



THE EVOLUTION OF MATERIALS

Stainless Steel Insights 2025



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“Climate systems are edging past safe planetary boundaries, reshaping coastlines and supply chains alike. At the same time the share of people aged over sixty-five is on course to double in many developed economies, stretching hospitals, pensions and even the geometry of homes and transit hubs. Technology will morph and political winds will shift, yet one constant runs through every scenario: societies will still need vast expanses of resilient, low-impact infrastructure and energy.

Materials sit at the heart of that task. Behind every policy target or market forecast lies a physical choice – which alloy, polymer or composite will carry the load or store the energy? The decision rarely makes headlines, but it is exactly where grand ambitions succeed or stall. The UK National Audit Office estimates that design consumes only 0.3–0.5% of a project’s whole-life budget yet influences up to 85% of it.^[1]

And if geopolitics, capital flows and consumer taste feel unpredictable, other forces remain stubbornly certain. Ageing bridges must still be replaced, and coastal cities will demand corrosion-proof defenses and buildings. In addition, recent studies suggest average temperatures increases may accelerate the rate of corrosion propagation in infrastructure.^[2] By 2100, the European Commission expects climate change induced corrosion repair costs to range from €76bn in current climate scenarios, up to €883bn in a severe scenario.^[3]

This means manufacturers will seek materials that can cycle through multiple lives without downgrading performance and risk over time. Those certainties invite a fresh look at metals that combine longevity, strength, and genuine circularity.”

^[1] Getting Value for Money from Construction Projects through Design, National Audit Office, 2013.

^[2] Landi et al. 2025. Europe's reinforced concrete structures: Corrosion rates in a changing climate.

^[3] Dimova et al, 2024. Impact of climate change on the corrosion of the European reinforced concrete building stock, Publications Office of the European Union

EXECUTIVE SUMMARY

From May 5–20, 2025, research consultancy Kairos Future, on behalf of Outokumpu, conducted a global online survey of senior decision-makers from 70 companies, totaling the annual revenue of ~428.85 billion USD (2024) – including some of the world’s largest stainless-steel consumers. Quantitative and qualitative data were collected and analyzed by Kairos Future, yielding 49 completed responses (70% response rate). To complement the survey, in-depth interviews were conducted with selected companies and Outokumpu experts.

Respondents represent a broad swath of the economy: energy, automotive, consumer goods, construction and infrastructure, transport equipment, food & beverage, pharmaceuticals, chemical/petrochemical processing and specialized distribution. Geographically, respondents break down into Europe (41%), United States (24%) and those operating globally (35%) – a mix that provides a reasonably balanced view of regional priorities and pain-points.

The survey shows momentum:

- two-thirds plan to increase stainless purchases over five years
- sourcing is being diversified as tariffs and trade friction bite
- life-cycle-cost (LCC) methods are spreading
- sustainability data increasingly shape tenders and Scope 3 targets.

Growth will concentrate where reliability is properly priced: energy systems, the built environment, mobility and selected consumer/process industries. The common thread is fewer unplanned outages and lower upkeep over longer service lives, with circular recovery at end-of-life. Buyers will increasingly reward scrap-rich, lower-emission stainless and the suppliers able to certify it.

The playbook is simple: institutionalise LCC in procurement, hard-wire resilience into sourcing, and measure outcomes in availability, maintenance avoided and verified CO₂ per unit. In other words, pay once for durability and collect the cash flows for decades.





DIG DEEPER INTO THE KEY INSIGHTS AND GROWTH SECTORS:

1.

ENERGY —

**ENGINEER FOR
CORROSION & HEAT**

2.

**DEFENSE &
AEROSPACE —**

DESIGN FOR EXTREMES

3.

**BUILDINGS & CIVIL
INFRASTRUCTURE —**

BUILD FOR LONG LIFE

4.

**AUTOMOTIVE &
MOBILITY —**

**OPTIMIZE TOTAL COST OF
OWNERSHIP & SAFETY**

5.

**CONSUMER &
LIFESTYLE —**

CHOOSE DURABLE HYGIENE



ABOUT THIS REPORT

Outokumpu is accelerating the green transition as the global leader in sustainable stainless steel. Our business is based on the circular economy: our products are made from 95% recycled materials, which we then turn into fully recyclable stainless steel. This steel is utilized in various applications across society, including infrastructure, mobility, and household appliances. We are committed to 1.5 °C target to mitigate climate change, and with up to 75% lower carbon footprint than the industry average, we support our customers to reduce their emissions. Together, we are working towards a world that lasts forever. Outokumpu Corporation employs approximately 8,700 professionals in close to 30 countries, with headquarters in Helsinki, Finland and shares listed in Nasdaq Helsinki.

Read more: www.outokumpu.com

Kairos Future is a Swedish consultancy specializing in strategic intelligence, foresight, and scenario planning. Through trend analysis, innovation, strategy, and software support for AI-driven analytics, we help our clients understand and shape their future. Founded in 1993, Kairos Future is headquartered in Stockholm and has offices and partners around the world. Read more: www.kairosfuture.com



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