

MARKET INTELLIGENCE 02

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VITALSPEC MARKET INTELLIGENCE · BODIES & FREIGHT

Global bodies, foundries and freight

The 155 mm projectile-body trade: who forges, who buys, and why the freight market — not the forges — sets the corridor economics.

CORE JUDGEMENT

Projectile-body manufacture is the most globalised and most commercially accessible layer of the 155 mm ecosystem — and the layer where the binding constraint is not metallurgy but movement. Forging capacity exists on four continents at prices a fraction of European levels; what is scarce is compliant, insurable, carrier-accepted logistics between forge and filling line. We assess that operators who solve the **freight-and-compliance problem**, rather than the forging problem, will capture the corridor margin as Western filling capacity outgrows local body supply through 2028.

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SCOPE NOTE

This paper assesses the global industrial base for 155 mm projectile bodies — forging and machining capacity, the trade corridors connecting it to Western filling demand, and the freight economics that govern whether that trade clears. It draws on two evidence layers: public sources, hyperlinked throughout and listed in the source register; and VitalSpec's proprietary intelligence holdings — a global foundry/billet map of 172 entries, a munitions manufacturing map of 84 entries with a 45-project expansion pipeline, a downstream charge-loading map of 134 entries, a supply-chain connections map of 280 upstream-downstream pairings across 10 corridors, and a freight and logistics map covering 74 providers and 16 priced lanes⁷⁶. Proprietary-derived findings are labelled as such; underlying entries are available to clients of the VitalSpec Markets platform. Estimative language follows the conventions of the VitalSpec Defence Industrial Outlook 2026.

COMPANION READING

The *Defence Industrial Outlook 2026* (demand model, energetics bottleneck) and *MI-03: The Commodity Chain* (precursor supply chains). Citation numbering is shared across the three papers for cross-reference.

KJ Key judgements

1 Bodies are globally abundant relative to fill — and the flagship Western ramp is slipping, not closing, the gap

HIGH CONFIDENCE

European body capacity is scaling fast (Unterlöss 350k/yr, Snina 360k/yr, Polish programmes^{23 36 32}), yet Western filling demand plus stockpile rebuilding exceeds European body output through at least 2028. The US proves the report's point: its 100,000 rounds/month objective has slipped to mid-2026, actual output is around 40,000/month, and the Army is reviewing General Dynamics' management of the new Mesquite, Texas universal projectile lines^{70 71}. The West's own body programmes demonstrate that buying bodies is easier than building body lines.

2 The India corridor is proven at scale, not theoretical

HIGH CONFIDENCE

Yantra India shipped \$35m of empty 155 mm casings to a single buyer over 2022–24; Ordnance Factory Ambajhari has exported 100,000 M107 shells to Europe; Italy's MES buys empty Indian bodies and fills them in Europe^{57 58 59}. Forge-direct quotations (VitalSpec commercial holdings) put ex-works prices at \$350 (HE boattail) to \$650 (ERFB) — one-third to one-half of implied European body cost.

3 Freight, not forging, sets corridor economics

HIGH CONFIDENCE

Mainline container carriers apply military-cargo acceptance screening to munitions components regardless of their inert status^{66 75}, pushing the trade onto a small pool of voyage-priced multipurpose tonnage. The result is a cost staircase — ~\$145/body at 20-container pilot lots falling to ~\$58/body at 50-container parcels on the same ~\$1.45m sailing (VitalSpec forwarder quotation) — with sub-\$50 unproven. Aggregating demand to fill parcels is worth more per body than switching forges.

4 Second-tier supply bases are one qualification away — and that distance is shorter than buyers assume

MODERATE CONFIDENCE

Our foundry mapping identifies credible billet-to-body candidates across ASEAN (Malaysia, Indonesia, Singapore machining clusters), Türkiye, Brazil and South Korea — Korea alone sustains ~200,000 rounds/yr with Poongsan forging and Hanwha assembly^{72 76}. The constraint is qualification, not metallurgy — and the fast lane is raw-material second-sourcing: qualifying a supplier of an input such as a body second-source can be accepted materially faster (potentially months) than qualifying a whole new munition, which runs two-to-four years under STANAG 4170/AOP-7.

5 The corridor window narrows from ~2028

MODERATE CONFIDENCE

As European and US body lines mature, third-country body demand shifts from structural to price-arbitrage. UK policy now dates the closing of that window explicitly: the June 2026 Defence Investment Plan commits £11bn to munitions and weapons and at least six new energetics factories by 2030^{64 9} — onshore capacity that, once commissioned, erodes the import corridor's pricing power. Corridor operators should build the durable assets — QA, certification, aggregation, storage and customer relationships — while the structural window is open.

6 The UK is now a funded, near-term buyer and co-investor, not just a prospect

MODERATE CONFIDENCE

The £11bn munitions line (nearly doubling the SDR's £6bn), £45m/50% energetics capital grants across three windows (Q3 2026, Q2 2027, Q4 2027)^{87 88}, and UKEF's £50bn Defence Export Fund (within £130bn total capacity; £3bn defence-earmarked direct lending; working capital up to £25m without a signed contract)^{97 98 99} mean corridor participants can finance qualification and working capital from UK instruments rather than balance sheets. Note: the capital grant text is energetics-focused; applicability to standalone body/LAP projects should be confirmed.

01 The global body picture

Projectile-body manufacture is hot forging of thick-walled steel preforms, followed by machining, heat treatment, banding, base or boat-tail finishing, coating and inspection. It is demanding industrial work — but it is conventional industrial work, and it exists far beyond the defence primes. Our foundry/billet map catalogues 172 forging, billet and metallurgy entries worldwide with a capability-class rating against 155 mm body work; the manufacturing map adds 84 munitions-sector manufacturers and a 45-project expansion pipeline⁷⁶.

PRODUCER BASE	PUBLIC CAPACITY SIGNAL	ASSESSMENT
Europe (primes + nationals)	Unterlöss 350k/yr by 2027; ZVS Snina 360k bodies/yr; Mesko toward 150k/yr; KNDS proposal for 200k/yr in Poland ^{23 36 32 37}	Scaling fast; committed to national programmes; open-market availability limited
United States	100k rounds/month objective slipped to mid-2026; ~40k/month actual; Army reviewing GD's management of new Texas lines ^{70 71}	Absorbing its own output; a demand competitor, not a supply source
India	Yantra \$35m casing exports 2022–24; OFAj 100k shells to Europe; multiple state and private forges ^{57 58}	Proven exporter at scale; \$350–650 ex-works (VitalSpec quotations)
South Korea	~200k rounds/yr; Poongsan casings, Hanwha assembly; ER programme in production ⁷²	High quality; export-policy constrained; domestic/US priorities first
Türkiye	MKE and Repkon ecosystem; body and line-building capability; corridor proximity to Black Sea demand ⁷⁶	Strong and rising; licensing and politics require careful structuring
ASEAN / others	Malaysia/Singapore/Indonesia steel, ports and machining clusters; Brazil defence-industrial base ⁷⁶	Capability present, qualification absent — the classic second-tier gap

ANALYTICAL DISCIPLINE

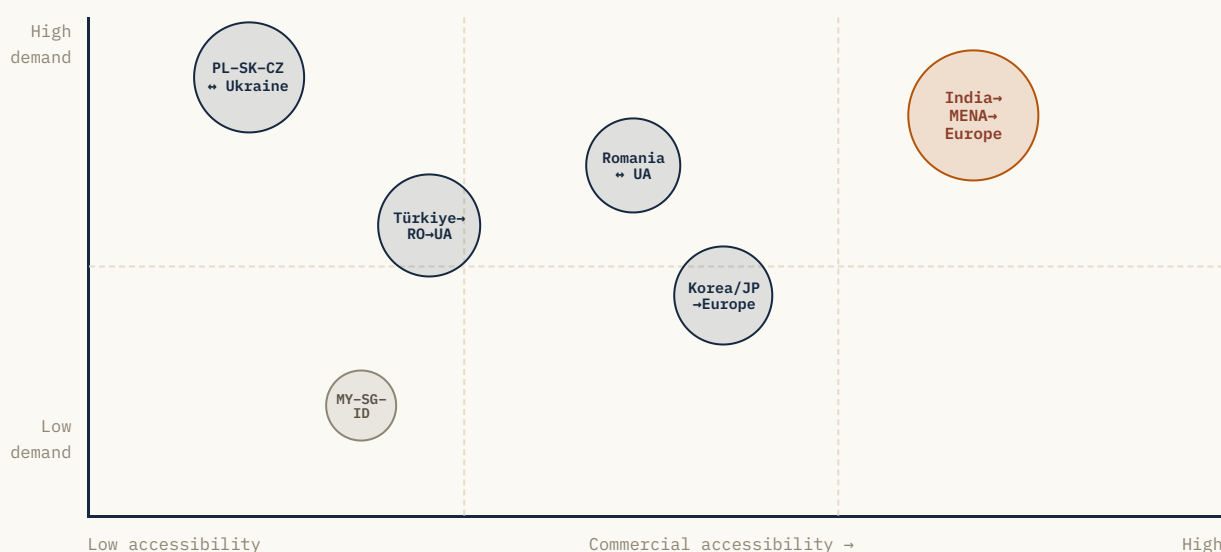
Body capacity numbers are the easiest in the ammunition system to overstate: a 'shell plant' announcement may mean bodies, assembly, filling or all three. This paper counts bodies only, and treats complete-round plants as body capacity only where the body line is separately evidenced. The same discipline applied in reverse explains KJ1: many celebrated European plants are net consumers of bodies, not producers.

02 Corridors: where the trade actually flows

Our supply-chain connections map pairs 280 downstream demand points with their nearest viable upstream body sources and consolidates them into ten corridors, scored for demand pressure, capability strength and commercial accessibility⁷⁶. Three findings stand out. First, the highest-demand corridors (the prime-led German–French–Polish ecosystem, USA–Europe) are the least commercially accessible — incumbency, ITAR and capacity allocation close them to independents. Second, the India–Middle East–Europe corridor uniquely combines proven export volume, quotation-anchored pricing and workable compliance architecture. Third, Türkiye–Romania–Ukraine and the intra-CEE corridors offer the shortest routes to end-use demand but carry the heaviest sanctions-screening and war-risk burden.

FIGURE 2 Corridor prioritisation — demand pressure vs commercial accessibility

● Priority corridor ● Corridor ● → ● bubble size = capability strength



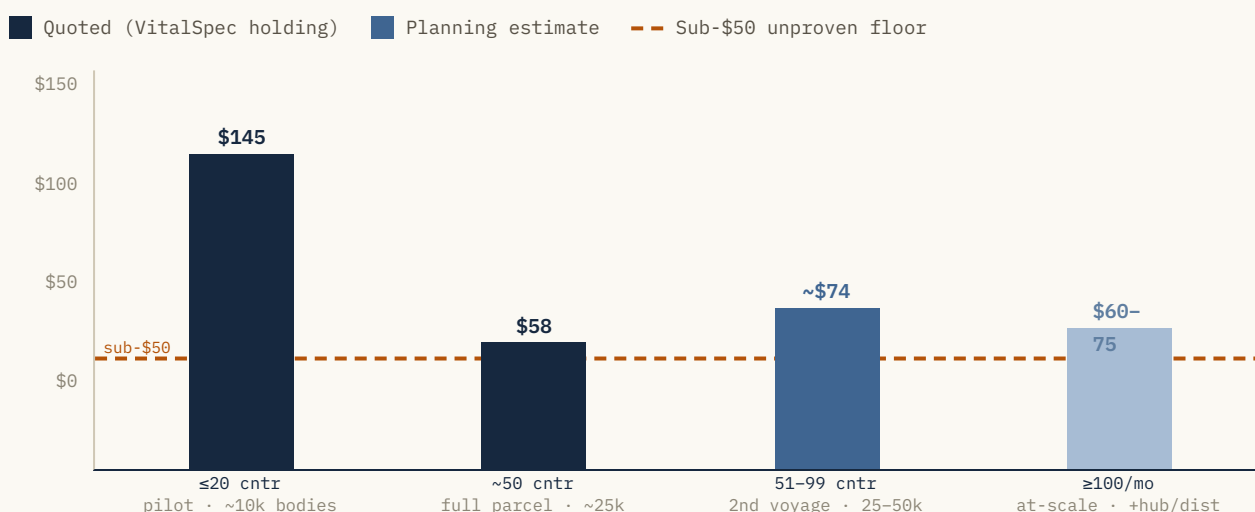
Positioning from the VitalSpec connections map (280 pairings, 10 corridors). Bubble size scales with assessed capability strength; India-MENA-Europe is the priority corridor where compliance architecture is robust.

CORRIDOR	WHY IT MATTERS	MAIN CONSTRAINTS	VITALSPEC ASSESSMENT
India → MENA → Europe	Bodies + financed demand; proven exports	Export approvals; long sea routes; intermediated risk	Priority corridor where compliance architecture is robust
Poland–Slovakia–Czechia ↔ Ukraine	Bodies + filling + end-use proximity	War-risk routing, insurance, capacity reservation	Top operational corridor for Ukraine-adjacent demand
Romania ↔ Ukraine / Black Sea	Charge-loading expansion + border access	Black Sea risk; NATO qualification; opaque capacity	Make Romania first-tier; supplier/customer adjacency
Türkiye → Romania → Ukraine	Industrial capacity close to demand	Licensing, politics, route risk	High potential; strict counterparty screening
Korea / Japan → Europe	High-quality ammunition base	Distance; export policy; domestic priorities	Strategic fallback and benchmark
Malaysia–Singapore–Indonesia	Steel, ports, machining candidates	No public 155 LAP; qualification gap; energetics absent	Best SE-Asia cluster for upstream body-stock development

03 Freight: the staircase that decides the margin

The regulatory position and the commercial position diverge, and the divergence is the single most important fact in this report. A genuinely inert body — no propelling charge, primer or energetics — is not IMDG Class 1 dangerous goods; UN 0012, commonly miscited, covers inert-projectile rounds with a propelling charge⁷⁵. But mainline carriers screen by what the cargo is for, not what UN number it carries: Maersk's March 2025 statement formalised screening of all military-related cargo against the Wassenaar Arrangement, the EU common military list and ITAR⁶⁶, and peer carriers apply similar internal policies. Munitions components are bucketed as military cargo regardless of inert status. The consequences cascade: most mainline tonnage refuses the cargo; the trade moves to multipurpose and parcel carriers running multi-port itineraries; insurance prices toward war-risk terms; and quotes arrive per voyage, not per container.

FIGURE 1 The freight staircase — cost per body falls as the parcel fills the same sailing



Anchored to VitalSpec forwarder quotations: ~\$1.45m per sailing whether 20 or 50 containers are loaded. Beyond ~45,000 bodies/month, flows route through European hub storage and multi-drop distribution, so realistic at-scale logistics sit at \$60-75/body, not the sub-\$50 a smooth curve would suggest.

LOT SIZE	~BODIES	FREIGHT/BODY	STATUS
≤20 containers (pilot)	~10,000	~\$145	Quoted (VitalSpec holding)
~50 containers (full parcel)	~25,000	~\$58	Quoted — same voyage, higher utilisation
51–99 containers	25,000–50,000	~\$58–90	Planning estimate: blended, second voyage
≥100 containers/month	≥50,000/mo	Sub-\$50 unproven	Requires contracted service; exceeds accessible supply (~45,000/mo); +hub & distribution ~\$10–25/body

Three implications. First, aggregation is the moat: filling a 50-container parcel is worth ~\$85–90/body against pilot-lot shippers — more than most forge-to-forge price differences — so the operator who consolidates multiple buyers' demand onto one sailing owns the corridor economics. Second, the at-scale floor is higher than it looks: beyond ~45,000 bodies/month, flows route through European hub storage and multi-drop distribution, so realistic at-scale logistics sit at \$60–75/body, not the sub-\$50 a smooth curve would suggest. Third, mode strategy matters at the margins: our lane data prices ocean FCL at \$2,500–6,500 per 40ft, breakbulk at \$70–220/tonne, European road at €1.70–2.60/km and rail at €0.04–0.11/tonne-km⁷⁶ — but none of these commercial rates apply cleanly until a carrier has accepted the cargo, which is why forwarder selection and defence-cargo accreditation dominate rate-shopping.

COMPLIANCE ARCHITECTURE, STATED PLAINLY

The corridor's compliance burden is front-loaded and fixed-cost: Indian export approvals on origin; end-use and end-user documentation; transit-state permissions on multi-port itineraries; UK/EU import controls where applicable; and carrier acceptance packs. Once built, this architecture is reusable across shipments — a second reason the corridor rewards a standing operator over spot traders. VitalSpec's compliance matrix (proprietary) maps cargo states to forwarder classes and document sets across the 16 priced lanes⁷⁶.

04 Bottlenecks and risk by geography

Consolidated from our regional bottleneck and risk-heatmap analysis⁷⁶: Europe/Black Sea combines the deepest network with the highest route and energetics risk; India offers the strongest scale opportunity subject to export and QA diligence; ASEAN is an upstream opportunity with a downstream qualification gap; North America is technically strongest and commercially hardest (ITAR, government priority); Türkiye and MENA carry capital and demand with variable capability depth. The pattern across all geographies is consistent with KJ4: capability is distributed, qualification is concentrated.

GEOGRAPHY	DEMAND	SUPPLY DEPTH	LOGISTICS RISK	ACCESS DIFFICULTY	PRIORITY
Europe / Black Sea	5	5	4	4	Very high
India	5	4	3	3	Very high
North America	5	5	3	5	High (reference)
Malaysia / ASEAN	3	3	2-3	2-3	High watch (upstream)
Korea / Japan / Taiwan	4	4	4	4	Medium-high
Middle East / N. Africa	4	3	4	3	Medium-high

Scores 1-5 (5 = highest). Access difficulty rates barriers to independent participation, not desirability.

05 The UK: a funded buyer appears

Since v1.0 the UK has moved from stated intent to committed money. The June 2026 Defence Investment Plan puts £11bn against munitions and weapons — nearly double the SDR's £6bn — and commits to at least six new energetics factories by 2030^{64 9}. Capital grants of up to £45m or 50% of project cost open in three-month investment windows from Q3 2026, open to all applicants^{87 88}, and UKEF's £50bn Defence Export Fund plus a £25m working-capital facility that needs no signed contract change the financing calculus for the 20-to-50-container freight step this report prices^{97 98 99}. The strategic read: for roughly two years the UK is a premium buyer of imported bodies; from ~2028–2030, as onshore energetics and load-assemble capacity commission, it converts into a competitor — consistent with KJ5's corridor window.

£11bn

munitions & weapons line, nearly double the SDR's £6bn

£45m

or 50% capital grant, three windows from Q3 2026

£50bn

UKEF Defence Export Fund; £25m working capital, no contract

06 Implications

FOR GOVERNMENTS

Third-country bodies are the fastest way to feed new filling capacity — the UK's sixteen-fold Glascoed uplift and Europe's LAP wave need feedstock now³⁸ — but origin rules written for peacetime will quietly starve wartime filling lines unless import pathways for inert components are clarified.

FOR PRIMES

Body-supply agreements with corridor operators de-risk ramp schedules at known cost. The bottleneck to protect is not the forge; it is carrier acceptance and the parcel economics that sit on top of it.

FOR INVESTORS

The durable assets are aggregation, QA/certification, compliance architecture and hub storage — the forging is bought, the logistics is the business. The window for structural (rather than arbitrage) returns runs to roughly 2028 (KJ5).

07 Indicators and warning

#	INDICATOR	VALIDATES / DEGRADES
1	US Mesquite, TX universal projectile lines: outcome of the Army's review of GD management; hitting 100k/month deflates the import-corridor thesis ^{70 71}	KJ1 — global body scarcity duration
2	New Indian 155 mm export contracts or licensing changes ^{57 58 59}	KJ2 — corridor volume and policy risk
3	Carrier policy statements on military-related cargo ⁶⁶	KJ3 — freight premium direction
4	Quoted rates for >50-container parcels or contracted recurring service (VitalSpec commercial monitoring)	KJ3 — staircase shape below \$58
5	European body-line commissioning vs announced dates ^{23 36 32}	KJ5 — corridor window closure
6	First NATO-standard qualification of an ASEAN or MENA body producer	KJ4 — second-tier emergence
7	EU/UK origin-rule clarifications for inert components in war-reserve procurement	Policy unlock
8	Uptake and awards under the UK energetics capital-grant windows (Q3 2026, Q2 2027, Q4 2027) — awards to body/LAP-adjacent projects signal onshoring acceleration ^{87 88}	KJ5/KJ6 — onshore substitution pace
9	UKEF Defence Export Fund uptake by corridor-type exporters ⁹⁷	KJ6 — financing availability

ACCESS TO THE UNDERLYING DATA

The facility-level entries behind this report — foundry capability classes, corridor pairings, provider and carrier assessments, lane pricing and the compliance matrix — are maintained as living datasets on the VitalSpec Markets platform. Qualified government, prime and investor readers can request access at vitalspec.co.

Source register

Public sources hyperlinked in text; numbering is shared with the VitalSpec Defence Industrial Outlook 2026 source register for cross-reference. Ref [76] denotes VitalSpec proprietary intelligence holdings (commercial-in-confidence); forge and freight quotations are VitalSpec commercial holdings presented as planning inputs.

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