World Military Unmanned Aerial Vehicle Systems

2023/2024 Market Profile and Forecast

TEAL GROUP
CORPORATION

World Military Unmanned Aerial Systems

Market Profile & Forecast

2023/24 Edition

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The Market Outlook

In terms of worldwide military budgets, the unmanned aircraft systems (UAS) segment continues to see growth, although annual growth has moderated when compared to a decade ago. The unclassified sector will continue to increase over the next decade, by about 66%, from current annual spending on RDT&E and procurement of about $15.3 billion in FY24 to about $25.4 billion in FY33 (a CAGR of 5.8%). If operations and maintenance expenditures were to be added, these totals would be greater. (Note: we use the US fiscal year cycle here as the standard for comparison purposes, even though each country uses its own budget cycle.)

This growth is being driven by the continued adoption of unmanned aerial vehicles (UAVs) worldwide. Over the next decade, unclassified US procurement will grow modestly during the first half of the forecast period, and then potentially grow significantly if the USAF Cooperative Combat Aircraft (CCA) bears fruit (this is covered below and in the US section). Another big issue for the US drone sector is the extent of secret "black" drone programs, some of which may involve CCA.

Growth will increasingly shift towards international markets as more militaries adopt the lessons of Iraq, Afghanistan, Syria, Libya, Nagorno-Karabakh, and Ukraine and incorporate UAVs into their forces (see Figure 1). The introduction of specially built unmanned combat air vehicles (UCAVs) also promises to drive growth over the next decade.

Now, for the seventh year Teal Group has separated all civil government and commercial UAVs into a separate study in recognition of the strong potential for the future as airspace begins to open worldwide. We have included a summary of those findings, however, at the end of this Executive Overview.

Please note that in our tables and charts "procurement" and "production value" are two different, but related numbers. Procurement, covered in the budget forecasts here, represents the annual amount of production funding included in a country's annual defense budget, usually on a fiscal-year basis. Production value, covered in the numerous tables in this study, represents the value of UAV systems delivered during a calendar year. In rough terms, the funds "procured" during one-year result in "delivered" units the following year or two after.

The most significant catalyst to this market has been the enormous

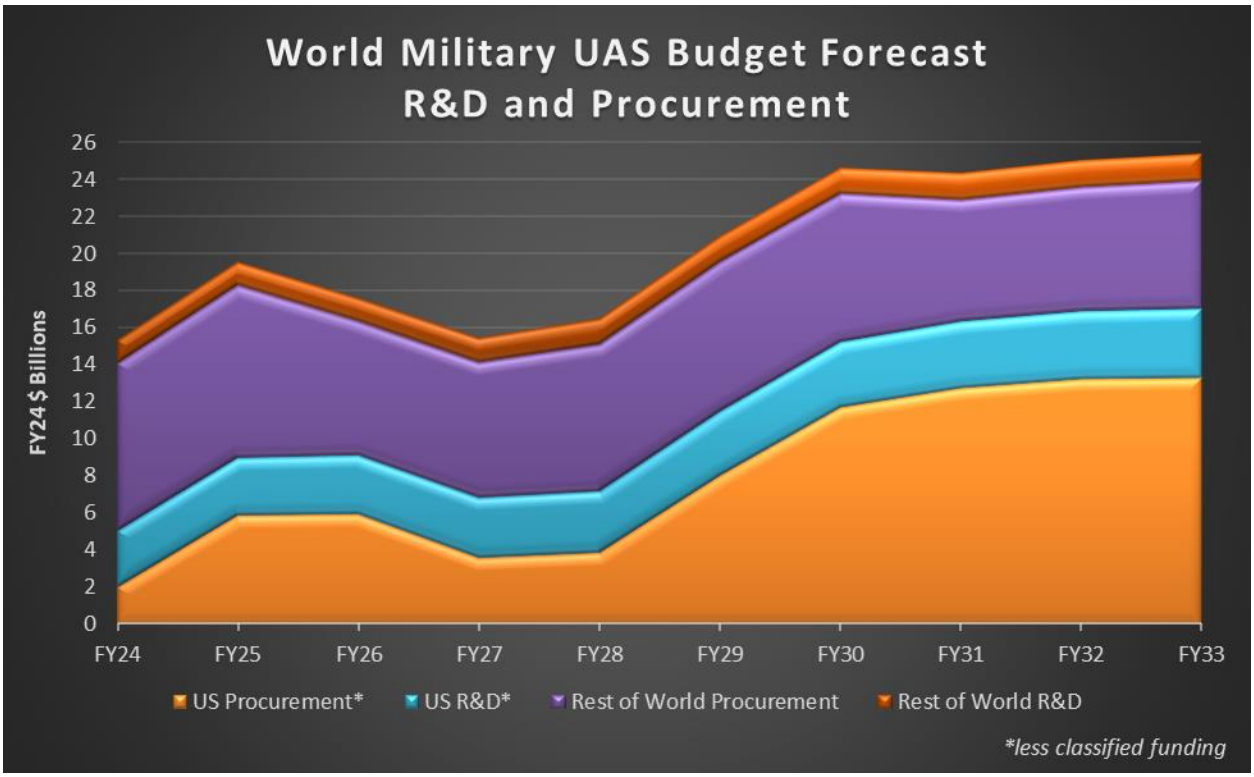

Figure 1

growth of interest in UAVs by the US military, tied to operations in Iraq and Afghanistan, as well as the general trend towards information warfare and netcentric systems. UAVs are a key element in the intelligence, surveillance, and reconnaissance (ISR) portion of this revolution, and they are expanding into other missions as well with the advent of hunter-killer UAVs. The reason for the slow-down in US growth has been the decline of US unclassified procurement over the past decade with the end of the wars in Iraq and Afghanistan. The US military currently has the world's largest and most sophisticated drone fleet, with the rest of the world only beginning to catch up.

Our research finds that the US will account for 71.5% of the unclassified R&D spending on UAV technology over the next decade, and about 51.2% of the unclassified procurement through the forecast decade.

These percentages change significantly when adjustments are made for US classified UAV development and procurement funding (see Figure 2). The value of these "black" programs can only be surmised. With these assumptions, the US accounts for 81.1% of the world R&D on UAVs and 59% of the procurement.

This difference is due to the heavier US investment in cutting-edge technologies and the marked lag-time in such research and procurement elsewhere, especially major aerospace centers such as Europe. This follows trends in other cutting-edge technologies observed over the past decade by Teal Group analysts in such areas as precision-guided weapons, information and sensor technology, and military application of space systems.

A tangible example of the "black" UAV budget in the US is the RQ-170 Sentinel program which only came to light when one of the stealth drones came down in Iranian territory. Recent revelations about the RQ-180 provide another example.

Teal Group expects that the sales of UAVs will follow recent patterns of high-tech arms procurement worldwide, with the Asia-Pacific area representing the second largest market, followed by Europe. Indeed, the Asia-Pacific region may represent an even larger segment of the market, but several significant players in the region, namely Japan and China are not especially transparent about their plans compared to Europe. As in the case of many cutting-edge aerospace products, Africa and Latin America are expected to be very modest markets for UAVs.

Some warnings are needed when viewing the summary tables and charts here. There appear to be wide swings and dips in unit acquisition over the forecast decade, that is not matched by similar swings in the production value. This is primarily due

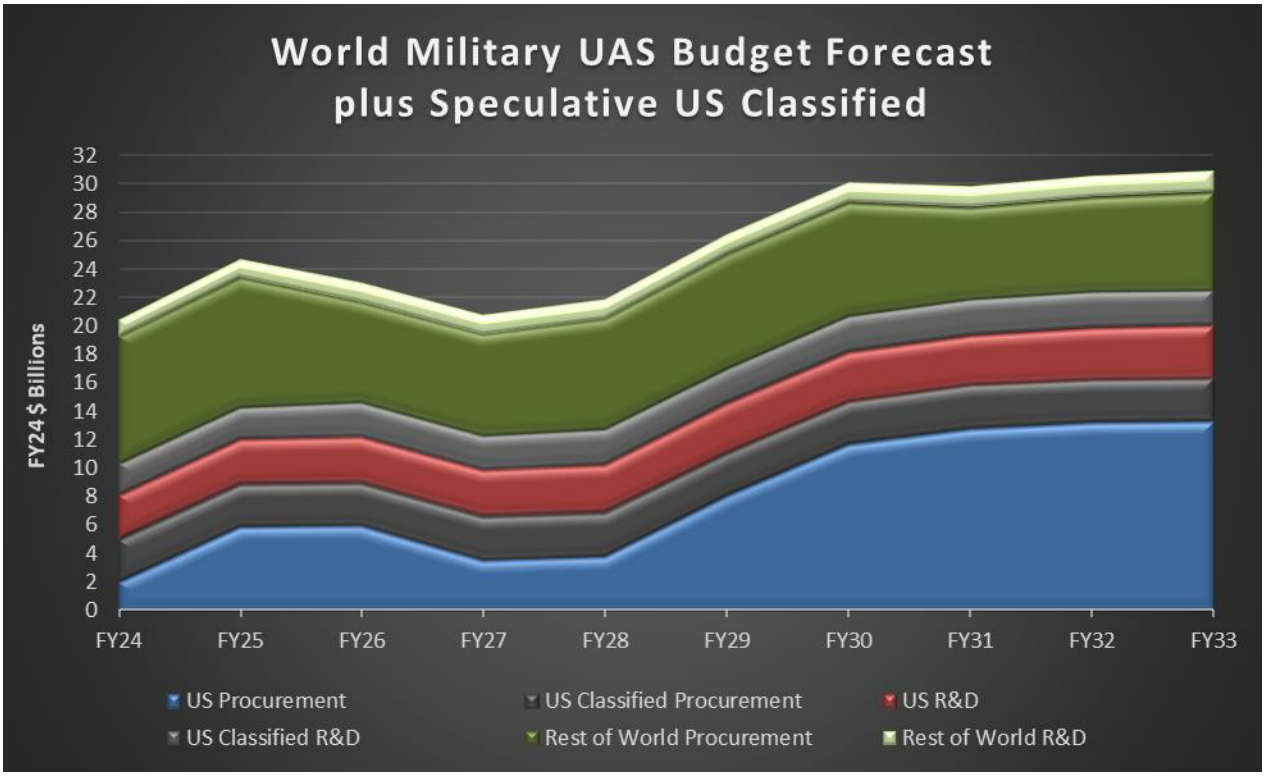

Figure 2

to the volatile mini-UAV market, which represents exceptionally large numbers of air vehicles even though unit costs are extremely low compared to other UAVs, especially the endurance types. This forecast expects a drop in US mini-UAV acquisition as combat operations wind down in Iraq and Afghanistan, which has a significant effect on unit numbers, though not on dollar values. It is also important to note that we are not yet including forecasts for quadcopters, or very small and inexpensive micro-UAVs. In many cases, these are being obtained off-the-shelf from the commercial market, and the unit cost is too low for any form of tracking. In addition, the large numbers likely to be acquired tend to grossly distort the unit forecast numbers.

The summary tables below include a budget forecast, as well as UAV production forecasts based on the various program unit forecasts. As can be seen, the procurement aspect of the budget forecast is higher than the production forecast (by value). The procurement forecast captures costs other than the acquisition costs alone, such as modification programs, acquisition of system components including sensors, ground control stations and support equipment. Since US classified programs are so speculative, we have included two separate budget forecasts here, one that excludes the US classified programs and one that includes them.

The US lines are derived from the US budget procurement forecast found in the US section. The "Rest of the World" procurement line is based on the production forecast, plus a fractional addition to account for the other UAV costs.

World UAS Budget Forecast (excluding US classified budget)

($ Millions)	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total
World R&D	4,258	4,369	4,491	4,623	4,728	4,821	4,915	5,010	5,107	5,205	47,526
World Procurement	11,025	15,145	13,111	10,826	11,721	16,099	19,634	19,252	19,880	20,149	156,841
Total	**15,283**	**19,514**	**17,601**	**15,449**	**16,449**	**20,920**	**24,548**	**24,262**	**24,986**	**25,354**	**204,367**

R&D ($ Millions)	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total
USA	3,058	3,119	3,191	3,283	3,378	3,446	3,515	3,585	3,657	3,730	33,961
Rest of World (RoW)	1,200	1,250	1,300	1,340	1,350	1,375	1,400	1,425	1,450	1,475	13,565
Total R&D	**4,258**	**4,369**	**4,491**	**4,623**	**4,728**	**4,821**	**4,915**	**5,010**	**5,107**	**5,205**	**47,526**

Procurement ($ Millions)	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total
USA	2,006	5,898	5,976	3,595	3,856	8,066	11,679	12,767	13,201	13,270	80,314
RoW	9,020	9,247	7,134	7,231	7,865	8,033	7,955	6,484	6,679	6,879	76,527
Total Procurement	**11,025**	**15,145**	**13,111**	**10,826**	**11,721**	**16,099**	**19,634**	**19,252**	**19,880**	**20,149**	**156,841**

World UAS Budget Forecast (including provisional US classified budget)

($ Millions)	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total
World R&D	6,478	6,589	6,966	6,998	7,228	7,321	7,415	7,510	7,607	7,705	71,816
World Procurement	14,025	18,145	16,111	13,826	14,721	19,099	22,634	22,252	22,880	23,149	186,841
Total	**20,503**	**24,734**	**23,076**	**20,824**	**21,949**	**26,420**	**30,048**	**29,762**	**30,486**	**30,854**	**258,657**

R&D ($ Millions)	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total
USA	5,278	5,339	5,666	5,658	5,878	5,946	6,015	6,085	6,157	6,230	58,251
Rest of World (RoW)	1,200	1,250	1,300	1,340	1,350	1,375	1,400	1,425	1,450	1,475	13,565
Total R&D	**6,478**	**6,589**	**6,966**	**6,998**	**7,228**	**7,321**	**7,415**	**7,510**	**7,607**	**7,705**	**71,816**

Procurement ($ Millions)	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total
USA	5,006	8,898	8,976	6,595	6,856	11,066	14,679	15,767	16,201	16,270	110,314
RoW	9,020	9,247	7,134	7,231	7,865	8,033	7,955	6,484	6,679	6,879	76,527
Total Procurement	**14,025**	**18,145**	**16,111**	**13,826**	**14,721**	**19,099**	**22,634**	**22,252**	**22,880**	**23,149**	**186,841**

World Production Forecast by Type

(Units, Air Vehicles)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
Mini-VTOL UAVs	29,080	30,232	30,557	4,777	6,645	6,795	6,450	7,585	9,160	9,275	140,556
Small/Tactical VTOL UAVs	2,052	2,831	2,827	875	990	1,440	1,865	2,522	2,942	3,185	21,529
Mini-UAVs	2,742	2,424	1,767	942	1,060	1,150	1,090	1,095	1,190	1,115	14,575
STUAVs	276	182	180	142	104	102	100	62	85	49	1,282
TUAVs	471	491	468	355	437	1,084	1,558	1,734	1,736	1,858	10,192
Naval UAVs	42	53	45	52	43	31	56	61	62	33	478
MALE	234	266	275	252	141	173	188	208	183	155	2,075
HALE	28	30	28	34	39	25	22	21	22	18	267
UCAVs	7	7	11	17	26	27	27	79	150	150	501
Total	**34,932**	**36,516**	**36,158**	**7,446**	**9,485**	**10,827**	**11,356**	**13,367**	**15,530**	**15,838**	**191,455**

($ Millions)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
Mini-VTOL UAVs	85	105	106	55	84	85	82	100	117	123	941
Small/Tactical VTOL UAVs	60	109	106	51	57	91	125	145	173	186	1,102
Mini-UAVs	167	152	113	64	76	83	79	79	85	80	976
STUAVs	123	78	81	65	45	39	42	27	32	21	552
TUAVs	1,492	1,519	1,502	1,108	1,282	1,136	1,273	1,213	1,228	1,013	12,764
Naval UAVs	376	484	410	468	368	262	494	544	568	302	4,276
MALE	4,126	4,673	4,942	4,809	2,911	3,629	4,039	5,731	5,274	5,739	45,873
HALE	2,241	2,510	2,133	2,569	3,096	2,121	1,725	1,675	1,750	1,450	21,270
UCAVs	700	700	800	1,100	1,400	1,500	1,500	4,450	8,100	10,100	30,350
Total	**9,369**	**10,331**	**10,193**	**10,288**	**9,317**	**8,946**	**9,358**	**13,963**	**17,326**	**19,013**	**116,061**

World UAV Production Forecast by Region

(Units, Air Vehicles)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
USA	**508**	**1,066**	**671**	**636**	**1,115**	**1,982**	**2,631**	**2,894**	**2,963**	**3,168**	**17,634**
Rest of World (RoW)	**34,424**	**35,450**	**35,487**	**6,810**	**8,370**	**8,845**	**8,725**	**10,473**	**12,567**	**12,670**	**173,821**
Europe	31,487	32,236	32,117	3,794	4,082	4,567	4,132	4,775	5,395	5,428	128,013
Mid-East	884	1,006	893	915	1,174	1,559	1,782	2,194	2,432	2,744	15,583
Africa	316	235	479	369	480	518	420	326	893	583	4,619
Asia-Pacific	1,534	1,892	1,899	1,667	2,507	2,060	2,284	3,096	3,660	3,796	24,395
Americas	203	81	99	65	127	141	107	82	187	119	1,211
Total	**34,932**	**36,516**	**36,158**	**7,446**	**9,485**	**10,827**	**11,356**	**13,367**	**15,530**	**15,838**	**191,455**

($ Millions)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
USA	**1,739**	**2,044**	**1,993**	**1,882**	**2,832**	**2,372**	**2,208**	**6,660**	**10,095**	**13,118**	**44,944**
Rest of World (RoW)	**7,630**	**8,286**	**8,200**	**8,406**	**6,486**	**6,574**	**7,150**	**7,303**	**7,231**	**5,895**	**73,161**
Europe	3,250	3,508	3,554	3,142	1,704	1,791	2,000	2,175	2,244	1,599	24,967
Mid-East	986	1,128	1,407	1,930	1,691	1,593	1,796	1,609	1,578	1,245	14,962
Africa	120	80	116	166	205	136	93	214	138	31	1,299
Asia-Pacific	3,061	3,416	2,936	2,978	2,823	2,923	2,926	3,160	3,198	2,955	30,376
Americas	213	155	187	190	63	131	335	145	74	65	1,557
Total	**9,369**	**10,331**	**10,193**	**10,288**	**9,317**	**8,946**	**9,358**	**13,963**	**17,326**	**19,013**	**118,105**