

THE METAL THAT CAN SWITCH OFF FACTORIES.

WHY **TUNGSTEN** IS INDIA'S HIDDEN VULNERABILITY.

One mineral. A long chain.
A strategic leverage in
China's hands.



STRATEGIC CONTROL

Tungsten sits at the core of defence, industrial and technology supply chains.



GLOBAL IMPACT

Supply disruptions ripple across industries, economies and geopolitics.



INDIA'S CHALLENGE

Over 90% import dependent, India must act to secure its critical mineral future.



74

W

Tungsten

183.84



OF GLOBAL
**TUNGSTEN MINE
PRODUCTION**
COMES FROM CHINA.

INSIDE THIS EDITION



The Global
Tungsten
Dependency



Geopolitical
Leverage
in Action



Industry
at Risk



India's
Way
Forward

02 NOT IN THE SPOTLIGHT. BUT **EVERYWHERE.**

Tungsten isn't the final product.
It's what helps make the final product.



No tools. No precision. No production.
That's the power of this invisible metal.

03

CHINA DOESN'T JUST MINE IT. IT CONTROLS THE CHAIN.



ORE



CONCENTRATE



APT /
REFINING



HIGH-PURITY
TUNGSTEN
POWDER



TUNGSTEN
CARBIDE /
ALLOYS



TOOLS +
DEFENCE +
SEMICONDUCTORS



~80%

OF GLOBAL
TUNGSTEN MINE
PRODUCTION
COMES FROM
CHINA.

But the real power is in
processing.

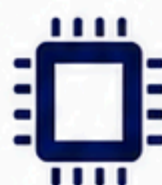
Control the bottleneck.
Control the world.



CRITICAL FOR
INDUSTRY



VITAL FOR
DEFENCE



ESSENTIAL FOR
SEMICONDUCTORS



STRATEGIC FOR
NATIONAL SECURITY



No tools. No precision. No production.
That's the power of this invisible metal.

WHEN A COMMODITY BECOMES A WEAPON.

FEB 2025: CHINA INTRODUCES EXPORT LICENSING FOR TUNGSTEN.



Restricted supply
Delays and denials become leverage.



Tighter availability outside China
disrupts global flows.



Sharp increase in prices
adds cost pressure across industries.



Higher input costs + supply chain uncertainty
impact competitiveness.

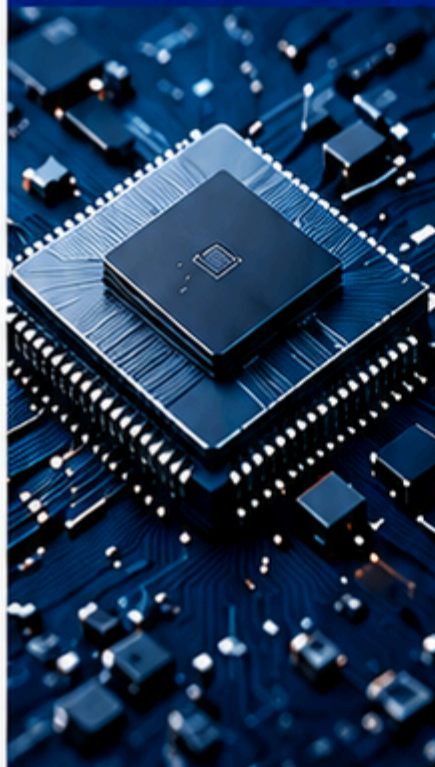
DEFENCE



Tungsten-alloy penetrators power APFSDS ammunition used in **India's tanks**.



SEMICONDUCTORS



Tungsten compounds are critical in advanced chip manufacturing (**WF₆**).



INDUSTRIALS



Tungsten carbide tools = high precision, high speed, **high performance**.



“

If tungsten becomes scarce, industries don't just get expensive.

They slow down. Or stop.

”

HOW TUNGSTEN BECAME THE CHIP INDUSTRY'S WEAK LINK.

74

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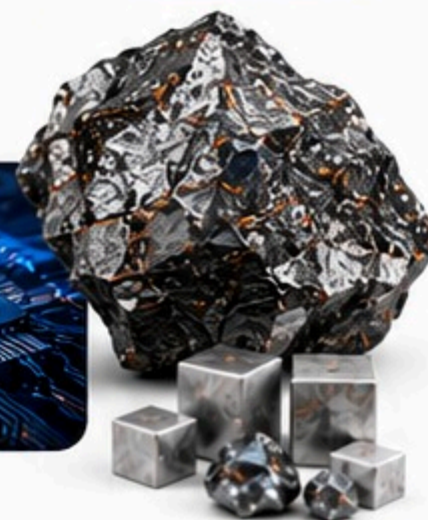
Tungsten
183.84

CHINA

Controls Tungsten



JAPAN

Needs Tungsten
to make WF_6  WF_6 Essential for
Advanced Chips

In 2026, China **restricted exports** of high-purity tungsten powder to Japan.



Since tungsten powder makes up **60–70%** of WF_6 's production cost, Japanese WF_6 producers were hit.



Two major Japanese suppliers, accounting for about **25%** of global WF_6 supply, announced production halts.



This immediately put **Samsung, SK Hynix** and **TSMC** under pressure because WF_6 is used to create the tiny tungsten connections inside advanced chips.



There is no easy substitute, and qualifying a new supplier can take **18–24 months**.

THE REAL LESSON



The semiconductor industry thought it was **buying WF_6 from Japan**.



But Japan itself **depended on China** for tungsten powder.

SO THE ACTUAL SUPPLY CHAIN WAS:

CHINA
(Tungsten)JAPAN
(WF_6)SAMSUNG / TSMC /
SK HYNIX
(Chips)

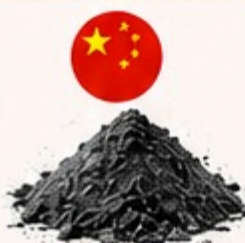
China didn't need to stop semiconductor production directly.

It controlled a tiny upstream **input** that eventually reached the chip fabs.



And the irony?

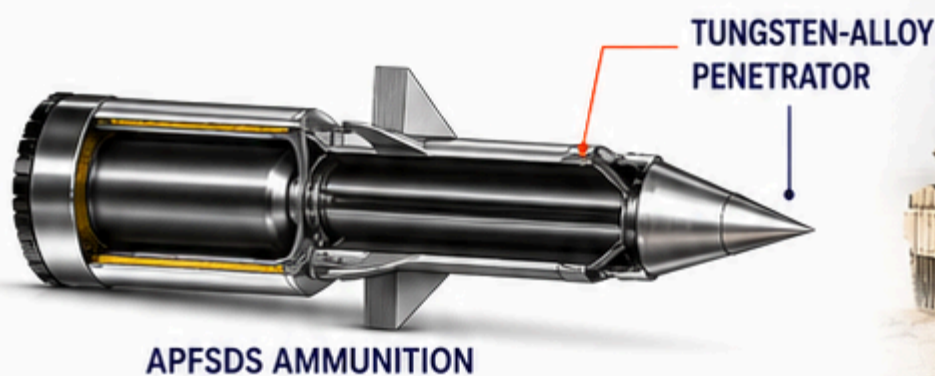
As Japanese supply weakened, Chinese WF_6 producers could step in, meaning the **chokepoint** potentially moved from Japan back toward China.

TUNGSTEN
POWDERCHINESE WF_6
PRODUCERSGLOBAL CHIP
INDUSTRY

INDIA DESIGNS THE WEAPON. CHINA CONTROLS THE METAL.



India's T-90, T-72 and Arjun tanks use APFSDS ammunition, which relies on tungsten-alloy penetrators to defeat enemy armour.



THE PROBLEM IS UPSTREAM:

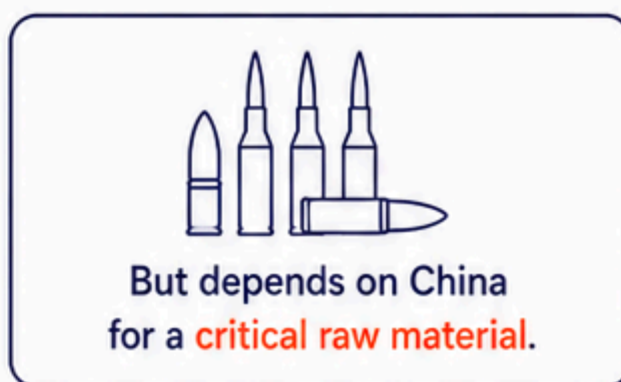
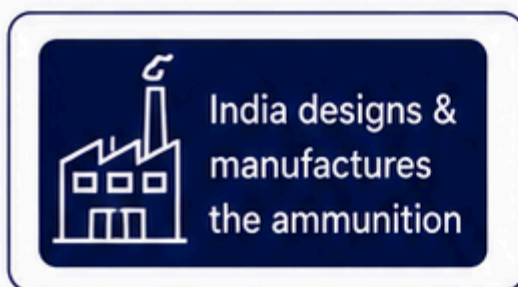
Trichy's High Energy Projectile Factory needs **~100–130 tonnes** of pure tungsten powder every year, while India has very limited domestic tungsten production.



>70%

of tungsten imports for some Indian tool manufacturers come from **China**, making China a major source.

SO THE VULNERABILITY IS:



If China were to restrict military-grade tungsten exports to India, India's ability to replenish tank ammunition could face a **serious bottleneck within months**.



CRITICAL MINERAL

Tungsten is a rare and strategy-critical mineral.



LIMITED DOMESTIC PRODUCTION

India's natural tungsten resources are very limited.



HIGH IMPORT DEPENDENCE

India depends heavily on imports to meet industrial & defence needs.



STRATEGIC RISK

Dependence on a single source for a critical input creates national security risk.

WHAT IS INDIA DOING ABOUT THE TUNGSTEN PROBLEM?

India is taking a **three-pronged** approach:

1 BUY ABROAD: SECURING GLOBAL ACCESS

KABIL is securing critical minerals overseas and expanding its mandate to tungsten and other strategic minerals.



2 MINE DOMESTICALLY: BUILDING THE FOUNDATION

Under the National Critical Mineral Mission, India is accelerating exploration and auctions of critical-mineral deposits, including tungsten.

The challenge is that **domestic mining** is still at an early stage.



3 RECYCLE WHAT IT ALREADY HAS: TURNING SCRAP INTO SECURITY

India is trying to recover tungsten from defence-production scrap and other waste.

More broadly, the government has allocated **₹1,500 crore** to incentivise critical-mineral recycling.



₹1,500 CRORE

ALLOCATED TO INCENTIVISE
CRITICAL-MINERAL RECYCLING



THE CATCH

None of these solutions is **immediate**.

Building a reliable non-Chinese tungsten supply chain requires years, from exploration and mining to processing it into the high-purity powder needed by defence manufacturers.



EXPLORATION



MINING



PROCESSING



HIGH-PURITY
TUNGSTEN POWDER

YEARS, NOT MONTHS