewable energy markets globally.

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