

Five Numbers to Remember About U.S. Aid to Ukraine: Security Assistance to Ukraine Lags Far Behind Congressional Commitment

BY ANDREI ILLARIONOV

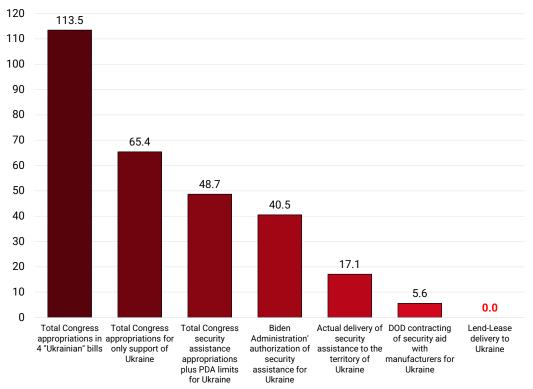
KEY TAKEAWAYS

- To assess U.S. security assistance to Ukraine in the last 16 months of Russian aggression against Ukraine there are five main (rounded) numbers to remember: 49 40 17 6 0. As of July 1, 2023:
 - Congress has allocated approximately **\$49 billion** in security assistance to Ukraine;
 - out of the \$49 billion Congress has allocated, the Biden administration authorized **\$40 billion** in security assistance to Ukraine;
 - the actual delivery of U.S. security assistance to the territory of Ukraine was \$17 billion;
 - the Pentagon contracted manufacturers to produce defense items for Ukraine in coming months and years for **\$6 billion**;
 - the Biden administration used **\$0** from the Ukraine Democracy Defense Lend-Lease Act, adopted by the U.S. Congress and signed by President Biden into law on May 9, 2022.

Figure 1

Overview of U.S. Security Assistance to Ukraine, February 24, 2022 - July 1, 2023

(in billions of U.S. dollars)



Introduction

The amount of U.S. security assistance to Ukraine since February 24, 2022, has been a confusing game of guesswork. Estimates vary significantly depending on coverage and types of aid, its legal status, author or institutional sponsorship of the estimates, and dates for which they are given. Some widely used numbers are subject to inaccuracies and errors, as well as to deliberate distortions.

The following report, based on the official U.S. data, aims to provide readers with the most comprehensive and accurate estimates possible of American security assistance to Ukraine – appropriated, authorized, contracted, as well as actually delivered – as of July 1, 2023.

What can be concluded from the official figures is

shocking. The Biden administration has lagged far behind Congress in committing American resources to Ukraine. Support for Ukraine represents a tiny fraction of U.S. defense aid to the United Kingdom, Soviet Union, or France in World War II. For reasons still unclear, the White House has provided Ukraine with zero Lend-Lease assistance.

Main categories of security assistance by legal status

The preliminary requirement for analysis of aid data is the correct identification of the legal status of the security assistance. The following legal statuses of aid are distinguished from each other as follows:

Appropriation – Congress' allocation of budgetary funds for acquisition of *defense items*, specifically for Ukraine.

Table 1

Five Ukraine Assistance Bills Passed by U.S. Congress in 2022

Date of adoption	Title of the bill	Public law number	Fiscal years	Total amount of financing
March 15, 2022	Ukraine Supplemental Appropriations Act, 2022	P.L. 117-103, Division N, Title III	2022	\$13.6 billion
May 10, 2022	Additional Ukraine Supplemental Appropriations Act, 2022	P.L. 117-128, Title II	2022	\$40.2 billion
September 30, 2022	Ukraine Supplemental Appropriations Act, 2023	P.L. 117-180, Division B, Title I	2023	\$12.4 billion
December 20, 2022	Additional Ukraine Supplemental Appropriations Act, 2023	P.L. 117-328, Division M, Title II	2023	\$47.4 billion
May 9, 2022	Ukraine Democracy Defense Lend-Lease Act, 2022	P.L. 117-118	2022-2023	

Presidential Drawdown Authority limits

- Congress' establishment of the upper limits for Presidential Drawdown Authority (PDA), within which existing defense items can be taken from U.S. Army warehouses and storage and transferred to Ukraine.

Presidential Authorization – use of appropriated budgetary funds by executive authorities (by the President and on his behalf by the Secretary of State and/or the Secretary of Defense).

Contracting – placing orders with manufacturers (in general, by the Department of Defense) to produce defense items (weapons, military equipment, ammunition).

Delivery – physical delivery of defense items to the territory of Ukraine.

Part of U.S. security assistance to Ukraine is provided in the form of *services* (transportation, repairs, training, communications, intelligence, etc.). Security service assistance to Ukraine is provided in Ukraine, in the United States, and in third countries. Some of these services have a dollar-denominated dimension. Some, such as, intelligence sharing, do not.

The provision of security assistance to Ukraine might be understood and presented differently by different participants in this process.

From the U.S. Congress' point of view, the provision of security assistance to Ukraine means approval of appropriations bills, the legislative clarification of existing channels for assistance, as well as the creation of new ways or means.

From the Biden administration's point of view, the provision of security assistance to Ukraine is authorization (issuing) of executive orders, through which the powers granted to the administration by Congress are implemented.

From *Ukraine's point of view*, the provision of military assistance to Ukraine is the actual delivery of defense articles to the country as well as actual provision of services to the state bodies and its representatives, primarily to the Armed Forces of Ukraine (AFU).

Table 2
Congressional Appropriations in Four "Ukraine" Bills

(in billions of U.S. dollars)	(in	hillions	of U.S	dollars
-------------------------------	-----	----------	--------	---------

Finant	Takal formaling	Sup	Support for Ukraine, including:		Military expend to Ukrair				
Fiscal years	Total funding, including:	Security	Humanitarian	Economic	Total	Replenishment of U.S. arms stocks	U.S. Armed Forces in Europe	Total	Other
2022	53.8	10.7	10.0	9.4	30.1	12.6	8.1	20.6	3.1
2023	59.7	12.6	4.9	17.9	35.3	13.9	9.8	23.7	0.7
2022- 2023	113.5	23.2	14.8	27.3	65.4	26.4	17.9	44.3	3.8

U.S. Congressional provisions through existing aid channels and the creation of new ones

In 2022, the U.S. Congress passed five laws that aimed to provide security assistance to Ukraine. Two of them are for fiscal year 2022 (October 1, 2021 – September 30, 2022), two are for fiscal year 2023 (October 1, 2022 – September 30, 2023), and one is for both fiscal years (2022 and 2023).

The total amount of funding under the first two bills for FY 2022 amounted to **\$53.8 billion**, under the following two bills for FY 2023 – **\$59.7 billion**, in total for both FY 2022 and FY 2023 – **\$113.5 billion**.

The Ukraine Democracy Defense Lend-Lease Act is formulated in such a way that it provides essentially unrestricted possibilities for providing military resources to Ukraine, subject only to discretion of the U.S. President.

The **\$113.5 billion** figure, or figures close to it (\$110, \$111, \$112 billion) have often been cited as *the total amount of security assistance to Ukraine*. However, such statements are incorrect. Why?

First, the \$113.5 billion figure includes funding for

operations that are not direct assistance to Ukraine. For example, deployment of new U.S. forces to Europe, replenishment of U.S. military stocks, refurbishment of a new building for the U.S. embassy in Kyiv, and provision of food aid to poor countries.

Second, this figure includes not only security assistance to Ukraine, but humanitarian and economic aid as well.

Table 2 shows how funds appropriated by the U.S. Congress are distributed within the framework of these four bills.

\$10.7 billion in security assistance to Ukraine in FY 2022, and **\$12.6 billion** in FY 2023. In total, Congress appropriated **\$23.2 billion** for Ukraine security assistance, which amounted to 20.5%, or slightly more than one-fifth, of the total funding under the four Ukraine assistance bills.

In addition to appropriations, Congress increased the prior limit on the Presidential Drawdown Authority (PDA). Congress raised the limit from \$100 million to **\$11 billion** in FY 2022 and **\$14.5 billion** in FY 2023 in the Ukraine aid bills. The total for both FY 2022 and 2023 is **\$25.5 billion**.

Table 3

Total Potential U.S. Security Assistance to Ukraine via Different Channels

(in billions of U.S. dollars)

Fiscal years	Congressional Appropriated Security assistance			PDA (limit)	Lend-Lease	Total Security	
	USAI	FMF	Total	` '		assistance	
2022	6.0	4.7	10.7	11.0		21.7	
2023	12.9		12.9	14.5		27.1	
Total	18.6	4.7	23.2	25.5		48.7	

Therefore, the potential amount of appropriated U.S. security assistance that could have been provided to Ukraine was **\$21.7 billion** in FY 2022 and **\$27.1 billion** in FY 2023.

In total, the potential amount of U.S. security assistance to Ukraine in both FY 2022 and FY 2023 (not counting possible Lend-Lease supplies) is **\$48.7** billion (see Table 3).

Slightly less than half of it **(\$23.2 billion**) is directly appropriated by Congress through two main channels:

- Ukraine Security Assistance Initiative (USAI) and
- Foreign Military Financing (FMF).

Slightly more than half of potential security assistance **(\$25.5 billion)** was planned to be shipped from U.S. Armed Forces' warehouses via the Presidential Drawdown Authority (PDA) channel.

It is worth noting that while security assistance to Ukraine is supposed to be taken from the U.S. military bases, they themselves are being replenished at the expense of the U.S. budget. Military assistance to Ukraine via the PDA channel in the amount of \$25.5 billion is to be compensated by the contracting production of new weapons for the U.S. Armed Forces in the amount of \$26.4 billion (see Table 2).

How did the Biden Administration use the cumulative **\$48.7 billion** appropriated by Congress in more than 16 months of full-scale Russian aggression against Ukraine by July 1, 2023? The official figures help explain.

How the Biden administration has used security assistance for Ukraine

Presidential Drawdown Authority (PDA)

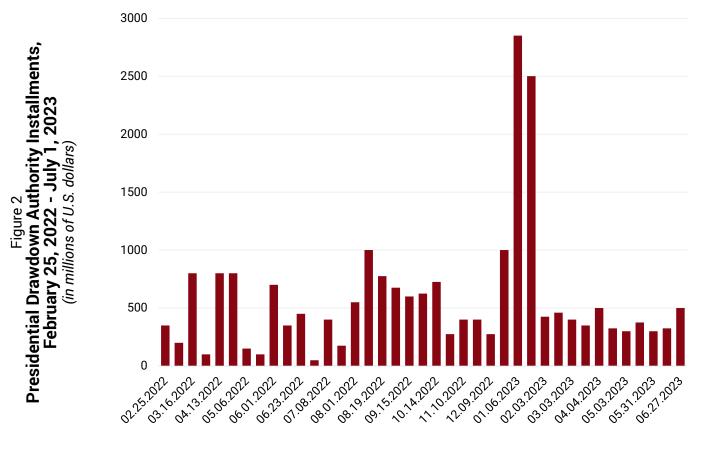
Through the *Presidential Drawdown Authority* (*PDA*), military hardware is transferred from the warehouses of the U.S. Armed Forces. From February 24, 2022, to July 1, 2023, the Biden administration sent 39 aid packages to Ukraine totaling a reported **\$22.3 billion**.

On June 20, 2023, Deputy Pentagon Press Secretary Sabrina Singh <u>revealed</u> inconsistencies in the valuation of the defense items shipped to Ukraine via the PDA. During a press conference, Singh said:

"Following up from some announcements earlier this year, during the department's regular oversight of our execution of presidential drawdown authority for Ukraine, we discovered inconsistencies in

Table 4 U.S. Security Assistance to Ukraine Through USAI in FY 2022 and FY 2023 (in billions of U.S. dollars)

Date	Congressional appropriation	Biden administration authorized funds	Contracting with manufacturers	Source
9/9/2022	6.0	4.8	1.2	<u>DOD</u>
9/15/2022	6.0	4.8	1.2	<u>DOD</u>
9/20/2022	6.0	4.8	1.2	<u>DOD</u>
10/17/2022	6.0	4.8	1.3	<u>DOD</u>
11/16/2022	9.3	6.3	1.5	<u>DOD</u>
12/5/2022	9.3	6.7	2.7	<u>DOD</u>
1/13/2023	9.3	7.1	2.9	<u>DOD</u>
1/23/2023	18.6	7.1	2.9	<u>DOD</u>
2/24/2023	18.6	11.3	3.6	<u>DOD</u>
4/28/2023	18.6	13.4	5.0	<u>DOD</u>
5/19/2023	18.6	14.6	5.6	<u>DOD</u>
6/9/2023	18.6	16.7	5.6	<u>DOD</u>
% of Congressional appropriation	100.0	89.8	29.8	



ILLARIONOV | 6

equipment valuation for Ukraine. In a significant number of cases, services used replacement costs rather than net book value, thereby overestimating the value of the equipment drawn down from U.S. stocks and provided to Ukraine. Once we discovered this misvaluation [sic], the Comptroller reissued guidance on March 31st clarifying how to value equipment in line with the financial management regulation and DOD policy to ensure we use the most accurate of accounting methods."

Singh said the calculation was off by **\$2.6 billion** in FY 2022 and **\$3.6 billion** in FY 2023.

Therefore, the net book value of the military equipment provided to Ukraine through the PDA was **\$6.4 billion** in FY 2022, **\$9.7 billion** in FY 2023, and **\$16.1 billion** in total.

Ukraine Security Assistance Initiative (USAI)

Unlike the PDA, which draws from existing DoD stocks, the USAI <u>allows</u> the federal government to contract the private sector to produce weapons, equipment,

and ammunition for Ukraine. From February 24, 2022, to July 1, 2023, Congress allocated **\$18.6 billion** to the USAI. The Biden administration has authorized 14 tranches for a total of **\$16.7 billion**, or almost 90% of Congressional appropriations. From that, the Pentagon has only placed production orders for **\$5.6 billion**, or roughly 30% of the budget allocations. Defense items produced under these orders, and delivered to Ukrainian territory, amounts to security assistance worth **\$950 million**, or 5% of the congressional budget appropriations.

Permits for contracting defense items worth \$1.9 billion have not been awarded yet, while the \$11.0 billion in contracts already approved by the administration have not been placed with manufacturers by DoD yet.

Table 4 gives a general idea of the provision of military assistance through USAI.

Foreign Military Financing (FMF)

FMF provides grants and loans to help countries purchase U.S. defense equipment. For example, Ukraine has <u>used</u> FMF to procure Javelin anti-armor missiles and Mark VI patrol boats.

As of July 1, 2023, the Pentagon announced it would make long-term investments for military assistance to

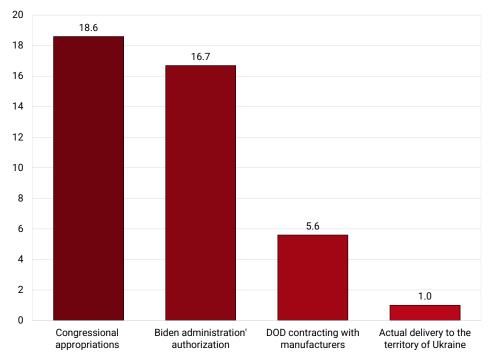
Table 5
U.S. Security Assistance Delivered to Ukraine in 2022 and 2023
(in billions of U.S. dollars)

Legal stages	PDA	USAI	FMF	Lend-Lease	Total
Congressional appropriations and PDA limits	25.5	18.9	4.7		48.7
Biden administration authorization	16.1	16.7	2.7	0.0	40.5
DOD contracts with private industry	0.0	5.6		0.0	
Actual delivery to Ukraine	16.1	1.0		0.0	17.1
Actual delivery as % of Congressional appropriations and PDA limits	63.3	5.0		0.0	35.1

Figure 3

Overview of Ukraine Security Assistance Initiative (USAI), February 24, 2022 - July 1, 2023

(in billions of U.S. dollars)



Ukraine within this channel in the amount of \$2.7 billion.

Ukraine Democracy Defense Lend-Lease Act of 2022

The Ukraine Lend-Lease Act was passed unanimously by the Senate, and by a vote of 417-10 in the House in April 2022, and signed into law May 9, 2022. As of July 1, 2023, the Biden administration has not touched Lend-Lease at all.

Out of a total of **\$48.7 billion** appropriated by Congress for fiscal years 2022 and 2023, the Biden administration has authorized **\$40.5 billion**, which is 83.2% of allocated funding.

Delivery of U.S. Security Assistance to Ukrainian Territory

Per the <u>State Department</u>, aid via PDA can arrive "within days – or even hours – of approval." Since the shipment of most defense materials from the U.S. Army warehouses occurs in a relatively short time (sometimes within several days), one can assume that the total amount authorized through the PDA essentially coincides with their actual deliveries – **\$16.1 billion**.

Of the contracts placed by the Pentagon via USAI for \$5.6 billion, the actual aid delivered to Ukraine was **\$950 million.**

Thus, the confirmed amount of U.S. security assistance physically delivered to the territory of Ukraine since February 24, 2022, under PDA and USAI, is **\$17.1** billion.

The actual share of PDA limits used (63.3%) applies to the total in FY 2022 and FY 2023. Since the PDA limit is set up for an individual fiscal year (i.e., 2022), but does not roll over to subsequent years if not used, it is more correct to estimate the use of the PDA channel for each fiscal year.

In FY 2022, the Biden administration used **\$6.4 billion** from the PDA out of the \$11.0 billion limit set by Congress. Since the PDA limit expired on September 30, 2022, the **\$4.6 billion** difference in security assistance was never delivered to Ukraine.

In FY 2023, the Biden Administration used **\$9.7 billion** from the PDA out of the \$14.5 billion limit. As of July 1, 2023, approximately **\$4.8 billion** of potential security assistance might be sent to Ukraine before the end of the FY 2023.

Average monthly deliveries of U.S. security assistance in FY 2022 and FY 2023

Table 7 provides an idea of the average monthly volume of U.S. security assistance to Ukraine by each year.

Table 6
U.S. Security Assistance Delivered to Ukraine via PDA in FY 2022 and FY 2023
(in billions of U.S. dollars)

	FY 2022	FY 2023	FY 2022 and FY 2023
PDA limit	11.0	14.5	25.5
Actual Delivery to Ukraine	6.4	9.7	16.1
Actual delivery as % of PDA limit	58.4	67.0	63.3

Table 7

Average Monthly U.S. Security Assistance to Ukraine
(in billions of U.S. dollars)

	FY 2022	FY 2023	Total
Total of Congressional appropriations and PDA limits	3.0	3.0	3.0
Biden administration authorization	2.4	2.7	2.6
Actual Delivery to Ukraine	0.9	1.2	1.1
Actual Delivery to Ukraine as % of total of Congressional appropriations and PDA limits	29.6	39.3	35.1

Table 8
Annual U.S. Security Assistance in WWII and to Ukraine in the Russian-Ukranian War

Recipient	UK 1941-45	USSR 1941-45	France 1944-45	Ukraine 2022-23
U.S. security assistance, \$bn in 2022 prices	88.4	37.9	21.2	12.7
As % of U.S. security assistance to the UK in 1941-45	100.0	42.9	24.0	14.4

The Biden administration delivered only **29.6%** of congressionally appropriated aid in FY 2022, and **39.3%** of congressionally appropriated aid in FY 2023 to Ukraine.

Comparative U.S. military assistance to Ukraine

From February 24, 2022, to July 1, 2023, U.S. security assistance delivered to Ukraine amounted to \$17.1 billion, or at an annualized rate of \$12.7 billion. This is much less than the average annual supply of U.S. security assistance under Lend-Lease to then U.S. allies during World War II (see Table 8).

Thus, the U.S. security assistance provided to Ukraine during last 16 months recalculated on annual basis (\$12.7 billion) was one seventh of the U.S. security

assistance to United Kingdom (\$88.4 billion), one third of the U.S. supplies to the USSR (\$37.9 billion) and slightly more than half of aid to France (\$21.2 billion) during World War II.

The State Department's <u>assembled data</u> for U.S. security assistance provided to foreign countries in 1947-2019 in constant prices gives further perspective (see Table 9).

From 1947-2019, Ukraine, having received \$3.1 **billion** from 1992-2019, was the **36**th largest recipient of U.S. security assistance.

From 1992 till July 1, 2023, Ukraine has received a total of **\$21.1 billion** in U.S. security assistance (**\$4.0 billion** from 1992-2021 and **\$17.1 billion** from 2022-2023).

Figure 4
Average Annual U.S. Military Aid to Allies in WWII (1941-45)
and to Ukraine in the Latest Stage of the Russian-Ukrainian War (2022-2023)
(in billions of U.S. dollars in 2022 prices)

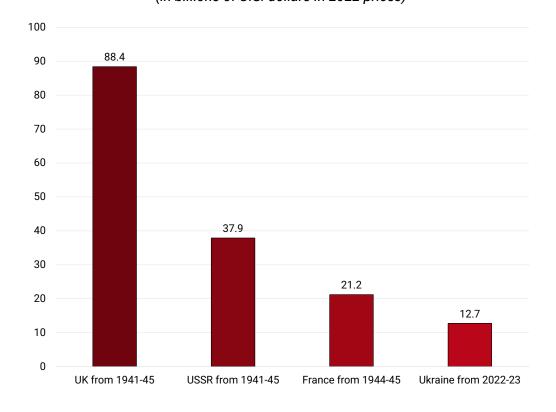


Table 9

Largest Recipients of Total U.S. Security Assistance Since 1947
(in billions of U.S. dollars)

	Recipients	1947-2019
1	Israel	197.7
2	Afghanistan	105.1
3	South Vietnam	98.1
4	Egypt	86.5
5	Turkey	53.2
6	South Korea	51.6
7	Iraq	42.3
8	France	41.4
9	Greece	37.4
10	Taiwan	33.0
11	Italy	21.9
12	Pakistan	18.2
36	Ukraine	3.1



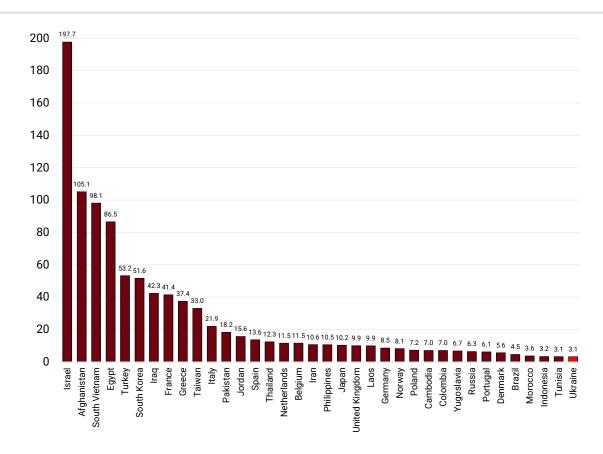


Table 10

Largest Recipients of Average Annual
U.S. Security Assistance in Periods
of Intensive American Support

(in billions of U.S. dollars in 2022 prices)

	Recipients	Period of support	Annual average security assistance
1	Afghanistan	2002-2019	5.836
2	South Vietnam	1956-1975	4.894
3	Israel	1959-2019	3.189
4	France	1950-1963	2.958
5	Iraq	2003-2019	2.462
6	Egypt	1979-2019	2.109
7	South Korea	1950-1986	1.357
8	Italy	1950-1966	1.286
9	Taiwan	1951-1978	1.084
10	Turkey	1948-1997	1.035
11	Germany	1951-1960	0.848
12	Yugoslavia	1951-1958	0.810
13	Netherlands	1950-1964	0.767
14	Belgium	1950-1964	0.765
15	Japan	1953-1966	0.727
16	Greece	1948-1997	0.725
17	United Kingdom	1950-1963	0.706
18	Ukraine	1992-2023	0.661
19	Laos	1956-1975	0.492
20	Cambodia	1956-63, 1970- 75	0.491
21	Iran	1950-1972	0.459
22	Pakistan	1955-68, 1983- 90, 2002-19	0.455
23	Norway	1950-1967	0.452
24	Spain	1954-1987	0.389
25	Denmark	1950-1966	0.327

Table 11

Largest Annual Recipients of U.S. Security

Assistance

(in billions of U.S. dollars in 2022 prices)

	Recipients	Year	U.S. security assistance
1	South Vietnam	1973	17.47
2	South Vietnam	1972	14.03
3	Israel	1979	13.54
4	Afghanistan	2011	13.52
5	France	1952	13.08
6	Afghanistan	2012	12.36
7	Israel	1974	12.27
8	France	1951	12.24
9	Ukraine	2022	11.1
10	South Vietnam	1971	10.86
11	South Vietnam	1969	9.82
12	South Vietnam	1970	9.31
13	Afghanistan	2010	9.13
14	Afghanistan	2013	8.99
15	Afghanistan	2008	8.52
16	South Vietnam	1968	8.33
17	Afghanistan	2009	8.17
18	Iraq	2006	7.82
19	Afghanistan	2015	7.56
20	Israel	1976	7.16
21	Afghanistan	2014	6.08
22	Ukraine	2023	6.01
23	Poland	2003	5.99
24	Iraq	2008	5.98
25	Afghanistan	2018	5.82

Figure 7

Largest Annual Recipients of U.S. Security

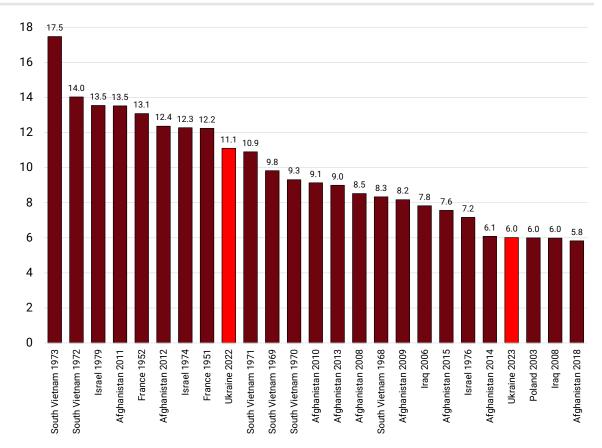
Assistance From 1947-2023

(in billions of U.S. dollars in 2022 prices)

Figure 6
Largest Recipients of Average Annual U.S. Security Assistance in Periods of Intensive American Support

(in billions of U.S. dollars in 2022 prices)

6 5.84 4.89 5 4 3.19 2.96 3 2.46 2.11 2 1.36 1.29 1.08 1.04 1 0.85 0.81 0.77 0.77 0.73 0.73 0.71 0.66 0.49 0.49 0 Cambodia 1956-63, 1970-75 South Vietnam 1956-1975 Egypt 1979-2019 Laos 1956-1975 France 1950-1963 Iraq 2003-2019 South Korea 1950-1986 Japan 1953-1966 United Kingdom 1950-1963 Ukraine 1992-2023 Afghanistan 2002-2019 Israel 1959-2019 Italy 1950-1966 Taiwan 1951-1978 Germany 1951-1960 Yugoslavia 1951-1958 Netherlands 1950-1964 Belgium 1950-1964 Greece 1948-1997 Turkey 1948-1997



Comparative data for all recipients of U.S. security aid in 2020-2023 is not currently available. Assuming no radical changes in security assistance trends for other recipients in the last three and half years, Ukraine (with **\$21.1 billion** in U.S. military aid) might now be in **12**th **place**, instead of 36th, behind Taiwan and Italy and before Pakistan and Jordan.

Since U.S. security assistance is provided based on changing geopolitical dynamics and U.S. foreign policy priorities, it might be more correct to compare annual average amounts of aid during times of more intensive American support for different recipients.

In terms of annual average U.S. security assistance during periods of intensive American support, Ukraine, at **\$661 million** from 1992-2023, is the **18**th largest recipient of U.S. military aid after WWII, behind Greece and United Kingdom and before Laos and Cambodia (see Table 10).

Another approach is to compare U.S. security assistance to Ukraine during the last two years of full scale Russian aggression with annual U.S. military aid provided to a particular recipient. In terms of annual U.S. security assistance to a particular recipient in a particular year, Ukraine, with \$11.1 billion in 2022, comes 9th in the list of largest annual recipients (behind France in 1951 and before South Vietnam in 1971), and with \$6.0 billion in the first 6 months of 2023, it comes 22nd (behind Afghanistan in 2014 and before Poland in 2003) (see Table 11).

Conclusion

To assess U.S. security assistance to Ukraine in the last 16 months of Russian aggression against Ukraine there are five main (rounded) numbers to remember: $\mathbf{49} - \mathbf{40} - \mathbf{17} - \mathbf{6} - \mathbf{0}$.

As of July 1, 2023:

- Congress has allocated approximately **\$49 billion** in security assistance to Ukraine;
- the Biden administration authorized **\$40 billion** in security assistance to Ukraine;
- the actual delivery of U.S. security assistance to the territory of Ukraine was **\$17 billion**;
- the Pentagon contracted manufacturers to produce defense items for Ukraine in coming months and years for **\$6 billion**;
- the Biden administration used **\$0** from the Ukraine Democracy Defense Lend-Lease Act, adopted by the U.S. Congress and signed by President Biden into law on May 9, 2022.

Despite its public statements, the Biden Administration has lagged far behind Congress in demonstrating a commitment to help Ukraine defend itself from Russian aggression and has completely failed to provide Ukraine with the virtually unlimited billions of dollars' worth of aid through Lend-Lease.



This report was produced by the Center for Security Policy, a nonprofit, nonpartisan 501(c)(3) institution focusing on national security policy issues.

It was made possible by generous contributions from the Center for Security Policy's supporters. All views, positions, and conclusions expressed in this publication should be understood to be solely those of the author(s).

 $\ \, {\mathbb C}$ 2023 by the Center for Security Policy. All rights reserved