

Turkey Steel Research and Industrial Policy: EAF Dominance, Green Transition, and Regional Export Strategies

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Abstract

This document examines Turkey's steel research and industrial policy in 2025, with a focus on the country's global leadership in Electric Arc Furnace (EAF) share, dynamic export orientation, and rapid evolution toward decarbonization under the shadow of EU Green Deal and global climate goals. Drawing from the most recent strategic documents and government programs—presented in both Turkish and English where available—this report analyzes Turkey's new "Low Carbon Roadmap" (Düyük Karbonlu Yol Haritası), the updated state investment incentive regime, R&D funding through TÜBİTAK and EUREKA, the sector's adaptation to EU CBAM, and the institutional frameworks guiding this transition.

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1 Introduction

Turkey is now the world's eighth-largest steel producer, having surpassed traditional producers like Italy. The Turkish steel sector's emphasis on modern, efficient EAF technology (65% of total capacity), a strong private industry, and pivotal geographic positioning between Europe, Asia, and the Middle East make it a unique case among emerging economies.

2 Strategic Context and Recent Growth

- **2024 Crude Steel Production:** 36.9 million tonnes (8th in world) [1]
- **Export orientation:** 55%, among the top 5 in the world.
- **Per Capita Production:** ~430 kg/year
- **EAF Share:** 65% (global leader)
- **Key products:** Construction-grade long products (rebar, wire rod), flat products, developing auto/white goods segment

3 Industry Structure and Major Players

3.1 EAF and Integrated Producers

- **Erdemir/OYAK Group:** Largest integrated (BF-BOF) producer, state-linked, strong modernization drive. - **İşdemir:** Sister plant, recovering from 2023 earthquake, vital for flat/long products on Mediterranean coast. - **Çolakoğlu, Habas, İçdaş:** Largest private EAF groups, export-focused, constant efficiency investment. - Over 20 medium-scale EAF/long product producers, mostly family-owned, regionally clustered (İzmir, Bursa, İskenderun).

4 Official Programs and Policy Landscape

4.1 Key National Strategies and Initiatives

- **Türkiye Çelik Sektörü için Düşük Karbonlu Yol Haritası (2023–2025)**
Low Carbon Roadmap for the Turkish Steel Sector, Ministry of Industry and Technology (Sanayi ve Teknoloji Bakanlığı). Major policy framework aligning sector with the Paris Agreement and EU CBAM rules. Roadmap at: <https://www.sanayi.gov.tr/assets/pdf/birimler/turkiye-celik-sektoru-icin-dusuk-karbonlu-yol-haritasi.pdf>
- **2025 State Investment Incentive System for Steel (Cumhurbşkanlığı Karar No. 9903, Haziran 2025)** – General, regional, green/priority, strategic, and mega-project axes. Emphasis on decarbonization and digitalization. English summary: [https://www.steelorbis.com/steel-news/latest-news/turkish-steel-sector-to-receive-support-with-new-incentives-for-2025/htm](https://www.steelorbis.com/steel-news/latest-news/turkish-steel-sector-to-receive-support-with-new-incentives-for-2025/)
- **Demir-Çelik ve Demirdışı Metaller Strateji Belgesi ve Eylem Planı**
Steel and Non-Ferrous Metals Sectoral Strategy and Action Plan. Main blueprint for industrial modernisation. (TR) <https://www.matil.org/tr/sektorden/celik-sektoru/demircelik-ve-demirdisi-metaller-strateji-belgesi-798.html>
- **TÜBİTAK 1004 — Mükemmeliyet Merkezi Destek Programı**, international and industrial research funding for metal and steel innovation. (EN) <https://stip.oecd.org/stip/interactive-dashboards/policy-initiatives/2025%2Fdata%2FpolicyInitiatives%2F26241>
- **Onuncu Kalkınma Planı: Demir Çelik Çalışma Grubu Raporu**
“Tenth Development Plan (2014-2023): Steel Working Group Report”—desired transformation, targets, diagnosis. (TR) <https://www.sbb.gov.tr/wp-content/uploads/2022/08/Onuncu-Kalkinma-Plani-Demir-Celik-Calisma-Grubu.pdf>

4.2 Active Green Steel and Decarbonization Programs (2023–2025)

- **Türkiye Yeşil Mutabakat Eylem Planı** (Turkey Green Deal Action Plan, 2021–): Implementation tracked at sectoral (steel included) level in every ministry.
- **Türkiye Çelik Sektörü için Düşük Karbonlu Yol Haritası**: First complete sectoral assessment of decarbonization for a major Turkish industry, aligns with CBAM/ETS.
- **Low-Carbon and Efficiency Focused Initiatives**—MoIT/“Sanayi ve Teknoloji Bakanlığı”: Eko Çelik Projesi, TYSP (Türkiye Yeşil Sanayi Programı), and Türkiye Industrial Decarbonization Investment Platform (TIDIP).
- **Support for R&D**: TÜBİTAK, EUREKA, and the Center of Excellence funding (Ulusal ve Uluslararası Ortak ArGe Programları).
- **EU CBAM Preparedness**: MoIT/Energy Ministry sectoral roundtables and adaptation working groups.

5 Policy Framework and Governance

Responsible Agencies:

- Ministry of Industry and Technology (Sanayi ve Teknoloji Bakanlığı): National policy, industrial decarbonization, investment incentives.
- Ministry of Energy and Natural Resources: Electricity and energy security, renewables for EAF sustainability.
- Ministry of Environment, Urbanisation and Climate Change: Environmental, CBAM and Paris/NDC alignment, permitting and compliance.
- TÜBİTAK: Research ecosystem, major funding body for technological innovation in steel/metals.
- TÇÜD (Turkish Steel Producers Association): Major sectoral advocacy, statistics, and interface with the state.

Recent Legislative and Policy Milestones

- **Cumhurbaşkanlığı Yatırım Teşvik Sistemi (2025)**: First incentives for “green steel” projects, large-scale renewables integration, and digitalization.
- **MoIT “Düşük Karbonlu Yol Haritası” (2024)**: Defined emission reduction targets and priorities for Turkish steel, paved way for Turkish CBAM reporting infrastructure.
- **CBAM/EU Adaptation**: Comprehensive roadmap to comply with EU’s Carbon Border Adjustment Mechanism for all steel (flat and long) exports.

6 R&D, Innovation, and International Programs

TÜBİTAK and International Collaboration

- **TÜBİTAK 1004 (Mükemmeliyet Merkezi Destek Programı)**: Center of Excellence for metallurgy and materials, supports steel sector innovation, from green technologies to digital transformation.
- **EUREKA, COST, and Horizon EU**—international research integration, pilot green steel projects, digitalisation, and process improvement.

7 Trade, EU Relations, and Future Outlook

- **EU Customs Union**: Core to Turkish steel’s EU market access; ongoing negotiations for CBAM compliance paired with export strategy diversification to Middle East, Africa, and Asia.
- **CBAM**: Turkish EAF advantage (average CO₂ emissions under 1.2 t/t) gives relative carbon edge, provided grid decarbonization continues.
- **Green Steel Export Hubs**: Targeting

green premium customers in EU and MENA with new investments in solar/wind-backed EAF production.

8 Comparative Table: Strategic Programs and Initiatives

Program/Document	Agency/Ministry	URL
Türkiye Çelik Sektörü için Düşük Karbonlu Yol Haritası (2023-2025)	Sanayi ve Teknoloji Bakanlığı	https://www.sanayi.gov.tr/assets/pdf/birimler/turkiye-celik-sektoru-icin-dusuk-karbonlu-yol-haritasi-2023-2025.pdf
State Investment Incentives for Steel (Karar No. 9903)	Cumhurbaskanligi/Sanayi Bakanligi	https://www.steelorbis.com/steel-news/latest-news/turkish-steel-sector-to-receive-support-htm
Demir-Çelik ve Demirdışı Metaller Strateji Belgesi	Sanayi ve Teknoloji Bakanlığı, Matil	https://www.matil.org/tr/sektorden/celik-sektoru/demircelik-ve-demirdisi-metaller-strateji-belgesi.html
TÜBİTAK 1004 ArGe Programı	TÜBİTAK, OECD	https://stip.oecd.org/stip/interactive-dashboards/policy-initiatives/2025%2Fdata%2FpolicyInitiatives%2F26241
Onuncu Kalkınma Planı – Demir Çelik Raporu	Cumhurbaşkanlığı	https://www.sbb.gov.tr/wp-content/uploads/2022/08/Onuncu-Kalkinma-Plani-Demir-Celik-Raporu.pdf

9 Conclusions and Outlook

Turkey's steel sector stands as a strategic regional hub, already aligned with emerging climate and digital policy trends, but is now at a crossroads where ambitious programs on paper need consistent execution and cross-ministerial coordination. The most recent 2023–2025 plans prioritize decarbonization, build on public-private R&D, and set the stage for Net Zero 2053 goals. Turkey's ability to maintain EU market access, scale renewables for its EAF fleet, and secure global green steel leadership will shape its future competitive position.

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Comments and perspectives from Turkish academic or industrial HLH (High Level Human) stakeholders are warmly welcomed.

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