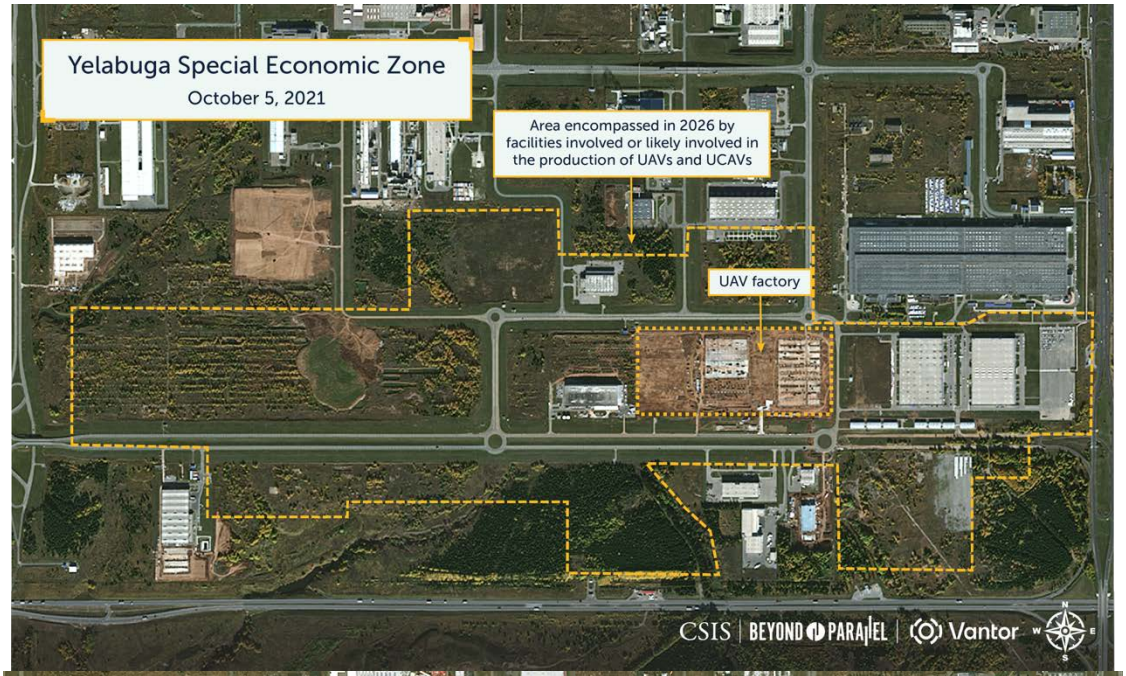
A Closer Look at the Yelabuga UAV Factory

March 9, 2026, by Joseph S. Bermudez Jr., Victor Cha, and Jennifer Jun



Close-up view of the UAV factory and likely related facilities at the Yelabuga Special Economic Zone, October 5, 2021, and November 17, 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

Key Findings

- The Yelabuga drone factory has been identified in open-source reports as a major production site for the Iranian-designed drones, Geran-1 and Geran-2, which Russia has used in the war against Ukraine. China reportedly has supported the project with dual-use components, machine tools, industrial supply chains, and logistics infrastructure through the Deng Xiaoping Logistics Terminal, located just seven kilometers east of the Yelabuga special economic zone. And North Korea has underpinned the rapid growth with reported recruits of up to 12,000 workers and engineers. This circle of cooperation has allowed Russia to quickly industrialize and scale production systems at Yelabuga ahead of schedule, which is now reportedly producing more than 5,500 units per month to support the war in Ukraine. In the meantime, Iran and North Korea are gaining real-world combat data for their own drone designs by observing what works against Ukraine's air defense.
- CSIS satellite imagery shows sustained infrastructure expansion at the Yelabuga drone factory in Russia through early 2026, consistent with the rapid establishment and scaling up of production of uncrewed aerial vehicles (UAV) and uncrewed combat aerial vehicles (UCAV) following Russia's invasion of Ukraine.
- According to our imagery study, since late 2021, the UAV factory and associated facility area at the Yelabuga SEZ has expanded from two buildings under construction to a 17-facility complex comprising up to 116 buildings, encompassing over 2,820,000 square meters of space (2,82 km2), and 67 finished housing units that could house approximately 20,000 workers. Our analysis shows that approximately 15% of the entire Yelabuga SEZ's facilities are now likely involved in the production of UAVs and UCAVs.
- Any North Korean involvement with the Yelabuga UAV factory would likely expose Pyongyang to Russia's wartime UAV production experience and technology, which could be valuable to North Korea's expanding UAV and UCAV programs.[1]

[1] Recent and incomplete reports indicate that North Korean combat troops sent to fight in Ukraine have also undertaken offensive UAV and UCAV operations. It is unknown whether, and to what extent, they have employed the Iranian-designed Shahed-136 UCAV. Regardless, any combat experiences or technology brought back to North Korea will be of considerable value to that country's expanding UAV and UCAV programs going forward.

UAV Factory Core

**These facilities all have anti-UAV netting on the roof*

- 1 — UAV Factory (38,000 m^2)
- 2 — UAV Factory (38,000 m^2)
- 8 — Facility #8 (22,300 m^2)
- 9 — Facility #9 (19,300 m^2)

West Support Facilities

- 4 — Housing Facility + Park (*8 buildings*)
- 12 — Housing Facility (*≈56 buildings*)
- 13 — Housing Facility (*≈22 buildings*)
- 15 — Warehouse Facility #15 (*4 warehouses - 71,200 m^2*)

North Support Facilities

- 5 — Facility #5 (38,500 m^2)
- 6 — Facility #6 (21,000 m^2)
- 7 — Facility #7 (22,800 m^2)
- 11 — Warehouse Facility #11 (*3 warehouses - 52,200 m^2*)

East Support Facilities

- 3 — Housing Facility (*7 buildings*)
- 10 — Parking lot (*expanded to 43,000 m^2*)
- 14 — Parking lot + earth-covered magazine (ECM)
- 16 — Facility #16 (*anti-UAV netting*)
- 17 — Warehouse Facility #17

Close-up view of the UAV factory and likely related facilities at the Yelabuga Special Economic Zone, November 17, 2025.

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UAV Factory Core

Serves as the central hub for UAV systems integration, assembly, production and final delivery.

	Name	Construction	Operationalization	Size	Others
1	UAV Factory	March 2021	September 2023	38,000 m²	Anti-UAV net, security wall
2	UAV Factory	March 2021	September 2023	38,000 m²	Anti-UAV net, security wall
8	Facility #8	March 2024	September 2024	22,300 m²	Anti-UAV net, security wall
9	Facility #9	March 2024	September 2024	19,300 m²	Anti-UAV net, security wall

Close-up view of the future site of the UAV factory under construction, November 17, 2025.

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West Support Facilities

Dramatic increase in the number of housing units southwest and west of the UAV factory.

	Name	Construction	Operationalization	Size	Others
4	Housing Facility + Park	April 2022	April 2023	8 buildings	Park-like area, security fence
12	Housing Facility	February - March 2025	Ongoing	≈56 buildings	Sidewalks and covered walkways
13	Housing Facility	February - March 2025	Ongoing	≈22 buildings	Sidewalks and covered walkways
15	Warehouse Facility #15	April 2025	February 2026	71,200 m²	4 large warehouses, covered walkways

Development of Facilities #12, #13, and #15, November 17, 2025.

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East Support Facilities

Supports UAV production, logistics, storage, and personnel accomodation.

	Name	Construction	Operationalization	Size	Others
3	Housing Facility	Present since 2019	April 2023	7 buildings	Covered walkways
10	Parking lot	Present since 2019	Expanded in 2020	43,000 m²	Covered walkways, grew from 11,000 m² to 43,000 m²
14	Parking lot + earth-covered magazine (ECM)	February - March 2025	Ongoing changes	N/A	36-meter-by-23-meter ECM for storing explosive materials
16	Facility #16	Present since 2019	Ongoing changes	2 buildings	Covered walkways, anti-UAV netting
17	Warehouse Facility #17	December 2024	February 2026	4 buildings	3 large warehouses, 1 support building, covered walkways

Development of the Facilities 3, 16, 10, and connecting covered walkways, November 17, 2025.

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North Support Facilities

Support UAV production through storage, logistics, and internal movement of personnel and materials.

	Name	Construction	Operationalization	Size	Others
5	Facility #5	August 2022	April 2024	38,500 m^2	Covered walkways, security wall
6	Facility #6	November 2023	August 2025	21,000 m^2	Covered walkways, security wall
7	Facility #7	April 2024	July 2024	22,800 m^2	Covered walkways
11	Warehouse Facility #11	February 2023	June 2024	52,200 m^2	3 warehouses, parking lot, covered walkways

Development of Facilities #5 and #6, along with covered walkways, November 17, 2025.

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Introduction

Beginning shortly after its February 2022 invasion of Ukraine, Russia faced an unprecedented and growing need for uncrewed aerial vehicles (UAVs, commonly called drones) and uncrewed combat aerial vehicles (UCAVs, commonly called attack or suicide drones), a need that rapidly outstripped its ability to produce such weapons domestically.

To address this shortfall, Russia reached out to Iran. Following several 2022 visits by Russian officials to Iran, during which they inspected the Shahed line of UAVs, the two nations concluded an agreement for the immediate supply of the Shahed-131 UAV (known in Russia as the Geran 1) and the Shahed-136 UCAV (known in Russia as the Geran 2). The first of these reportedly arrived by August 2022.[2] The initial deliveries were dominated by the delta-winged Shahed-136, which Russian forces used with great effect against Ukraine, reportedly with a range of 2,000+ kilometers and a warhead of up to 90 kilograms.[3]

In June 2023, then National Security Council spokesman John Kirby described Russia's expanding relationship with Iran as becoming "a full-scale defense partnership," with "support flowing both ways." Russia provided "an unprecedented level of military and technical support" to Tehran in exchange for Iranian UAVs, UAV production technology, and other equipment for use in Ukraine.[4] Among this support was the establishment of a UAV factory within the Yelabuga Special Economic Zone (SEZ) to produce the Shahed-

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[2] Both the Shahed-131 and Shahed-136 were developed by Shahed Aviation Industries in association with both the Islamic Revolutionary Guard Corps Aerospace Force (IRGC-ASF) and the Iran Aircraft Manufacturing Industries Corporation (HESA). Other Iranian-supplied UAVs reported, but not firmly confirmed, provided by Iran include the Shahed-129, Shahed-191, and Mohajer-6. "Timeline: Iran-Russia Collaboration on Drones," United States Institute of Peace, August 2023, https://iranprimer.usip.org/blog/2023/mar/01/timeline-iran-russia-collaboration-drones; Dalton Bennett and Mary Ilyushina, "Inside the Russian effort to build 6,000 attack drones with Iran's help," The Washington Post, August 17, 2023, https://www.washingtonpost.com/investigations/2023/08/17/russia-iran-drone-shahed-alabuga/, Joby Warrick, Souad Mekhennet and Ellen Nakashima, "Iran will help Russia build drones for Ukraine war, Western officials say," Washington Post, November 19, 2022, https://www.washingtonpost.com/national-security/2022/11/19/russia-iran-drones-secret-deal/, and "Treasury Targets Actors Involved in Production and Transfer of Iranian Unmanned Aerial Vehicles to Russia for Use in Ukraine". U.S. Department of the Treasury (Press release). 15 November 2022, https://home.treasury.gov/news/press-releases/jy1104. While Russia did purchase a small quantity of Shahed-131, it decided to concentrate production upon the Shahed-136 as it better suited its needs. The Shahed-136 is most often identified as a "loitering munition" or "suicide drone" that can cruise above the battlefield until an appropriate target is identified before attacking it. "Not Only Shahed-136: a Detailed Study of Another Iranian Shahed-131 Kamikaze Drone Used by Russia," Defense Express, September 24, 2022, https://en.defence-ua.com/weapon_and_tech/not_only_shahed_136_a_detailed_study_of_another_iranian_shahed_131_kamikaze_drone_used_by_russia-4320.html.

[3] Viktória Majirská, "From Tehran to Alabuga: The Evolution of Shahed Drones into Russia's Strategic Asset," *Adapt Institute*, September 26, 2025, https://www.adaptinstitute.org/from-tehran-to-alabuga-the-evolution-of-shahed-drones-into-russias-strategic-asset/26/09/2025/, Reid Standish, "A Russian Factory Is Using Underage Workers To Assemble Iranian 'Suicide' Drones Destined For Ukraine," *RadioFreeEurope*, August 12, 2023, https://www.rferl.org/a/russia-iran-suicide-drones-assembled-underage-students-ukraine/32545386.html; and "HESA Shahed 136: A cheap and deadly Iranian kamikaze drone," *Combat Operators*, October 20, 2022, https://combatoperators.com/vehicles/air/loitering-munition/hesa-shahed-136/.

[4] Seligman, Lara and Alexander Ward "New U.S. intelligence shows Russia's deepening defense ties with Iran," *Politico*, June 9, 2023, https://www.politico.com/news/2023/06/09/united-states-security-council-russia-iran-weapons-00101191. It should be noted that previously the military and intelligence cooperation between the two nations included Russia's provision to Iran of an Earth-imaging reconnaissance satellite and components to assist in the operation and rebuilding of the Bushehr nuclear power plant.

131 and Shahed-136.[5] The agreement between the two countries called for Iran to assist in establishing a Russia-based manufacturing plant for the Shahed-131, Shahed-136, and other systems.[6] This assistance included advisors, training, production equipment, and an initial supply of components.

In addition to Iranian technical support, Russia appears to be broadening its external partnerships. In late 2024, Ukraine claimed that North Korea was supplying Russia with personnel for Russian factories, with subsequent media reports in November 2025 indicating that North Korea is supplying 12,000 workers for the SEZ.[7] The specific nature and extent of any North Korean involvement in the production or design of UAVs at the Yelabuga SEZ remain unknown, aimed that North Korea was supplying personnel to Russia.[8] However, given the unprecedented level of Russian-North Korean military and technical support, there is a better-than-even chance that, at a minimum, North Korean UAV designers and engineers have visited the facility to study the design and production processes for the UAVs and UCAVs produced there. Any North Korean involvement with the Yelabuga UAV factory will likely bring Russian wartime UAV experience and technology back to North Korea, which will be of considerable value to the country's expanding UAV and UCAV programs.[9]

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[5] The Yelabuga SEZ is sometimes identified as the as either the "Joint Stock Company Alabuga" or the "Alabuga special economic zone." Joint Stock Company Alabuga Special Economic Zone Production And Industrial Type," *Opensanctions*, https://www.opensanctions.org/entities/NK-mP7f6NnzfS8fWMvFYW8Qbg/.; Viktória Majirská. "From Tehran to Alabuga: The Evolution of Shahed Drones into Russia's Strategic Asset," *Adapt Institute*, September 26, 2025, https://www.adaptinstitute.org/from-tehran-to-alabuga-the-evolution-of-shahed-drones-into-russias-strategic-asset/26/09/2025/, and Karen DeYoung and Joby Warrick, "Russia-Iran military partnership 'unprecedented' and growing, officials say," *Washington Post*, December 9, 2022, https://www.washingtonpost.com/national-security/2022/12/09/russia-iran-drone-missile.

[6] Dalton Bennett and Mary Ilyushina, "Inside the Russian effort to build 6,000 attack drones with Iran's help," The Washington Post, August 17, 2023, https://www.washingtonpost.com/investigations/2023/08/17/russia-iran-drone-shahed-alabuga/, Joby Warrick, Souad Mekhennet and Ellen Nakashima, "Iran will help Russia build drones for Ukraine war, Western officials say," *Washington Post*, November 19, 2022, https://www.washingtonpost.com/national-security/2022/11/19/russia-iran-drones-secret-deal/, and "Treasury Targets Actors Involved in Production and Transfer of Iranian Unmanned Aerial Vehicles to Russia for Use in Ukraine". U.S. Department of the Treasury (Press release). 15 November 2022, https://home.treasury.gov/news/press-releases/jy1104. While Russia did purchase a small quantity of Shahed-131, it decided to concentrate production upon the Shahed-136 as it better suited its needs. The Shahed-136 is most often identified as a "loitering munition" or "suicide drone" that can cruise above the battlefield until an appropriate target is identified before attacking it. "Not Only Shahed-136: a Detailed Study of Another Iranian Shahed-131 Kamikaze Drone Used by Russia," *Defense Express*, September 24, 2022, https://en.defence-ua.com/weapon_and_tech/not_only_shahed_136_a_detailed_study_of_another_iranian_shahed_131_kamikaze_drone_used_by_russia-4320.html.

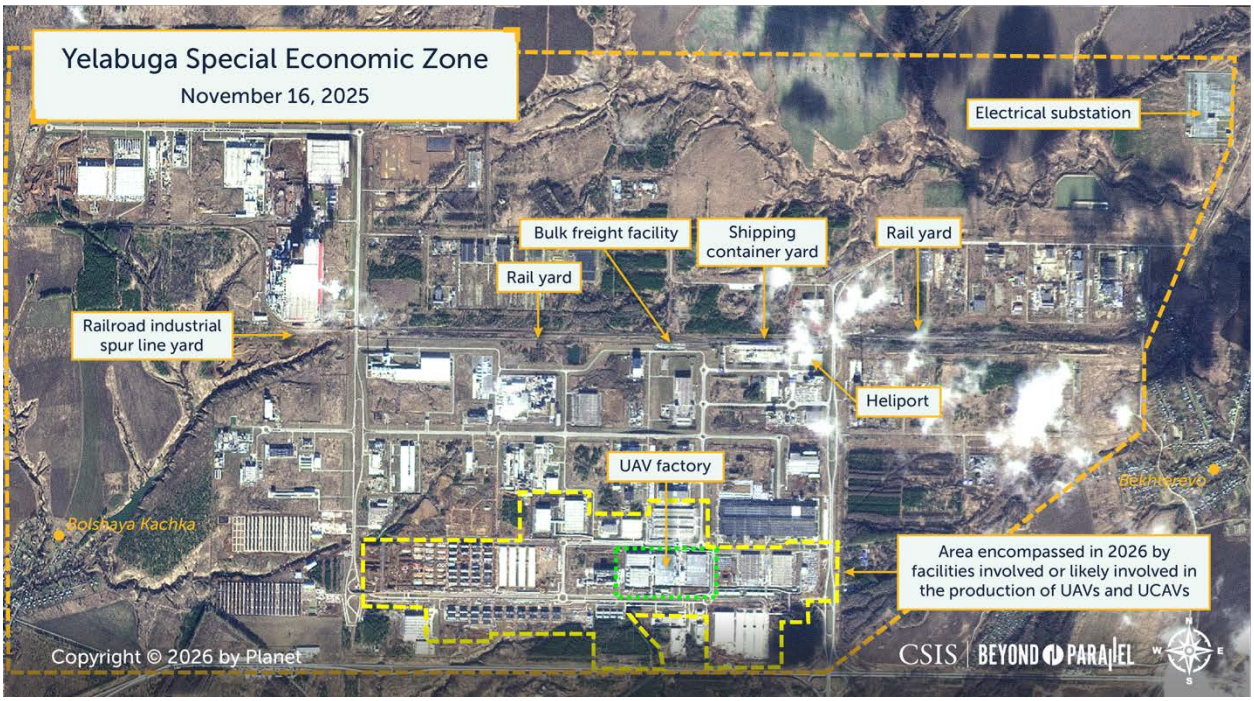
[7] Anastasia Protz, "North Korea supplies Russia with both weapons and workers for factories, Zelenskyy says," Pravda, October 16, 2024, https://www.pravda.com.ua/eng/news/2024/10/16/7479931/;
Main Intelligence Directorate of the Ministry of Defense of Ukraine, "There Is a Shortage of Hands: Moscow Plans to 'Import' 12 Thousand 'Shaheed Collectors' from the DPRK," Telegram post, November 14, 2025, https://t.me/DIUkraine/7294;

[8] Main Intelligence Directorate of the Ministry of Defense of Ukraine, "There Is a Shortage of Hands: Moscow Plans to 'Import' 12 Thousand 'Shaheed Collectors' from the DPRK," Telegram post, November 14, 2025, https://t.me/DIUkraine/7294.

[9] North Korea's involvement with UAVs dates to the 1970s. Bermudez Jr., Joseph S. "North Korea Drones On: Redeux," *38North*, January 19, 2016, https://www.38north.org/2016/01/jbermudez011916/.. Recent and incomplete reports indicate that North Korean combat troops sent to fight in Ukraine have also undertaken offensive UAV and UCAV operations. It is unknown whether and to what extent they have employed the Iranian-designed Shahed-136 UCAV. Regardless, any combat experiences or technology brought back to North Korea will be of considerable value to that country's expanding UAV and UCAV programs going forward.

The SEZ's importance to Russian ambitions is evident in satellite imagery analysis of the Yelabuga SEZ from late 2021, prior to the Russian invasion of Ukraine, through the present, showing a sustained and deliberate expansion of infrastructure and supporting facilities consistent with the rapid scaling up of UAV and UCAV production.

Overview of the Yelabuga Special Economic Zone



Overview of the Yelabuga Special Economic Zone, November 16, 2025. Copyright © 2026 by Planet. Image may not be republished without permission. Please contact imagery@csis.org.

The location chosen for the Iranian-supported UAV factory was the Yelabuga special economic zone (SEZ), approximately 1,100 kilometers east of the Ukraine border, eight kilometers north of the city of Yelabuga, and bounded by the small Tatarstan villages of Bekhterevo to the east and Bolshaya Kachka to the west. Archival satellite imagery shows that the Yelabuga SEZ began development in 1986. Since then, the Yelabuga SEZ, like many other Russian SEZs, has gradually expanded as part of efforts to support the development of a more diversified and robust Russian economic infrastructure. This gradual expansion continued through 2022, when it accelerated dramatically.

The choice of the Yelabuga SEZ as the location for a UAV factory provided significant practical and logistical benefits, such as:

- The SEZ's location, 1,000-1,100 kilometers east of the Ukrainian border, placed it close enough to supply munitions depots supporting troops on the front lines, yet far enough to minimize its vulnerability to Ukrainian attacks.
- The availability of two structures, then under construction, for reassignment to the construction of the new UAV factory.
- A potential pool of educated workers (e.g., from Yelabuga [Alabuga] Polytechnical College) is readily available to jump-start production.[10]
- The rail facilities at the Yelabuga SEZ provided relatively easy and reliable access for equipment and personnel transported from the Iranian Astara Baku Railway Station—which is connected to the Russian rail network—and for forward munitions depots.

Satellite imagery of the UAV factory and associated facilities indicates a concerted Russian effort not only to rapidly develop a UAV/UCAV production capability but also to dramatically increase capacity and likely expand diversification.

Notably, the specific location within the southeast corner of the Yelabuga SEZ chosen for the new factory was a previous construction project that had begun as early as March 2021 and called for two large buildings. Redirecting this earlier project clearly underscores the importance the Russian government attaches to establishing this new UAV production capability.

Over the years, the types of facilities and the construction sequencing immediately around the UAV factory strongly suggest a close association with the factory. These facilities are likely involved in training, producing components and subsystems (e.g., engines, guidance systems), and supplying them to the UAV factory for systems integration, assembly, and final delivery. These facilities may also house small design offices and laboratories.

In late 2021, the SEZ encompassed about 50 square kilometers, with approximately 82 light-industrial, office, power-distribution, and miscellaneous activities operating or under construction. Additionally, it was served by a heliport with six landing pads and an industrial rail spur line with two rail yards, a rail servicing facility, a bulk freight loading/unloading facility, and a shipping container facility.

By July 2023, a total of 600 complete Shahed-136s had reportedly been delivered from Iran, and an additional 300 were assembled from airframes manufactured at the Yelabuga UAV factory. It was subsequently reported that production plans called for reaching a total of approximately 6,000 UAVs by August 2025, of which 600 were to be delivered from Iran, approximately 1,300 were to be manufactured from airframes produced at the factory, and approximately 4,000 were to be manufactured with airframes and major components produced at Yelabuga.[11] Supporting this production

[10] The Yelabuga Polytechnical College is sometimes known as the Alabuga Polytech College.
[11] Karen DeYoung and Joby Warrick, "Russia-Iran military partnership 'unprecedented' and growing, officials say," *Washington Post*, December 9, 2022, https://www.washingtonpost.com/national-security/2022/12/09/russia-iran-drone-missile, David Albright and Sarah Burkhard, "Visible Progress at Russia's Shahed Drone Production Site,"

plan, reports from September 2025 indicate that Iranian-supplied technology enabled Russia to develop and produce localized versions of the Shahed-131 and Shahed-136 in Yelabuga.[12]

Today, the number of light-industrial, office, educational, power-distribution, and miscellaneous activities within the SEZ, or under construction, has increased from approximately 82 to 91. Notably, this includes 14 facilities, including housing complexes for workers, directly associated with the UAV factory and located in the southeast corner of the SEZ.[13] This represents approximately 15% of the SEZ's facilities that are or likely are involved in the production of UAVs and UCAVs. It is also reasonable to assert that, with the Yelabuga UAV factory's continued development, it may now also be involved in manufacturing additional Iranian UAV models and in developing new domestically designed UAVs, such as the Albatross M5 reconnaissance UAV.[14]

The following sections examine the development of a UAV production capability at the Yelabuga SEZ from the months leading up to the Russian invasion of Ukraine to the present, highlighting construction activity, infrastructure expansion, and indicators of increasing UAV and UCAV production.

The UAV Factory

This section examines the development of the UAV factory within the SEZ, which serves as the central component for systems integration, assembly, and delivery. The development and expansion observed at the factory from 2021 to 2025 show the pace of Russia's UAV and UCAV ambitions. By early 2026, imagery indicates that the factory has transitioned from initial adaptation to a multi-building operation complete with integrated walkways, specialized storage areas, and security measures. While imagery alone cannot confirm production rates or specific systems, the scale and persistence of activity strongly indicate that the factory remains the centerpiece of UAV and UCAV manufacturing at Yelabuga.

Located in the southeast corner of the Yelabuga SEZ are two large buildings selected for the new UAV factory. Satellite imagery indicates that both were part of an earlier

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ISIS, November 13, 2023, https://isis-online.org/isis-reports/visible-progress-at-russias-shahed-drone-production-site, Dalton Bennett and Mary Ilyushina, "Inside the Russian effort to build 6,000 attack drones with Iran's help," *Washington Post*, August 17, 2023, https://www.washingtonpost.com/investigations/2023/08/17/russia-iran-drone-shahed-alabuga/; and David Albright, Spencer Faragasso, and the Good ISIS Team, "Major Developments at Alabuga SEZ Point to Significant Expansion in Military Drone Production," *ISIS*, July 28, 2025, https://isis-online.org/isis-reports/major-developments-at-alabuga-sez-point-to-significant-expansion-in-military-drone-production.

[12] Viktória Majirská. "From Tehran to Alabuga: The Evolution of Shahed Drones into Russia's Strategic Asset," Adapt Institute, September 26, 2025, https://www.adaptinstitute.org/from-tehran-to-alabuga-the-evolution-of-shahed-drones-into-russias-strategic-asset/26/09/2025/.

[13] Mary Ilyushina, "Russia's deadly drone industry upgraded with Iran's help, report says," *Washington Post*, May 29, 2025, https://www.washingtonpost.com/world/2025/05/29/russia-iran-drone-cooperation-industry.; and David Albright, Spencer Faragasso, and the Good ISIS Team, "Major Developments at Alabuga SEZ Point to Significant Expansion in Military Drone Production," *ISIS*, July 28, 2025, https://isis-online.org/isis-reports/major-developments-at-alabuga-sez-point-to-significant-expansion-in-military-drone-production.

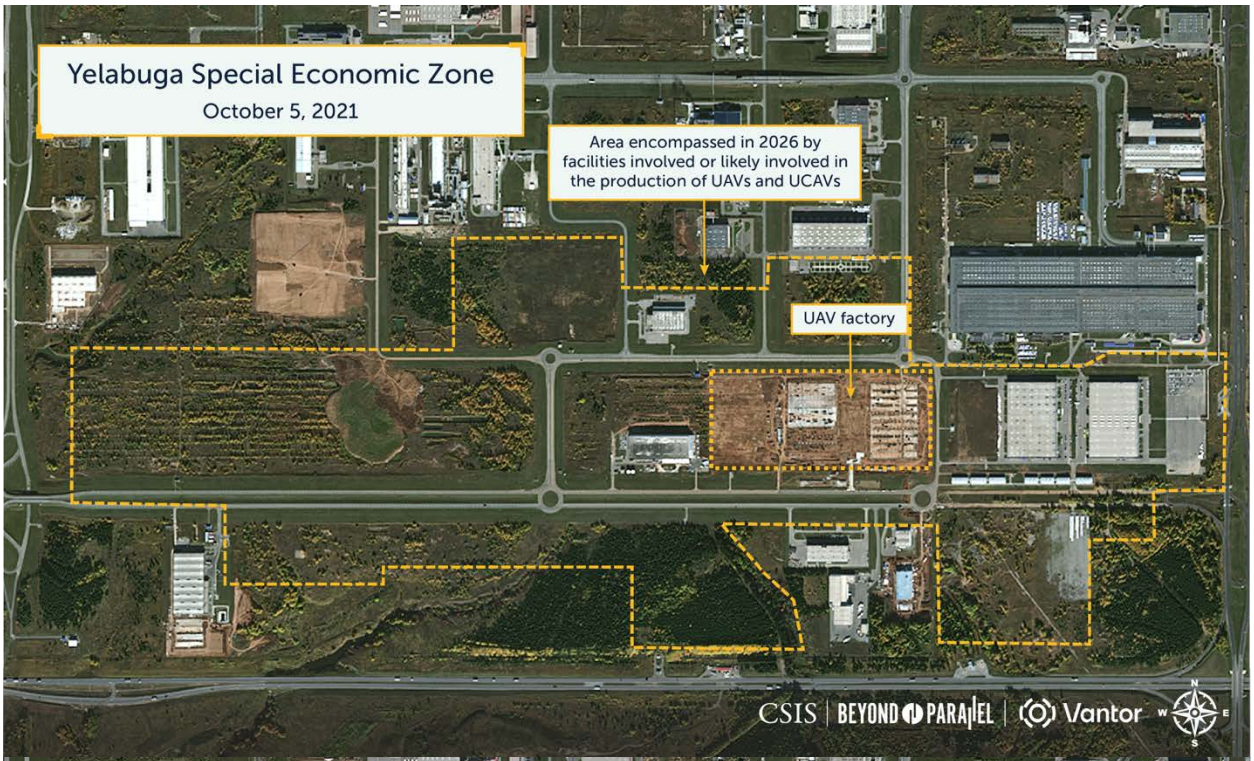
[14] For example, Iran reportedly provided, but not firmly confirmed, the Shahed-129, Shahed-191, and Mohajer-6. "Timeline: Iran-Russia Collaboration on Drones," United States Institute of Peace, August 2023, https://iranprimer.usip.org/blog/2023/mar/01/timeline-iran-russia-collaboration-drones.

construction project that began as early as March 2021. The repurposing of this earlier project underscores the importance the Russian government attached to establishing this new UAV production capability.

The two repurposed buildings, each covering 38,000 square meters and selected for the initial development of UAV production capability, were largely externally complete by April 2022 (for ease of reference, these two buildings will be referred to together in this report as the “UAV factory”). Significant renewed construction activity was not observed until August 2022, when paving of driveways and parking areas around the two buildings began, and large trucks delivering equipment were present. This activity was likely associated with finishing the buildings as a UAV factory. It is here that all systems integration, final assembly, and shipping of UAVs/UCAVs are believed to take place.

In 2023, imagery analysis indicates a transition from initial construction to operationalization, as evidenced by increased site activity, expanded logistics infrastructure, and protective measures around the UAV factory. One of the more significant projects undertaken in the year was the installation of anti-UAV screening between June and July, consisting of metal netting/fencing suspended over the roofs of the UAV factory’s two buildings to mitigate the effects of any Ukrainian UCAV attacks, including those that could occur in 2025.[15]

[15] David Albright, Spencer Faragasso, and the Good ISIS Team, “Major Developments at Alabuga SEZ Point to Significant Expansion in Military Drone Production,” *ISIS*, July 28, 2025, https://isis-online.org/isis-reports/major-developments-at-alabuga-sez-point-to-significant-expansion-in-military-drone-production; Yuliia Dysa, “Ukrainian strike damages Russian drone production site in Tatarstan, Kyiv says,” *Reuters*, April 23, 2025, https://www.reuters.com/world/europe/ukrainian-strike-damages-russian-drone-production-site-tatarstan-kyiv-says-2025-04-23/; and "Ukraine strikes Russian drone manufacturing plant in Tatarstan,” *Uawire*, April 23, 2025, https://www.uawire.org/ukraine-strikes-russian-drone-manufacturing-plant-in-tatarstan.


Yelabuga Special Economic Zone
October 5, 2021
Area encompassed in 2026 by facilities involved or likely involved in the production of UAVs and UCAVs
UAV factory
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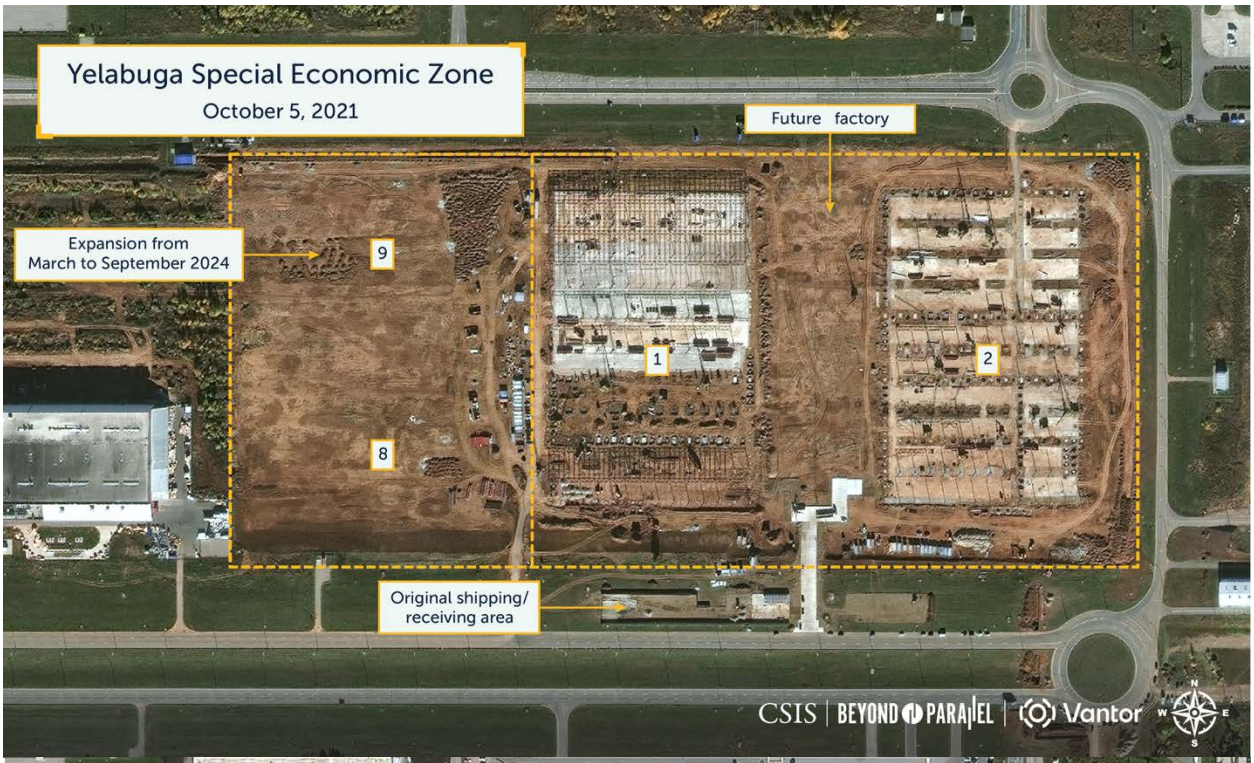
Yelabuga Special Economic Zone
September 27, 2024
Area encompassed in 2026 by facilities involved or likely involved in the production of UAVs and UCAVs
UAV factory
CSIS | BEYOND PARALLEL | Vantor

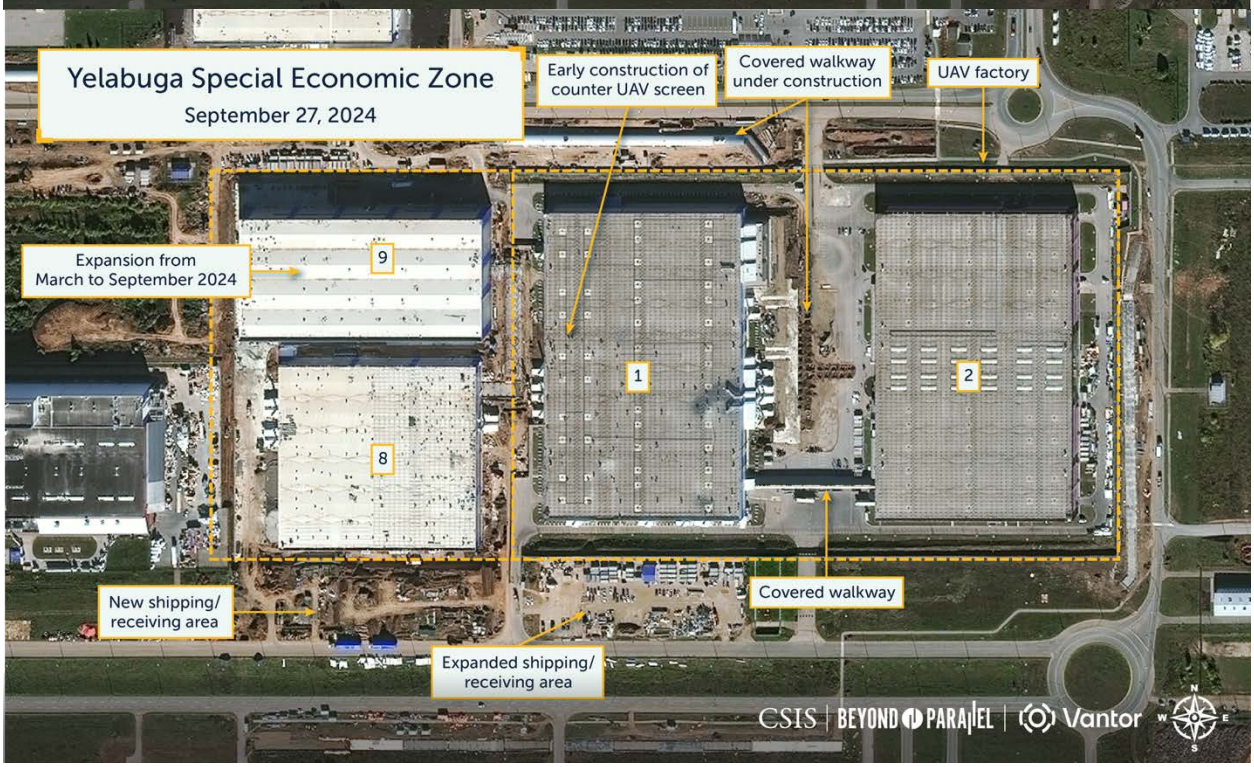
Close-up view of the UAV factory and likely related facilities at the Yelabuga Special Economic Zone, October 5, 2021, September 24, 2024, and November 17, 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

During the summer months of 2023, the beginnings of a security wall surrounding the two buildings of the UAV factory were observed, along with an increasing number of shipping containers/crates between the two buildings. Additionally, outside the security wall and immediately north of the UAV factory, a parking area for civilian vehicles was established. Taken together, these suggest that final construction and assembly of equipment were ongoing within the buildings, and that initial low-level assembly/production of UAVs may have now commenced. The following month, August 2023, a covered walkway was erected connecting the factory's two buildings. This allowed both the movement of personnel and light equipment during inclement weather and the concealment of that movement. By September 2023, the security wall around the UAV factory had been completed. Changing vehicle activity and the presence of shipping containers/crates around both buildings suggest that internal construction was now complete and regular production was underway.

In September 2023, a shipping/receiving area was established outside and south of the UAV factory's security wall. This area remained active, supporting construction activities until June 2025, when a large berm began to be erected on its north side. The reason for this is unclear. However, such bermed facilities are typically built to store hazardous materials that may explode and cause damage to nearby structures. This storage facility remains in imagery from February 4, 2026.

About March 2024, construction of two buildings (Facilities #8 and #9), measuring approximately 22,300 square meters and 19,300 square meters, respectively, began immediately west of the UAV factory. Additionally, a second shipping/receiving area was established south of Facility #9 to handle construction activity at Facilities #8 and #9. Construction of both buildings was completed by about September 2024 and represents an expansion of both the initial UAV factory and UAV/UCAV production capacity. This assessment was supported the following month when covered walkways were constructed from the west side of the UAV factory's west building to Facilities #8 and #9; and during February 2025, when the security wall that had previously encompassed only two buildings of the initial UAV factory was extended to include Facilities #8 and #9, a clear indication of their involvement in UAV production.


Yelabuga Special Economic Zone
October 5, 2021
Future factory
Expansion from March to September 2024
9
1
2
8
Original shipping/ receiving area
CSIS | BEYOND PARALLEL | Vantor


Yelabuga Special Economic Zone
September 27, 2024
Early construction of counter UAV screen
Covered walkway under construction
UAV factory
Expansion from March to September 2024
9
1
2
8
New shipping/ receiving area
Expanded shipping/ receiving area
Covered walkway
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Close-up view of the future site of the UAV factory under construction, October 5, 2021, September 27, 2024, and November 17, 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

For several weeks in May 2024, the covered walkway between the UAV factory buildings was also expanded to include the west side of the eastern building. This expansion was removed by the end of the month. Subsequently, during July 2024, partial covered walkways were again erected along the west side of the eastern building for a few weeks and then removed. The reasons for this activity are unclear.

As of February 2026, the four buildings comprising the UAV factory remain active and continue to serve as the central hub for UAV systems integration, assembly, production, and final delivery at the Yelabuga SEZ. This assessment is supported by the continued and expanding presence of large numbers of civilian vehicles, truck movements, and tracks in the snow within shipping/receiving areas, indicating ongoing production from 2022 through early 2026.

Support Facilities – East

While the world's attention has naturally focused on these initial production buildings, satellite imagery since 2021 shows they were only part of a broader, long-term effort to develop significantly more capable small UAV/UCAV production capacity. This section focuses on a group of facilities east of the UAV factory that appear to support UAV production, logistics, storage, and personnel accommodation. Although the precise functions of each eastern support facility cannot be conclusively determined from imagery alone, the progressive addition of covered walkways, protective measures, and explosive storage infrastructure suggests growing operational relevance to UAV and UCAV production. In particular, the appearance of earth-covered magazines and anti-UAV screening points to a maturing production environment that accounts for both safety and external threats, reinforcing the assessment that these facilities are no longer peripheral to factory operations.

East of the UAV factory consists of five facilities (Facilities #3, #10, #14, #16, and #17). Even before the construction of the UAV factory's initial production buildings, a small housing facility (Facility #3) 1.5 kilometers to the southeast had begun construction in May 2021. This small housing project, consisting of seven multistory buildings surrounded by a security fence, was completed by May 2022. Given its proximity, it was likely that this facility was quickly used to house personnel associated with the UAV factory's construction.

Like Facility #3, located immediately east of the UAV factory, two large buildings (Facility #16) have been present since 2019. Even after the construction of covered walkways that were later extended around the UAV factory's southern perimeter, there were no specific indications that Facility #3 was directly involved in UAV production from late 2021 through late 2025. The construction of Facility #3 included a small parking area (Facility #10) on its east side. Sometime during 2020, this parking area was expanded from 11,000 to 43,000 square meters. Like Facility #16 itself, there were no specific indications that this facility was involved in UAV production from late-2021 through late-2024.

Between December 2024 and September 2025, construction of a new facility (Facility #17) was undertaken south of Facilities #3 and #16. At that time, the facility's purpose and its relationship to UAV production were unclear. However, much of the facility is similar in size and design to Facilities #11 and #15.

By November 2024, the network of covered walkways and sidewalks, which was being extended east and then south around the UAV factory's security wall, was indirectly extended east to connect to Facility #3. This was then extended east to Facility #10, thereby directly linking it to the UAV factory and Facility #3.


Yelabuga Special Economic Zone
October 5, 2021
Future location for parking area
Future location of Facility #14
16
10
3
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Yelabuga Special Economic Zone
September 27, 2024
Covered loading/unloading dock under construction
Future location for parking area
Future location of Facility #14
16
10
3
Covered walkways under construction
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Development of the Facilities 3, 16, 10, and connecting covered walkways from 2021 to 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

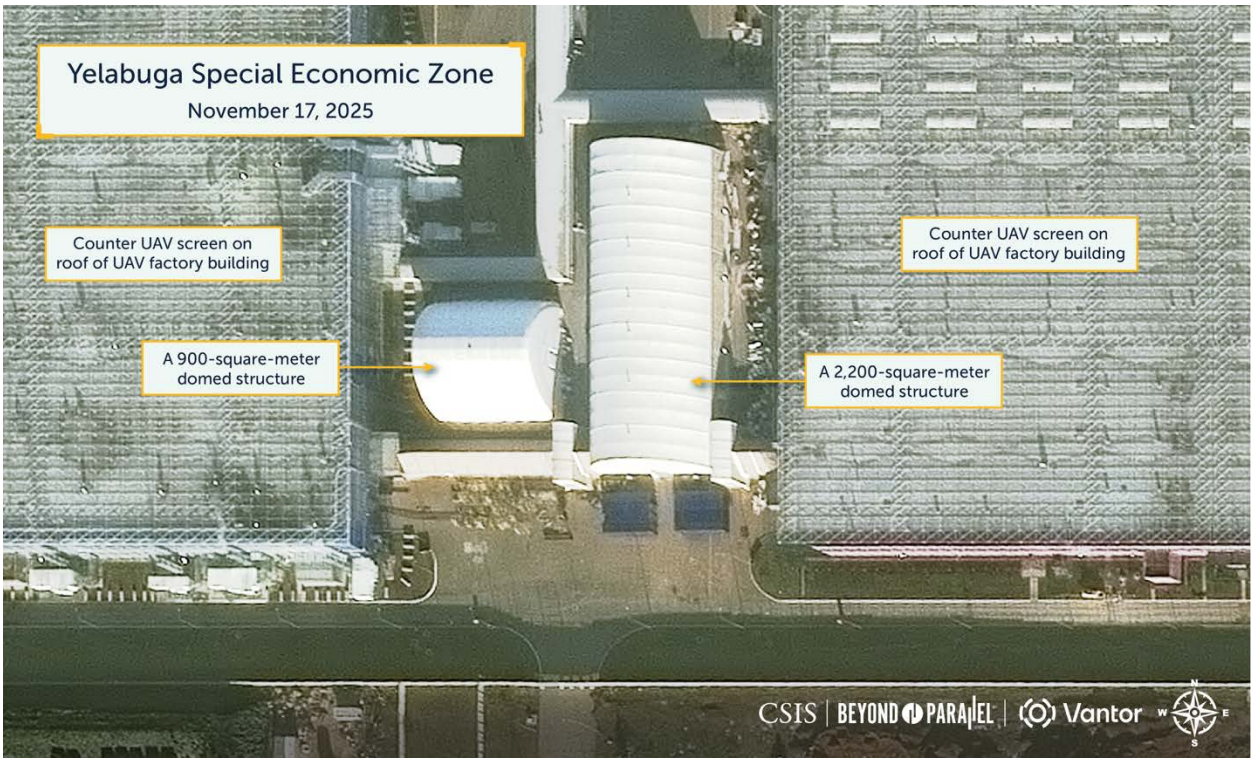
Between August and September 2025, the covered walkway that ran along the south side of Facility #16 and extended east to Facility #10 was extended south to Facility #17. This development, along with Facility #17's size and design, which resemble those of Facilities #11 and #15, may indicate an association with UAV production.

During the same period, two construction projects began in the open space immediately east of the UAV factory. The first was a new parking area for civilian vehicles, completed that month. The second was an approximately 36-meter-by-23-meter concrete structure that was later covered with earth (Facility #14), becoming what is commonly known as an earth-covered magazine (ECM). This was completed by September 2025. The latest satellite image, from February 4, 2026, appears to show a second ECM under construction. Such facilities are typically used to store explosive materials, and, as the only ECM in the area, they may be used to store warheads for mounting on UCAVs.

Close-up view of the future site for Facility #14, earth-covered magazine, November 17, 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

Two months later, in November 2025, changes at Facility #16 were observed as construction began on what appears to be anti-UAV screening, consisting of metal netting/fencing suspended over the roofs. If correct, this would suggest there is a better-than-even chance that this facility is now significantly involved in UAV production and thus in need of enhanced protection to mitigate the effects of any future Ukrainian UCAV. As of February 4, 2026, this construction work remains unfinished.

In addition to the walkways, ECM, and anti-UAV screening, a 2,200-square-meter dome structure was erected between the two UAV factory buildings by June 2025, followed by a smaller 900-square-meter dome structure by November 2025. Both structures remain as of February 2026.



Domed structures constructed between the two buildings of the UAV factory, November 17, 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

Support Facilities – North

This section examines the development of the northern section of buildings that appear to support UAV production through storage, logistics, and the internal movement of personnel and materials. The scale and progress of construction in this area between 2021 and 2025 further support a concerted effort to expand output and streamline connections between the main UAV factory buildings with support infrastructure. Such development includes additional warehousing, secure perimeters, and elevated walkways between the facilities.

In August 2022, concurrent with the completion of the two buildings that comprised the initial UAV factory, construction began on a new 38,500-square-meter building (Facility #5), one kilometer northwest of the UAV factory. The building was externally complete by April 2023 and operational by April 2024.

In February 2023, construction began on a complex of three large warehouse-type buildings (Facility #11), totaling approximately 52,200 square meters, immediately north and across an access road from the UAV factory. The facility was externally complete by September 2023 and likely operational around June 2024.

Subsequently, in November 2023, construction began on an approximately 21,000-square-meter building (Facility #6), 250 meters west of Facility #5. The facility was externally complete by October 2024 and operational by August 2025.


Yelabuga Special Economic Zone
October 5, 2021
Future location
of Facilities #5 and #6
6
5
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Yelabuga Special Economic Zone
September 27, 2024
Covered walkways
under construction
6
5
Covered walkways
under construction
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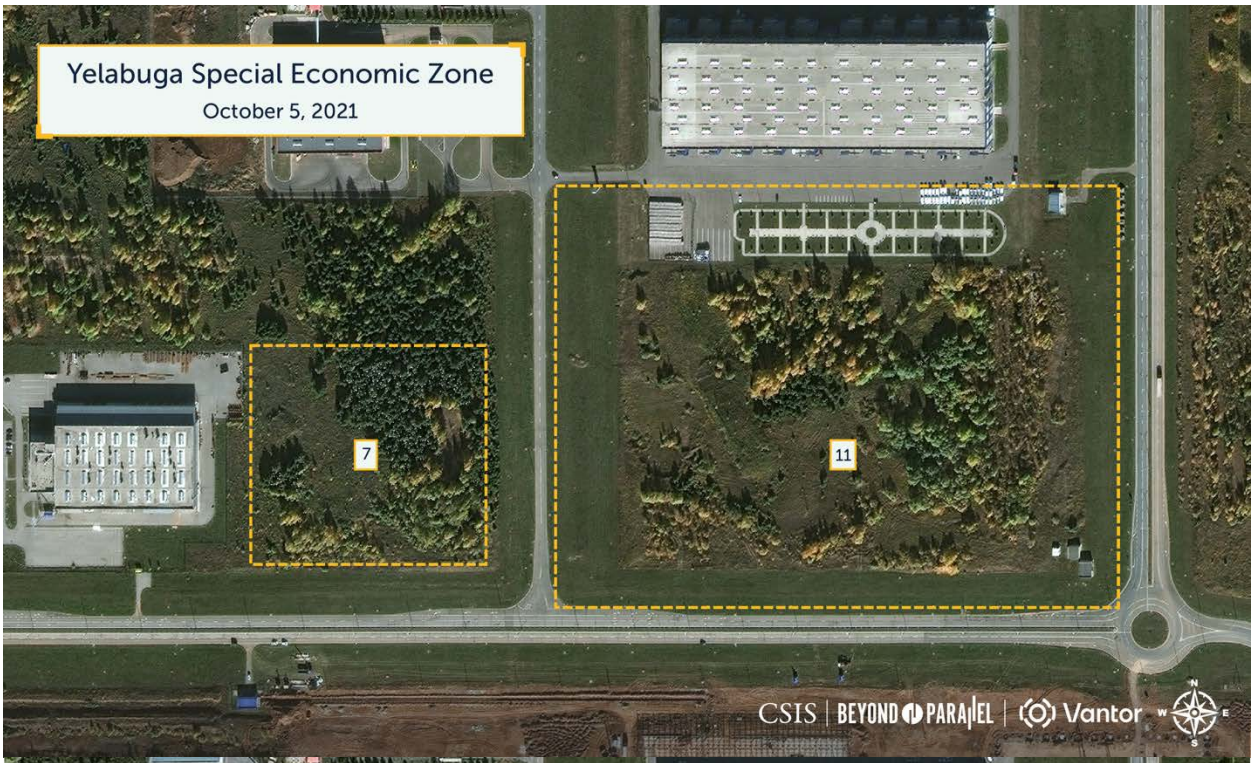
Development of Facilities #5 and #6, along with covered walkways, from 2021 to 2025.

In April 2024, construction began on another new building, approximately 22,800 square meters (Facility #7). It was located 500 meters northwest of the UAV factory, across an access road. Construction of Facility #7 was completed in July 2024.

Beginning in July 2024 and continuing through about November 2024, a network of covered walkways was constructed, connecting the UAV factory's security entrance north across the access road to Facility #7 and then further west to Facilities #5 and #6 (both connected by their own covered walkway). This construction necessitated the removal of the civilian parking area immediately north of the UAV factory. The parking for these civilian vehicles was moved to the parking areas around Facility #11, immediately north of the UAV factory.

During August 2024, numerous small foundation excavations were observed in the center of the paved area between the two buildings of the UAV factory. In October 2024, partial covered walkways were again erected along the west side of the east building for a few weeks before being removed. Subsequently, during November, the small foundations were used to construct a new covered walkway running north-south through the middle of the area between the buildings of the UAV factory, then north, connecting to the covered walkways running west and an elevated walkway over the road to Facilities #5, #6, and #7. In November 2024, both Facility #5 and #6 were surrounded by a security wall.

The following year, in February 2025, the security wall that had previously encompassed only the UAV factory was extended to include Facilities #8 and #9, a clear indication that they were part of the UAV factory and involved in the actual production of UAVs. The following month, a second elevated walkway was built over the access road to connect the UAV factory to Facility #11 immediately to the north.


Yelabuga Special Economic Zone
October 5, 2021
7
11
CSIS | BEYOND PARALLEL | Vantor


Yelabuga Special Economic Zone
September 27, 2024
7
11
Covered walkways under construction
CSIS | BEYOND PARALLEL | Vantor

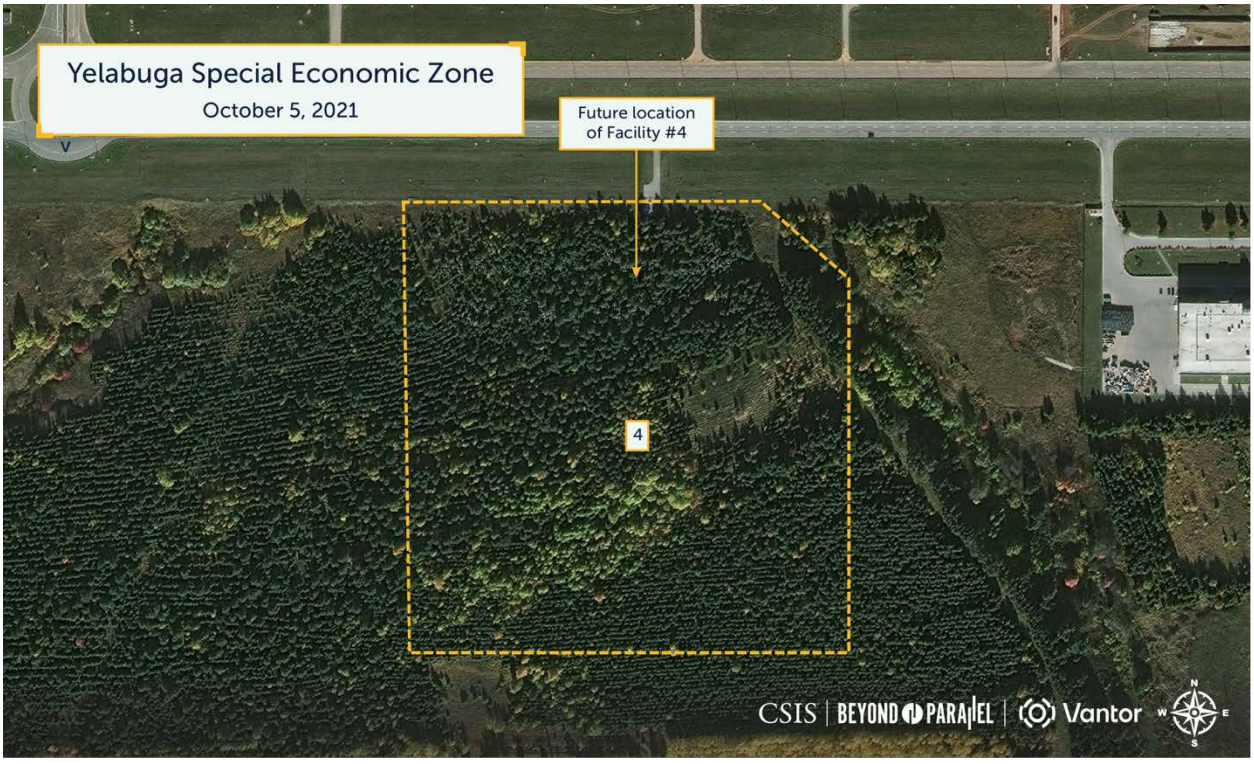
Development of Facilities #7 and #11 from 2021 to 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

Albatros M5 UAV. Source: Albatros

Support and Housing Facilities – West

This section explores the dramatic increase in the number of housing units to the southwest and west of the UAV factory, as well as the physical connections between these buildings and the main factory buildings. While imagery cannot confirm the nationality or roles of individual workers, the scale of the residential development aligns with reports of expanded recruitment efforts.

The housing units developed in the western section of the analyzed area can be grouped into four facilities (#4, #12, #13, and #15). In April 2022, satellite imagery showed that land had been cleared and construction had begun on a second small complex of eight dormitory-type buildings, 350 meters southwest of the UAV factory. This new facility (Facility #4) was completed by April 2023 and included a park-like area and a security fence, both of which were enclosed. Upon completion, this second facility would be connected to the UAV factory by sidewalks. Subsequently, between October and November 2024, these sidewalks would be upgraded to covered walkways.



Development of Facility #4 and surrounding areas from 2021 to 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

Construction of a group of four large warehouses (Facility #15) began in April 2025. These four warehouses total approximately 71,200 square meters and are similar in

design to those at Facilities #11 and #17. Beginning about June 2025, a combination of sidewalks and later covered walkways was built to connect this facility to the covered walkway for Facilities #5 and #6 to the north. As of February 2026, construction of Facility #15 appears to be externally complete.

Beginning in February-March 2025, construction of two large housing projects (Facilities #12 and #13) began 1.5 kilometers west and west-southwest of the UAV factory. Ultimately, these two projects may consist of up to 56 and 22 multistory buildings, respectively, with large parking areas for civilian workers. These housing projects may have been an early indicator of a November 2025 report by the Main Intelligence Directorate of the Ministry of Defense of Ukraine, which stated that Russia was using the North Korean Jihyang Technology Trading Company to recruit 12,000 North Korean workers for the Yelabuga SEZ.

> "By the end of 2025, the aggressor state of the Russian Federation plans to attract about 12 thousand North Korean workers to work at the enterprises of the separate economic zone "Alabuga" in Tatarstan.
>
> It is in "Alabuga" that long-range drones of the Shaded/Geran type are manufactured, with which the Russian army carries out terrorist attacks on the civilian infrastructure of Ukraine.
>
> To discuss the details of the sale of workers, at the end of October [2025], a meeting of local government officials with representatives of the North Korean company Jihyang Technology Trade Company, responsible for the search and selection of Korean workers, was held at the Ministry of Foreign Affairs of the Russian Federation.
>
> Muscovites promise to pay the imported labor force approximately 2.5 US dollars per hour of work, and the shift for workers will last at least 12 hours.
>
> Such measures indicate deepening strategic cooperation between the two dictatorships to continue the aggressive war against Ukraine."[16]

As of February 4, 2026, satellite imagery indicates that construction continues, including sidewalks and covered walkways connecting the two new housing projects to Facility #4 and, ultimately, to the UAV factory. Given these connections, it is likely that, at a minimum, some of the workers to be housed here (including any from North Korea) will be employed to maintain and increase UAV/UCAV production.

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[16] Main Intelligence Directorate of the Ministry of Defense of Ukraine, "There Is a Shortage of Hands: Moscow Plans to 'Import' 12 Thousand 'Shaheed Collectors' from the DPRK," Telegram post, November 14, 2025, https://t.me/DIUkraine/7294.


Yelabuga Special Economic Zone
October 5, 2021
12
15
13
CSIS | BEYOND PARALLEL | Vantor


Yelabuga Special Economic Zone
September 27, 2024
12
15
13
CSIS | BEYOND PARALLEL | Vantor

Development of Facilities #12, #13, and #15 from 2021 to 2025. Copyright © 2026 Vantor. Image may not be republished without permission. Please contact imagery@csis.org.

The Future

Since 2021, Russia has committed and continues to commit considerable financial and human resources to the development and production of UAVs within the Yelabuga SEZ. Given the growing size and number of facilities directly involved in and supporting UAV production here, it is reasonable to assert that Yelabuga has evolved into one of Russia's leading centers for tactical and potentially operational-level UAV development and production.

In addition to manufacturing the original Shahed-136, the Yelabuga facilities have reportedly developed variants of the Shahed-136 and the Russian-designed Albatross M5 reconnaissance UAV.[17] It is likely that newer, undisclosed, and more capable UAVs are being designed and developed, and may be produced here, as long as the fighting in Ukraine continues.

While the Yelabuga SEZ has more than enough room to expand its UAV/UCAV production, there is a reasonable probability that, for strategic reasons, Russia may decide to either convert another existing light-industrial plant or construct a new one in a different location to also manufacture future UAVs/UCAVs.

Given the financial commitment and the growing number of UAV production facilities within the Yelabuga SEZ, Russia will likely retain these facilities even after the fighting in Ukraine ends, for both domestic use and export.

[17] The Albatross UAV was designed by the Albatross Company from Korolev, which is known to involved with the production of agricultural software and equipment. Lorenzo Bagnoli and Riccardo Coluccini, "A company from the Moscow region has launched production of reconnaissance UAVs," *RuAviation*, October, 20, 2023, https://ruavia.su/a-company-from-the-moscow-region-has-launched-production-of-reconnaissance-uavs/#:~:text=The%20Albatros%20company%20from%20Korolev,continuously%20during%20the%20entire%20flight.; "How Russia is trying to build its own war drone industry," *IrpiMedia*, February 24, 2024, https://irpimedia.irpi.eu/en-russia-war-drone-industry/, and Chris Cook, Max Seddon, Anastasia Stognei, Felicia Schwartz, Nikolaj Houmann Mortensen, "Russia deploys 'Albatross' made in Iran-backed drone factory," *Financial Times*, July 6, 2023, https://archive.ph/20230927132108/https://www.ft.com/content/3135edf7-2b80-4df4-9923-b96382d2fee5#selection-1499.0-1499.60.