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Why Tungsten Matters: A Critical Mineral Under Structural Pressure

Hard Asset Market Snapshot & Key US Macro Catalysts This Week

	Current $US April 10	Weekly Performance	YTD Performance
Gold	$4,748	2%	10%
Silver	$75	3%	5%
Copper	$5.74	2%	2%
Bitcoin	$71,697	7%	-18%
S&P 500	6,766	3%	-1%

Date	Time (ET)	Release	Market Focus
Tue, Apr 14	8:30 am	**CPI (Mar)**	Inflation path; real yields & USD
Wed, Apr 15	8:30 am	Retail Sales (Mar)	Consumer demand; growth momentum
Thu, Apr 16	8:30 am	Initial Jobless Claims	Labor momentum; growth signal

Tungsten is being reclassified from a niche industrial input to a **strategically constrained resource**, as supply concentration, policy intervention, and defense demand reshape its role in global markets. While historically tied to industrial activity, the market is evolving toward a structure defined by **limited supply elasticity and growing strategic demand**, particularly across aerospace and defense applications.

At the same time, global supply chains remain highly concentrated, with China maintaining dominant control over both production and downstream processing. Tightening quotas and export controls have increased the sensitivity of global availability to policy decisions, reinforcing tungsten's role as a **supply security-driven asset**, rather than a purely cyclical commodity.

Taken together, these dynamics suggest tungsten markets are entering a **structurally tighter regime**, where pricing is increasingly driven by availability and supply security, rather than incremental changes in industrial demand.

Conclusion First: Key Takeaways

Tungsten sits at the intersection of **industrial production and strategic demand**, supported by a highly concentrated and policy-sensitive supply base. As a result, it is transitioning from a cyclical industrial input to a **strategic hard asset**, with pricing increasingly anchored to availability rather than traditional demand fluctuations.

- **Structural re-rating underway –** Transitioning from industrial metal to **strategically constrained resource**
- **Highly concentrated supply base –** China controls ~75–80% of production and a greater share of processing
- **Emerging structural deficit –** ~17% supply shortfall expected through the mid-decade
- **Dual-demand profile –** Cyclical industrial demand + **structural defense and advanced manufacturing demand**
- **Opaque pricing mechanism –** Benchmark + bilateral pricing drives **delayed discovery and episodic repricing**

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What is Tungsten? Key Properties and Uses

Tungsten is a dense industrial metal defined by its **exceptional hardness, high melting point, and resistance to wear and heat**, making it one of the most durable materials used in industrial and high-performance applications. With the highest melting point of any metal, tungsten maintains structural integrity under extreme conditions where most materials fail.

Figure 1 - Tungsten - Key Properties

Source: Miningvisuals.com

These properties are most economically expressed through **tungsten carbide**, where tungsten is combined with carbon to create an extremely hard, wear-resistant material. Tungsten carbide represents the dominant form of global consumption and is widely used in **cutting tools, drilling equipment, and industrial wear components**, making it foundational to manufacturing, mining, and resource extraction.

At the same time, tungsten's **density and thermal stability** make it critical in **defense and aerospace applications**, including armour-piercing munitions, missile systems, and high-performance alloys. These applications require materials capable of withstanding extreme stress and temperature environments, with limited substitution available.

Taken together, tungsten's physical properties underpin both its **industrial importance and its growing strategic relevance**, linking high-volume industrial demand with increasingly critical defense and advanced manufacturing applications.

Why Tungsten Matters: From Industrial Metal to Strategic Resource

Tungsten has historically been viewed as a niche industrial metal, valued primarily for its role in cutting tools, mining equipment, and high-performance industrial components. In this context, demand was largely cyclical, closely tied to global manufacturing activity, construction, and capital expenditure cycles.

More recently, however, tungsten's role is undergoing a structural shift. Demand is becoming increasingly linked to **strategic and high-performance applications**, particularly across aerospace, advanced manufacturing, and defense systems. Its use in armour-piercing munitions, missile components, and emerging anti-drone technologies has elevated its importance within national security frameworks, positioning tungsten as a material with both industrial and strategic relevance.

At the same time, supply dynamics have become more constrained and policy-sensitive. China's dominant position across both production and processing, combined with tightening mining quotas and export controls, has increased the vulnerability of global supply chains to policy decisions. This concentration reduces market flexibility and reinforces the importance of supply security as a determining factor in availability.

Importantly, this shift reflects a broader change in how the market functions. Tungsten is no longer defined solely by industrial demand cycles, but increasingly by the interaction between **structurally constrained supply and policy-driven demand**, particularly in defense and advanced manufacturing applications.

As a result, tungsten is transitioning from a cyclical industrial input to a **strategically constrained resource**, where market behaviour is increasingly shaped by supply security, geopolitical dynamics, and long-term structural demand trends.

Figure 2 - Why Now: Converging Supply Constraints and Strategic Demand

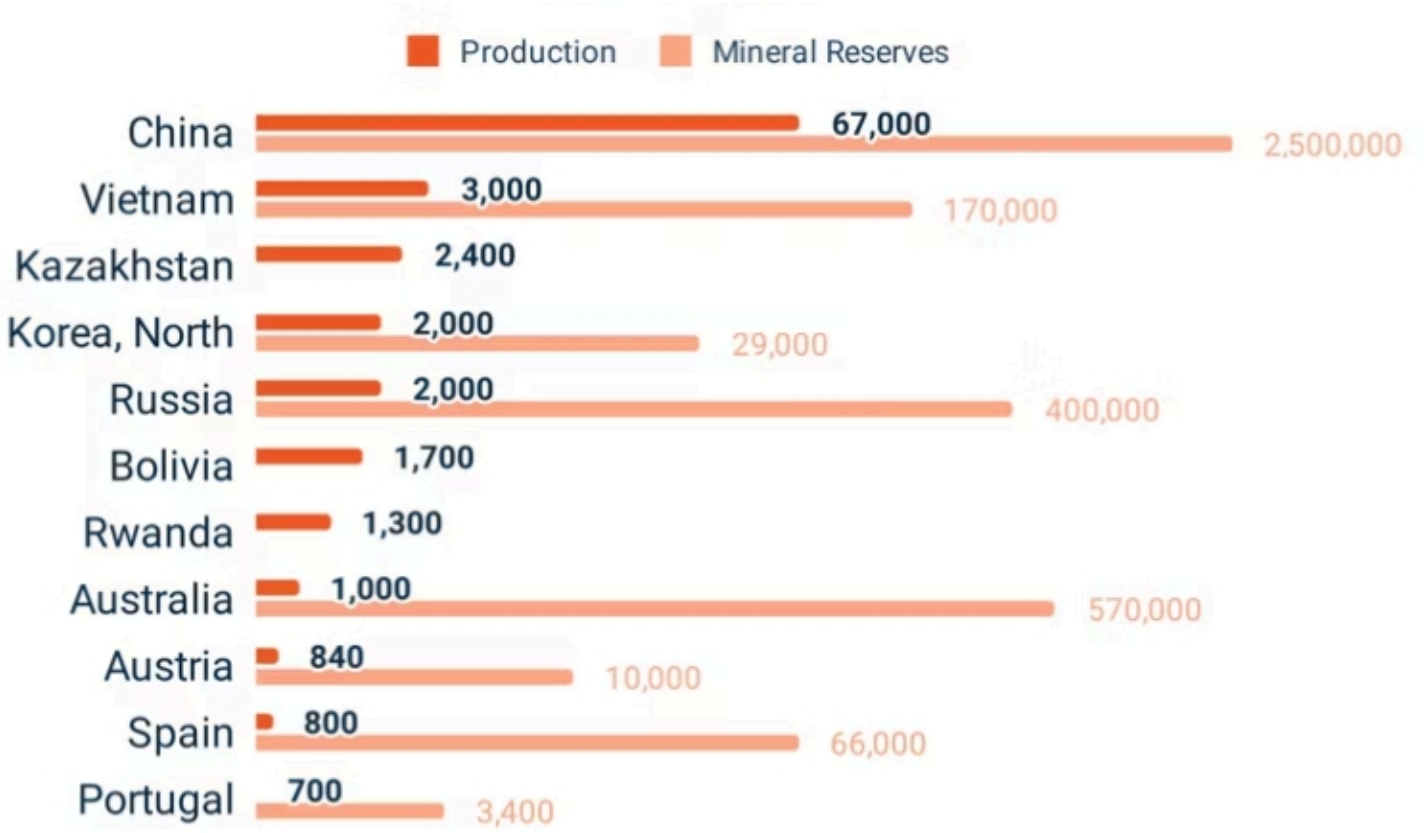
- **China tightening supply** – Production quotas and export controls are increasing the sensitivity of global availability to policy decisions
- **Rising defense demand** – Ongoing geopolitical conflicts are accelerating consumption across munitions, missile systems, and advanced military hardware
- **Limited supply response** – New tungsten projects face long development timelines, permitting complexity, and capital constraints
- **Critical mineral policy shift** – The U.S. and Europe are actively prioritizing tungsten supply security through designation, funding, and domestic development initiatives

Source: RCC Analysis

Supply Reality: Concentration and Constraint

Global tungsten supply is defined by a high degree of geographic concentration and limited flexibility, creating a structurally constrained market. China accounts for approximately **75–80% of global production**, with an even greater share of processing and refining capacity concentrated within its domestic supply chain. This dominance gives China significant influence over both primary supply and downstream availability, exposing global markets to policy decisions, export controls, and production quotas.

Figure 3 - Global Tungsten Supply is Highly Concentrated in China



Source: USGS, Investing News Network

China's dominance in global tungsten supply reinforces the market's sensitivity to **policy decisions, export controls, and domestic production quotas**, limiting the ability of global supply to respond to changing demand conditions.

More recently, Chinese authorities have implemented tighter mining quotas and export controls across several critical minerals, including tungsten. While often framed in the context of environmental management and resource conservation, these measures reinforce the strategic importance of domestic supply and increase the role of policy in determining global availability.

Outside of China, supply remains limited and fragmented. Production is concentrated in a small number of jurisdictions, including Vietnam and Russia, along with a handful of smaller operations globally, none of which approach the scale or integration of Chinese supply. This lack of diversification reduces the ability of global markets to respond to supply disruptions or shifts in demand.

Importantly, the development of new tungsten supply is both **capital-intensive and time-consuming**. Projects face long permitting timelines, technical complexity, and relatively niche market economics compared to larger bulk commodities. In addition, declining ore grades in some mature deposits and limited availability of high-quality resources further constrain the potential for rapid supply growth.

Recycling provides a partial offset, particularly through the recovery of tungsten from industrial scrap and tooling. However, recycling flows are closely tied to industrial activity and do not fully compensate for primary supply constraints, particularly in applications such as defense, where material is consumed rather than recoverable.

Taken together, tungsten supply is characterized by **high concentration, limited elasticity, and increasing policy influence**, suggesting that the market is unlikely to respond quickly to higher prices and may remain structurally constrained over time.

Demand: Industrial Backbone Meets Strategic Growth

Tungsten demand is anchored by its role in industrial applications, where its physical properties, including extreme hardness, high density, and resistance to heat, make it indispensable in manufacturing and resource extraction. The majority of global consumption is tied to **cemented carbides**, used in cutting tools, drilling equipment, and wear-resistant components across manufacturing, mining, and energy infrastructure. As a result, tungsten demand maintains a strong linkage to **global industrial activity and capital investment cycles**, providing a stable and persistent base of consumption.

Importantly, this demand profile is not uniform, but reflects a **dual-structure composition**. Approximately **60–70%** of global tungsten consumption is concentrated in **tungsten carbide**, which serves as the primary volume driver of the market and is closely tied to industrial output and infrastructure activity. The remaining **30–40%** is associated with **tungsten metal and alloy applications**, including aerospace components, electronics, and high-temperature industrial systems, where performance requirements limit substitution.

Figure 4 - Why Tungsten Matters – A Dual-Demand Framework

Segment	Primary Use Case	Demand Driver	Macro Sensitivity
Tungsten Carbide	Cutting, drilling, machining, wear parts	Industrial production, mining, energy	High (GDP / capex-linked)
Tungsten Metal	Heat-resistant components, electronics	Aerospace, defense, specialty industrial	Moderate (strategic demand)

Source: RCC analysis

This segmentation is critical to understanding tungsten's evolving demand dynamics. While carbide demand remains cyclical and linked to economic activity, metal and alloy applications are increasingly tied to **longer-duration, non-cyclical drivers**, including advanced manufacturing and defense systems. As a result, tungsten demand is becoming less sensitive to short-term economic fluctuations and more influenced by structural trends.

More recently, demand growth has been increasingly supported by **defense and strategic applications**, where tungsten's density and durability make it essential for armour-piercing munitions, missile components, and emerging anti-drone technologies. These applications differ from traditional industrial uses in that they are less responsive to economic cycles and more closely aligned with geopolitical developments and national security priorities.

In addition, tungsten continues to play a critical role in advanced manufacturing and high-performance engineering, including aerospace alloys, electronics, and specialized energy systems. As these sectors expand, particularly in areas requiring materials capable of withstanding extreme conditions, tungsten demand is increasingly supported by **long-duration structural growth trends**, rather than purely cyclical drivers.

Importantly, many of these applications offer **limited substitution potential**. Tungsten's physical characteristics are difficult to replicate in high-stress and high-temperature environments, reducing demand elasticity and reinforcing the persistence of consumption, even in a higher price environment.

Taken together, tungsten demand reflects a combination of **cyclical industrial volume and structural strategic consumption**, suggesting that future demand may be more resilient across economic cycles and increasingly influenced by policy, security, and long-term technological trends.

This constrained supply profile provides the foundation for tungsten's demand dynamics, which combine industrial volume with increasingly strategic consumption.

Pricing Framework: Opaque Markets and Non-Linear Price Formation

Tungsten flows from mined concentrate through chemical processing into **ammonium paratungstate (APT)**, the primary pricing benchmark, before being converted into powders and end-use products. Control over processing stages, particularly APT production, reinforces pricing power within the supply chain.

Tungsten pricing differs materially from that of larger commodity markets, as it is not determined through a centralized exchange or transparent, liquid trading environment. There is no active futures market on exchanges such as the LME or COMEX, and price discovery instead occurs through a combination of published benchmarks and privately negotiated transactions.

The primary reference price is APT, with benchmark prices typically published by agencies such as Fastmarkets and Asian Metal. **Recent pricing has exceeded US$3,200 per mtu (Fastmarkets, April 10, 2026)**, reflecting tightening supply conditions and reinforcing the sensitivity of the market to availability constraints. However, these benchmarks represent assessed prices rather than executable levels and may not fully capture real-time shifts in supply and demand.

In practice, the majority of transactions occur through **bilateral contracts** between producers, processors, and end-users. Pricing within these agreements reflects material specifications, volume commitments, delivery terms, and counterparty relationships, resulting in realized pricing that can vary meaningfully from published benchmarks.

This structure results in **limited liquidity and reduced price transparency**, particularly relative to more established commodity markets. Participation is concentrated among a relatively small number of producers and consumers, inventories are not consistently reported, and spot market activity remains thin. As a result, price movements may not immediately reflect tightening conditions, but can adjust rapidly once constraints become more acute.

Importantly, China's dominant role across both mining and downstream processing further shapes pricing dynamics. With approximately 75–80% of global production and significant control over refining capacity, policy decisions, including export controls and production quotas, can have an outsized impact on global availability. This introduces a **policy-sensitive pricing regime**, where pricing is influenced not only by marginal cost and demand, but by strategic considerations around supply security.

Tungsten is not priced on an exchange, but through opaque, relationship-driven transactions.

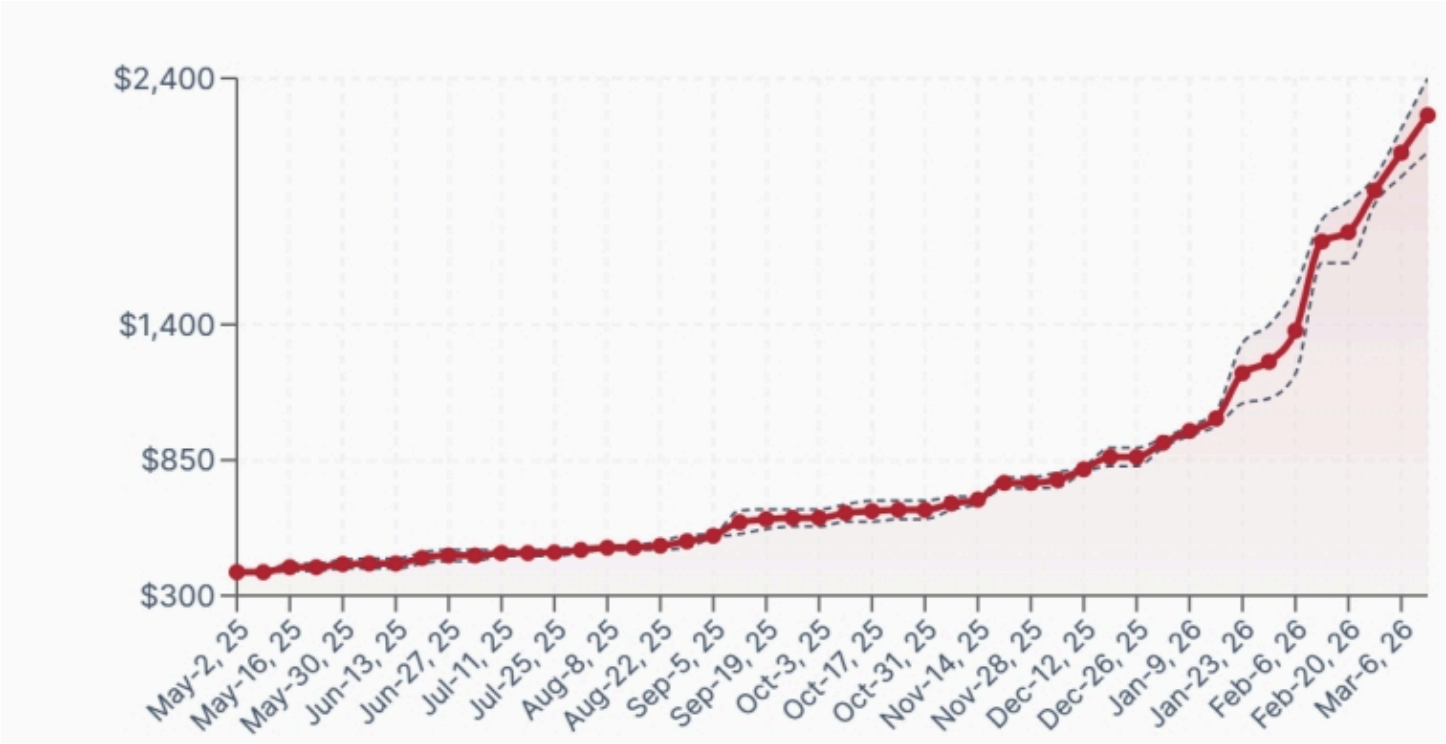
In this context, pricing behaviour becomes increasingly **non-linear**. In the absence of continuous price discovery, benchmark prices may lag underlying fundamentals during periods of tightening, but can reprice rapidly once material availability becomes constrained.

Modest disruptions in supply can therefore have an outsized impact on pricing, given the limited elasticity in both production and substitution. This dynamic contrasts with more liquid commodity markets, where price signals are transmitted continuously and supply responses are more immediate.

At the same time, the combination of **concentrated supply, limited substitution, and growing strategic demand** reinforces the potential for sustained periods of elevated pricing, rather than short-lived cyclical spikes. Pricing is increasingly anchored to **availability and access to material**, rather than purely to marginal production costs.

For investors, these dynamics suggest that tungsten should be viewed through a **strategic, supply-driven lens**, rather than as a conventional cyclical commodity exposure.

Figure 5 - APT Tungsten Pricing Reflects Episodic Repricing in an Opaque Market (USD/MTU)



Source: Fastmarkets, Almonty

> ***Price movements occur in step changes rather than continuous discovery, reflecting tightening availability rather than incremental demand shifts.***

Implications for Investors

- **Strategic exposure to constrained supply** – Tungsten provides leverage to a market where pricing is increasingly driven by **availability and supply security**, rather than incremental changes in demand
- **Supply-side positioning is critical** – Investment opportunities are likely to be concentrated in **jurisdictions and assets capable of delivering reliable, non-concentrated supply**, particularly outside of China's dominant processing network
- **Asymmetric pricing potential** – Limited supply responsiveness, low inventory visibility, and inelastic demand increase the likelihood of **non-linear price movements** as constraints emerge
- **Policy-driven upside** – Government prioritization of critical minerals, including stockpiling, funding, and domestic development initiatives, may provide **incremental demand support and capital inflows**
- **Structural demand floor** – The growing role of defense and advanced manufacturing introduces a **less cyclical component of demand**, supporting consumption even during periods of industrial weakness
- **Longer-duration investment thesis** – Tungsten is best viewed as a **structural resource exposure**, where value is driven by persistent supply constraints and strategic relevance, rather than short-term commodity cycles

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