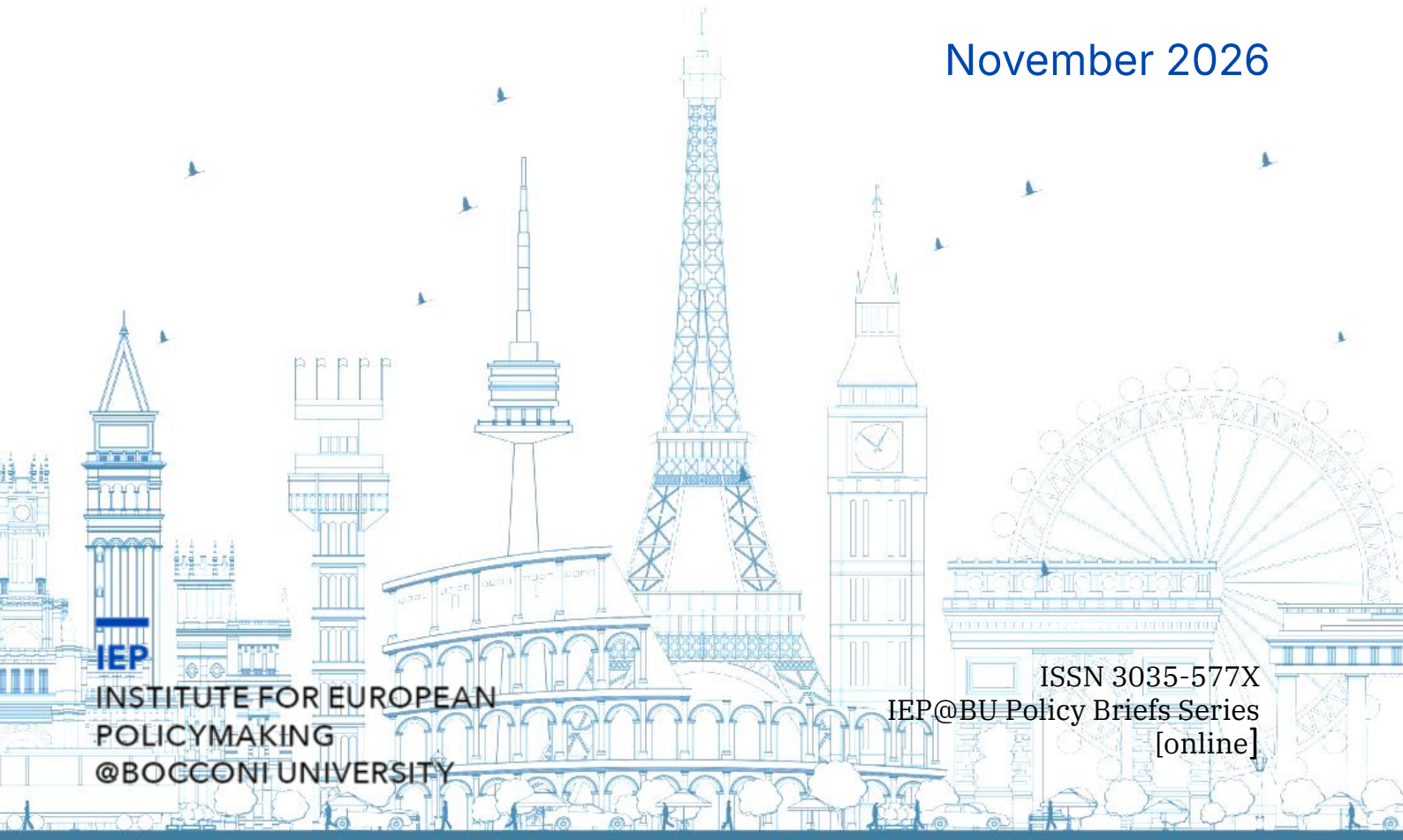
Bocconi

VALUING EUROPEAN MILITARY SUPPORT TO UKRAINE

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Abstract

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We use a bottom-up approach to estimate the economic value of military aid to Ukraine. We find that by mid-2026, realized military aid from EU member states amounted to €26.4 billion, with a further €18.4 billion in the pipeline. The combined €44.8 billion represents just 58% of the €77 billion in military support officially reported by the EU and 55% of the €81.3 billion in military allocations recorded by the Kiel Ukraine Support Tracker.

The large difference with our estimate primarily reflects overlapping announcements, commitments that have not been implemented, imprecise valuations or interpretation of what equipment was transferred, and the values applied to aging stockpiles. Using item- and system-specific reference prices while prioritizing the most recent refurbishment or contracted values, we estimate realized EU military aid at €37.7 billion before applying any remaining straight-line depreciation to the portion that is from existing stockpiles, yielding €26.4 billion.

Extending the analysis to all non-US donors, including the United Kingdom, Norway, and Canada, brings total realized military aid to €38.1 billion, with a further €22.3 billion in the pipeline.

Strikingly, realized non-US military aid declined in 2025, precisely when the reduction in new US assistance made a rapid European response more urgent. Combined realized and pipeline support nevertheless increased sharply, highlighting Europe's difficulty translating its response to this security shock into timely military assistance.

Our research provides strong evidence that the official figures overstate the economic value of the military support provided to Ukraine and suggest that much more would have been possible without straining public finances or military readiness.

1 Corresponding author. Preliminary version of working paper available upon request.

Introduction

Supporting Ukraine in its defense against Russia is a major European policy priority. The EU has committed substantial financing, including a €90 billion loan for Ukraine's budgetary needs and defense procurement in 2026–2027. Europe's initial response to this extraordinary security shock, however, required member states to draw urgently on their limited military inventories while mobilizing industrial capacity to supply additional aid. We assess the scale and timeliness of European military aid to Ukraine through a bottom-up valuation of donor contributions through mid-2026.

We estimate the economic value of military aid already provided by EU member states, directly or through partners, at €26.4 billion (*realized aid*). This includes equipment assessed as delivered, military funding already executed (including contributions to weapons-acquisition programs specifically intended for Ukraine), and military training. Our estimate amounts to just 34% of the €77 billion in military support reported by the EU and its member states on July 1, 2026. A similar gap between headline figures and economic valuations emerges for the United States, where Fedyk et al. (2025) estimate military aid delivered through 2024 at $21.1 billion, or 30% of the $70.4 billion announced, although the periods and accounting definitions differ.

We attribute a further €18.4 billion to EU member states' aid in the pipeline: sufficiently firm commitments backed by specific government decisions, procurement plans, contracts, or credible reports of implementation underway, but not yet counted as realized aid. Together, realized and pipeline aid amount to €44.8 billion, or approximately 58% of the EU's reported total.

Reliable accounting is essential to assessing Europe's response. While US reporting also suffers from gaps and inconsistencies, European military assistance must be reconstructed across more than two dozen national systems with differing disclosure practices and valuation conventions. Official military-aid figures often combine overlapping announcements, commitments, and deliveries, while basing aid totals on replacement and military rebuilding costs that can far exceed the economic value of equipment transferred to Ukraine. Such figures risk masking consequential delays and shortfalls in Europe's response. Depreciation of stockpile transfers alone reduces our estimate by €11.3 billion, revealing how heavily Europe's military assistance has relied on sending aging equipment to Ukraine, including systems dating back decades.

Germany is the largest EU donor, with about €6 billion in realized aid and €9 billion in the pipeline. Including the pipeline Denmark provided the largest aid relative to cumulative GDP over 2022–2025, 0.4%, compared with Germany's less than 0.1%. Northern European and



Baltic countries are also major contributors, with an order of magnitude lower figures for France (0.01%), Spain (0.008%), and Italy (0.004%).

Across all non-US donors, including the United Kingdom, Norway, and Canada, we estimate €38.1 billion in realized aid and €22.3 billion in the pipeline, totaling €60.4 billion.

As stockpile transfers declined, procurement and weapon-acquisition programs expanded. Strikingly, realized non-US military aid fell in 2025, precisely when the reduction in new US assistance made a rapid European response more urgent. Combined realized and pipeline support nevertheless increased sharply, highlighting Europe's difficulty translating its response to this security shock into timely military assistance.

Economic value should not be confused with military effectiveness. Older equipment can remain highly useful to Ukraine, particularly when it can be deployed immediately using existing training, ammunition, and maintenance capabilities.

1. Measuring the economic value of military aid

Measuring the economic value of military aid consistently across countries is particularly difficult. European donors differ in their announcement, disclosure, and valuation practices, while many details remain confidential for operational and security reasons. Government announcements may identify only a broad equipment category, even though different configurations within that category can have vastly different values.

Air-defense assistance illustrates the challenge. An announcement that a country has supplied an "air-defense system" could refer to a complete battery comprising surveillance and fire-control radars, command-and-control equipment, several launchers, support vehicles, and a substantial stock of missiles. Alternatively, it might refer only to one or more launchers alone, without specifying whether radar or command systems were included or how many missiles accompanied them. Both transfers may be described in similar terms, although their monetary values can differ by an order of magnitude. Comparable ambiguities arise for artillery systems, armored vehicles, aircraft packages, and ammunition deliveries.

Reported package values pose a further challenge. A headline announcement may combine transfers from existing stocks, new procurement, training, maintenance, future production, and expenditure intended to replenish the donor’s own capabilities, while some commitments may remain only partly implemented. Successive announcements may describe the same underlying assistance, while cumulative government totals may rely on replacement costs or other valuation conventions that differ substantially from the economic value of the resources



actually transferred to Ukraine. Adding headline amounts can therefore double-count support and conflate distinct notions of value.

Without consistent measurement, we cannot reliably assess the scale and timeliness of Europe's military response to Russia's invasion.

2. A bottom-up approach

Existing estimates of military aid to Ukraine rely heavily on publicly announced commitments and reported package values, which are then disaggregated into individual components where information permits. By contrast, Rowley et al. (2026) develop an independent, bottom-up approach to estimating the economic value of military support. Drawing on extensive LLM-assisted web research, we reconstruct individual equipment transfers, procurement, funding, and training activities by non-US donors, tracing them from announcement through implementation wherever possible. We systematically cross-check the evidence against government documents, procurement records, and other independent sources.2 Our accounting covers support through June 30, 2026, using evidence collected through September 2026 to assess its implementation status and economic value.

We compile this evidence in an item- and program-level ledger recording the underlying support, its implementation status, and the donor ultimately financing it. We value identifiable transfers individually and reconcile them with broader package and funding announcements, distinguishing stockpile transfers from new procurement wherever possible. Where detailed information is unavailable, we use defensible valuation proxies or retain adjusted package-level residuals when supported by sufficient evidence, while avoiding double counting.

The resulting ledger contains roughly 2,500 source records, of which more than 1,500 have monetary valuations, each supported by detailed source documentation. Rowley et al. (2026) discuss the methodology in detail and provide illustrative examples.

Pipeline aid

Much of the military aid announced in recent years has yet to be delivered or fully executed.

2 Sources include national defense ministries and other government publications, parliamentary records, procurement contracts, and defense-industry documentation, supplemented by specialist reporting from Reuters, Militarnyi, and other outlets, equipment inventories such as Oryx, and SIPRI arms-transfer data for valuation benchmarks. Initial announcements and third-party reporting sometimes conflict with subsequent official disclosures, highlighting the importance of systematically cross-checking and reconciling the available evidence. Detailed source references are recorded in the underlying item-level ledger.



We classify as *pipeline aid* support for which financing, contracting, or production is sufficiently concrete, or for which governments indicate that implementation is underway, but which we do not yet assess as delivered or fully executed as of June 30, 2026.

On this basis, we estimate that EU member states had €18.4 billion in pipeline aid.

Realized aid and depreciation

We classify as *realized aid* equipment confirmed or reasonably assessed as delivered based on the available evidence, procurement terms, and delivery context, military funding disbursed to Ukrainian recipients or dedicated acquisition mechanisms, and military training or other support already provided.

During the first years of the war, much of the military equipment sent to Ukraine came from existing national stockpiles, some of it dating back several decades. Announced values were often based on historical acquisition costs, current replacement costs, or the cost of restoring a more modern capability. None necessarily captures the economic value of the aging equipment actually transferred.

We therefore estimate its remaining economic value using a depreciated-cost approach following Fedyk et al. (2025). Our approach combines the best available transaction, comparable-system, refurbishment, or acquisition benchmark with information on equipment age, useful life, and modernization history.3 Because an active secondary market does not exist for many military systems, the resulting valuations should be understood as estimates of remaining economic value rather than observed market prices.

Before accounting for depreciation, we estimate realized EU27 military aid at approximately €37.7 billion, around half the official €77 billion figure. Depreciating the portion transferred from stockpiles to reflect age and remaining useful life reduces this estimate by €11.3 billion, to €26.4 billion.

3. How is the burden shared across countries?

Figure 1 reports realized and pipeline aid as of June 30, 2026, by EU27 member state, both in euros and as a share of cumulative GDP for the four years 2022–2025.

3 Fedyk et al. (2025) focus on the United States, where depreciation accounting can draw on relatively rich administrative data. Extending this approach across many non-US donors requires handling a far more heterogeneous set of systems, acquisition vintages, modernization histories, and reporting practices. Where direct information is unavailable, we infer the most plausible valuation and depreciation basis from equipment lifespans, donor inventories, acquisition histories, refurbishment or modernization, and evidence from replacement and procurement patterns.

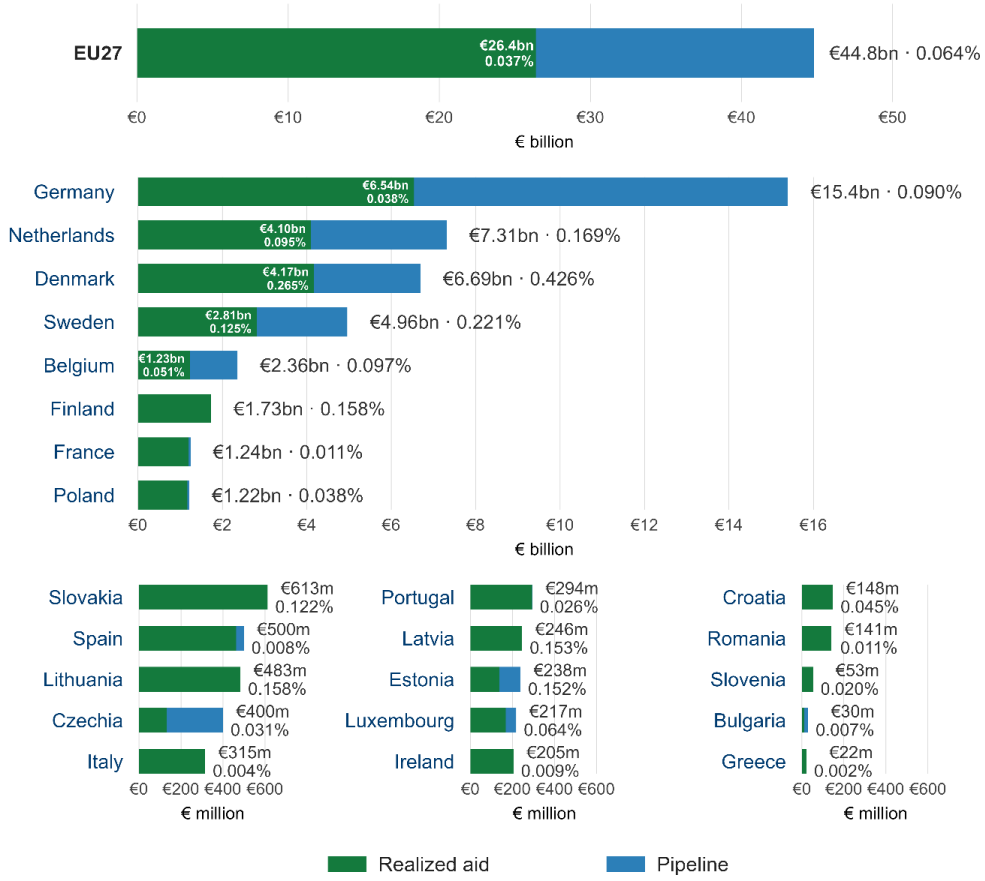


Germany is the largest donor in absolute terms, with €15.4 billion in realized and pipeline aid combined, followed by the Netherlands (€7.31 billion), Denmark (€6.69 billion), and Sweden (€4.96 billion). Together, these four countries account for more than three-quarters of the EU27 total of roughly €45 billion. For several of the largest donors, however, a substantial share of this support remains in the pipeline rather than having been realized.

Relative to economic size, Denmark is the largest donor with total support equivalent to 0.426% of its 2022–2025 GDP, followed by Sweden (0.221%), the Netherlands (0.169%), Lithuania and Finland (both 0.158%), Latvia (0.153%), and Estonia (0.152%).

Although Germany leads in absolute terms, its contribution amounts to 0.090% of 2022–2025 GDP, compared with the EU27 average of 0.064%. Several other large EU economies contribute substantially less relative to their economic size, notably France (0.011%), Spain (0.008%), and Italy (0.004%).

Figure 1. Military aid to Ukraine by EU member state



Note: Bars show realized military aid and military aid we consider to be in the pipeline through June 30, 2026 for the EU27 aggregate and EU member states with positive aid, using evidence collected through September 2026. Labels report total aid and its share of cumulative GDP over 2022–2025; selected green-bar labels report realized aid alone on the same basis.

Other non-US donors

Including the United Kingdom, Norway, Canada, and other non-US donors raises realized military aid by about 44%, from €26.4 billion for the EU27 to €38.1 billion. A further €22.3 billion is in the pipeline, bringing the combined total to €60.4 billion.

Outside the EU27 and the United States, the United Kingdom is the largest donor in terms of realized aid (€4.75 billion), followed by Norway (€3.51 billion) and Canada (€2.82 billion).

Box 1. External validation of the approach based on the United Kingdom

Detailed UK disclosures provide a useful external check on our estimates.

The UK government's £16 billion headline figure as of July 2026 measures broad commitments. By contrast, Defence Equipment & Support reports £4.45 billion in equipment and materiel delivered or provided in kind to Ukraine during FY2022/23–FY2025/26. Adding £691 million in training expenditure, £514 million in contributions to the International Fund for Ukraine, and £55 million for specific multilateral programs yields an upper-bound comparator of approximately £5.71 billion for our realized-aid measure.

Alternatively, the Ministry of Defence's non-additive Rapid Procurement series reports £5.319 billion in procurement expenditure for Ukraine, yielding a broader fiscal comparator of about £6.58 billion. Both are closer in scope to our €4.75 billion estimate of realized aid (€5.26 billion including pipeline aid) than to the government's headline commitment figure.

Valuation provides a second check. The National Audit Office values UK stock donations through March 2024 at £171.5 million after depreciation, only 6.3% of their £2.71 billion replacement-cost valuation. Similarly, our approach reduces the estimated value of UK stockpile transfers from €2.04 billion to €0.92 billion after depreciation.

4. Time profile and composition of non-US military aid

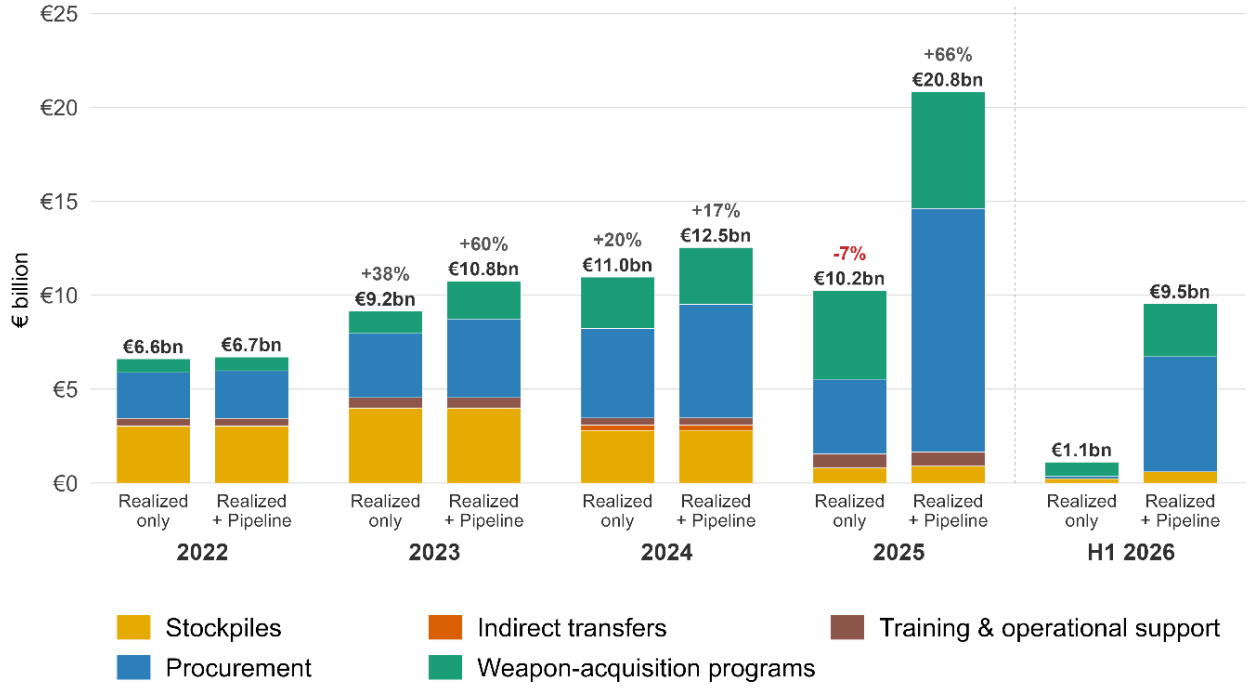
Our methodology breaks down military aid into transfers of existing stockpiles, procurement and weapon-acquisition programs, training and operational support, and indirect transfers (i.e., donor-financed transfers routed through third countries).4

4 The German term for indirect transfers is *Ringtausch* (circular exchange or equipment swap).



We find that the composition of aid is changing. As transfers from existing stockpiles have declined, procurement and weapon-acquisition programs have expanded. Figure 2 shows that realized aid from non-US donors fell in 2025, precisely when the reduction in new US assistance made a rapid European response more urgent. Although pipeline aid increased, driving a sharp rise in combined realized and pipeline support, this highlights Europe's difficulty translating its commitments into timely military assistance.5

Figure 2. Evolution and composition of non-US military aid to Ukraine



Note: Bars show non-US military aid to Ukraine by five categories: stockpiles, indirect transfers, training and operational support, procurement, and weapon-acquisition programs. For each period, the two bars show realized aid and realized plus pipeline aid, respectively, and should not be added together. Realized aid is assigned to the year of delivery or execution where this can be established or reasonably inferred, and otherwise to the best available date of the underlying support. Pipeline aid is assigned to the year of the corresponding commitment. Both classifications reflect evidence reviewed through September 2026, with June 30, 2026 as the accounting cutoff. H1 2026 covers January–June only and is not comparable with full calendar years. Percentage labels show year-over-year changes for 2023–2025 only.

5 This decrease is exacerbated if instead looking at the pre-depreciation value, where the -7% decrease in 2025 would instead be a -12% decrease.

5. Comparison with other sources

The EU does not publish a breakdown of its reported military aid. However, its totals are broadly comparable to Kiel Institute's Ukraine Support Tracker, the leading cross-country dataset on aid to Ukraine.6 The Tracker reports €81.3 billion of allocated military aid as of June 30, 2026, close to the EU's own estimate of approximately €77 billion as of July 1, 2026.

Before depreciation, our EU27 estimate of realized and pipeline aid reaches €56 billion. Our accounting reconciliation identifies a difference of approximately €36.5 billion relative to Kiel's estimates.

This difference primarily reflects distinct measurement approaches rather than disagreements over the accuracy of individual records (see the Appendix). Kiel compiles publicly announced allocations through a top-down framework; our independently constructed bottom-up ledger traces individual support actions and estimates their economic value, distinguishing realized from pipeline aid. Differences in accounting scope, overlapping announcements, and the treatment of uncertain commitments explain over half of the gap, alongside differences in valuation and depreciation. Conversely, additional military aid identified through our research or captured elsewhere in our accounting offset approximately 20% of the gap. Rather than simply subtracting categories from an existing estimate, we build a separate measure. The two approaches are therefore complementary, not competing assessments of the same concept.

6. Conclusions

Our bottom-up analysis reveals that the military aid to Ukraine realized by EU27 donors totals €26.4 billion as of mid-2026, with another €18.4 billion in the pipeline; including other non-US donors raises these figures to €38.1 billion in realized aid and €22.3 billion in the pipeline.

These figures represent only a minuscule fraction of GDP or of total public expenditure, with the exception of some Nordic and Baltic states. Germany is the largest donor in absolute terms but not relative to the size of its economy, and more than half of its recorded support remains in what we classify as pipeline aid.

Another way to gauge the relative importance of these numbers is to relate them to military equipment expenditure. The €26 billion in realized military aid by EU member states over roughly four and a half years amounts to less than 3% of their aggregate military expenditure

6 Several official EU documents cite the Ukraine Support Tracker as a source. These include parliamentary documents and official reports.



over 2022–2025 and about 8% of the aggregate expenditure on equipment.

Unfortunately, European realized aid fell in 2025, the year US support was sharply curtailed, but pipeline support increased, leaving a growing share of announced support dependent on future production, contracting, and implementation.

Our research provides strong evidence that the official figures overstate the economic value of the military support provided to Ukraine and suggest that much more would have been possible without straining public finances or military readiness.



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Rowley et al. (2026), IEP Working Paper Series --- forthcoming.



Appendix

The harmonized accounting framework developed in Rowley et al. (2026) estimates realized military aid from EU member states to Ukraine at €26.4 billion as of June 30, 2026, with a further €18.4 billion in pipeline aid, for a combined total of €44.8 billion. These estimates differ from Kiel's full allocation measure in both what is recognized as support and how that support is valued. The difference reflects the treatment of cumulative and overlapping announcements, inferred package values, the firmness and timing of commitments, donor attribution, the valuation and depreciation of transferred stock, and corrections to individual records.

Figure 3. summarizes the principal accounting differences relative to Kiel's €81.3 billion in recorded EU military allocations.

First, €7.5 billion consists of inferred monetary values constructed rather than independently reported or valued aid. The three largest are Kiel balancing entries used to reconcile its existing records with broader government headlines: €1.27 billion for France to reach a reported €2.615 billion cumulative total, €1.30 billion for Italy against a €3 billion total, and €0.72 billion for Poland against a €3 billion total. Our accounting instead values the underlying items and packages wherever possible. Subtracting these economic values from opaque cumulative headlines cannot yield a meaningful residual and risks importing inflated, non-comparable, or overlapping values. Another case is Danish Aid Package XIV, for which Kiel derives €0.70 billion by subtraction even though the deducted Defence-Industry Pool was additional; we therefore reject that synthetic residual but retain the underlying package support elsewhere in our accounting.

Second, €8.3 billion consists of non-additive, broad or cumulative values whose underlying support is represented more specifically elsewhere in our ledger. These may be genuine aid package or authorization amounts, but can reflect opaque valuation conventions, replacement or budget costs, authorization ceilings, or capability-reconstitution spending rather than the economic value of aid transferred. We therefore retain the more specific entries, which can be linked to actual aid outputs and valued consistently. France's €2 billion 2025 package combines transfers, procurement, and financing captured separately, while Sweden's roughly €0.83 billion Package 16 stock-donation authorization is a ceiling on specified materiel whose identifiable equipment is valued separately. Adding these aggregate values would therefore double count support while mixing different valuation concepts.7

7 This does not mean that all package-level totals or residuals are excluded. Where a package total has a sufficiently clear economic basis—for example, a defined procurement package or a mixed package whose stock and procurement composition can reasonably be established—we value the unitemized remainder using an appropriate package-level valuation or depreciation rule. Such residuals are anchored in a defensible package value and composition rather than inferred from an opaque cumulative



Third, €3.5 billion consists of specific observations whose independent monetary contribution remains uncertain because of overlap, attribution, or valuation issues. For example, roughly €0.29 billion associated with a Swedish air-defense and space package cannot be cleanly separated from other package-level implementation evidence, while a €60 million Belgian observation relies on an inferred value that does not correspond to the same ammunition package identified in our ledger.

Fourth, €7.8 billion consists of source-recorded support that could not be established, using evidence reviewed through September 2026, as a distinct, firm, and additive military-aid contribution eligible by June 30, 2026. A major example is €1.82 billion associated with Germany's May 2025 €5 billion package. Although the package included a separately identified €2.2 billion IRIS-T contract and a prospective long-range-weapons program, the remaining amount could not be tied to a distinct executed procurement, firm pipeline commitment, or delivered transfer. The category also includes unitemized package balances, potentially duplicative follow-on announcements, prospective systems, and contributions whose execution or donor share remained unresolved. Unlike the preceding categories, these amounts are not necessarily unsuitable in principle: some may later be substantiated as additional support and enter pipeline or realized aid, while others may prove smaller, overlapping, or never materialize.

Fifth, €1.3 billion falls outside our definition of donor-financed military aid. For instance, three French observations account for roughly €760 million: €300 million in weapons procurement in 2024 and €195 million in 2025 were financed from returns on immobilized Russian assets rather than French national funds, while another €265 million represents a French guarantee supporting a Norwegian-French procurement arrangement rather than a non-repayable French transfer. These are genuine military-support measures, but not French donor-financed aid under our accounting. Another example is Kiel's use of Spanish defense-export authorizations rather than government-financed aid, some of which can be traced to direct Ukrainian procurement.

Sixth, common valuation and donor-attribution rules reduce the remaining support by a net €4.1 billion before depreciation. Denmark's Harpoon coastal-defense system illustrates the valuation difference: Kiel's comparable source observation is about €134 million, whereas we value the initial complete system at about €9.4 million using an official Danish reconstitution-cost estimate of DKK70 million. More generally, we replace broad or proxy valuations with transaction-, system-, or donor-specific values where more reliable or detailed evidence is available. Where our item-level assessments agree with Kiel's documented unit prices, we

headline.



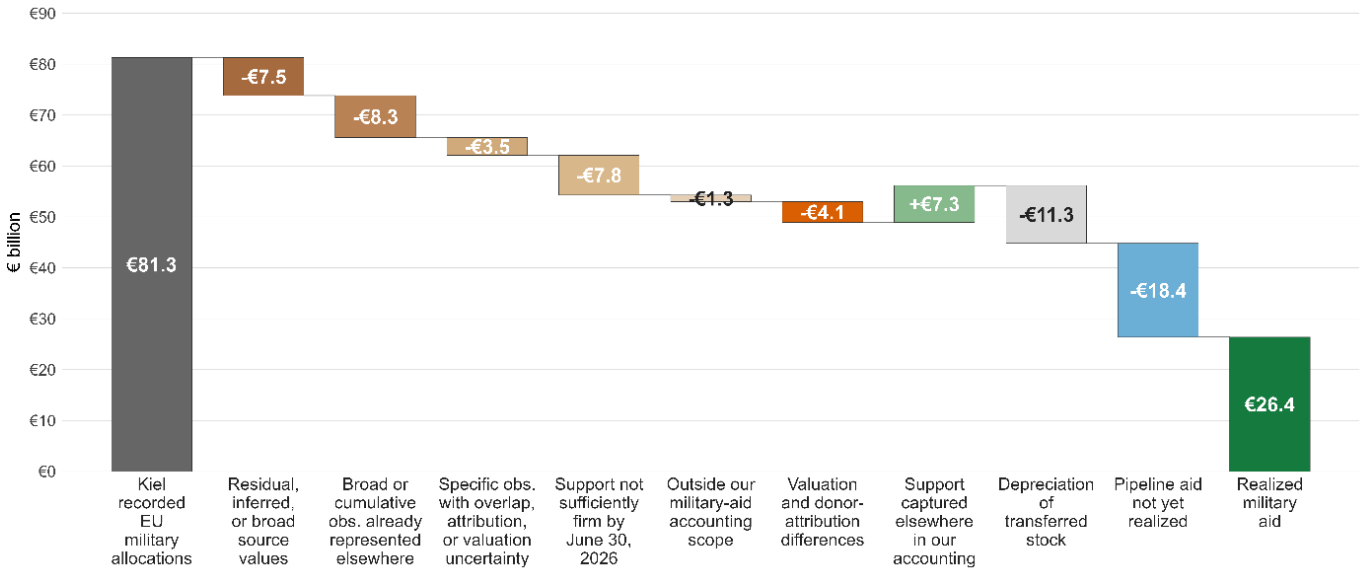
generally rely on the same underlying sources and valuations to ensure comparability. The adjustment is net, as some harmonized valuations also increase recorded support.

Seventh, €7.3 billion is added for realized or pipeline aid in our ledger that is not represented by the surviving Kiel-linked observations. This includes support identified independently of Kiel as well as underlying package components retained when a synthetic, overlapping, or otherwise unusable Kiel observation is removed. Stock transfers enter at their pre-depreciation value, with depreciation applied consistently in the final step.

Eighth, €11.3 billion is deducted for depreciation of military equipment transferred from existing stocks. Across realized stock transfers, the estimated pre-depreciation value is about €20.9 billion, compared with a retained accounting value of about €9.6 billion. Procurement, military funding, and other support valued at current expenditure are not subject to this adjustment.

Finally, €18.4 billion is deducted because it represents support not yet realized by June 30, 2026. After the preceding adjustments, our accounting contains €44.8 billion of realized aid plus pipeline support; removing the pipeline leaves €26.4 billion in realized EU27 military aid, our headline estimate after applying common rules for scope, incrementality, donor attribution, valuation, and depreciation.

Figure 3. Reconciling Kiel's military-aid estimates with our bottom-up valuation



Note: The figure reconciles €81.3 billion of EU27 military allocations recorded by the Kiel Ukraine Support Tracker with our harmonized accounting through June 30, 2026. Source-side adjustments remove residual or inferred values without an independent valuation basis, broad or cumulative observations already represented elsewhere, specific observations with unresolved overlap or attribution, support not sufficiently firm for the base case, and items outside our definition of donor-financed military aid. Valuation and donor-attribution differences apply common valuation rules to the remaining support. Support captured elsewhere in our accounting restores realized or pipeline support represented independently in our ledger but not carried through the preceding Kiel-linked reconciliation. Stockpile depreciation adjusts realized transfers from existing stocks for age. The final pipeline adjustment separates firm but not realized support from the resulting €26.4 billion estimate of realized EU27 military aid.

