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Rebuilding Germany's air defence capabilities: on the eve of crucial decisions

Justyna Gotkowska

As NATO has returned its focus to collective defence since 2014, very short, short-range and medium-range surface-based air defence has become a desirable capability. Germany, which has been recalibrating the Bundeswehr to resume participation in conventional military conflicts, is in the process of re-creating air defence capabilities. In 2018–2019, the German Defence Ministry is expected to take decisions regarding two crucial air defence programmes: the NNbS and the TLVS.

The very short and short-range air defence capabilities have effectively been dismantled within the German Army over the last decade. The Bundeswehr plans to rebuild them in the NNbS programme in order to meet its commitments within the NATO Defence Planning Process (NDPP). The contract for the NNbS is expected to be signed in 2019. However, the plans to quickly rebuild capabilities in this area may stumble on technical, financial and personnel challenges. As Germany has committed to deploy a fully modernised brigade for NATO Very High Readiness Joint Task Force (VJTF) duty in 2023, Berlin is also seeking alternative solutions, such as co-operation with The Netherlands, or smaller purchases outside the NNbS programme.

In late 2018 or early 2019, the German Defence Ministry is also planning to sign the contract for the medium-range air defence programme, TLVS, three years after it decided to use the results of the MEADS programme that was completed in 2014. The TLVS system will replace the Patriot batteries that have been in use since the late 1980s and have been successively upgraded. Time will tell as to whether the lengthy negotiations will enable the Defence Ministry to avoid delays and financial and technical problems in the complex TLVS programme, of which Germany is going to be the sole user for now.

Very short and short-range air defence: rebuilding capabilities

(1) Today: minimal capabilities of the Bundeswehr. The German armed forces currently have very limited capabilities when it comes to very short and short-range air defence. The Air Force's sole air defence missile wing has only one air defence missile group equipped with these kind of systems (see the map). It has four stationary MANTIS systems to protect military bases against RAM threats (rocket, artillery and mortar attacks) and, most probably, one LeFlaSys Ozelot battery (three platoons with Wiesel 2 vehicles equipped with Stinger launchers) to protect mobile forces.[1] In the absence of a successor system, the service life of the LeFlaSys Ozelot system has been extended to 2025 (it was originally due to expire in 2018).

Such limited capabilities are the fallout of the Bundeswehr reforms and changing assess-

[1] Leichtes Flugabwehrsystem (LeFlaSys) – light air defence system.

ments of the security environment over the last two decades. The very short and short-range air defence systems dating back to the Cold War era were gradually decommissioned: Roland in 2005 and Gepard in 2010. In 2007, Germany decided to implement a new air defence system, the *System Flugabwehr* or SysFla, mainly for the purpose of crisis-management operations abroad. In the first phase of the SysFla programme, the objective was to create a stationary system for the protection of military bases – against both asymmetric (RAM)

The Bundeswehr's current very short and short-range air defence capabilities are very limited.

and symmetric threats (aircraft, helicopters, drones and cruise missiles). In the second and third phase, the aim of the SysFla programme was to purchase mobile platforms integrated with weapon station to counter RAM missiles and missile launchers[2] for short-range air defence to protect mobile forces. However, only the first phase of the programme was implemented, and only four stationary C-RAM systems were acquired. This was due to the cuts that the Bundeswehr experienced after 2011, as well as to the perceived absence of any conventional threat, and to growing scepticism about high-intensity crisis-management operations. Moreover, all surface-based air defence systems previously located within the structures of the German Army were integrated into the German Air Force in 2012.

(2) Ambitious plans: meeting NATO requirements. As NATO has been refocusing on building up its collective defence since 2014, and in view of the new defence planning guidelines, very short and short-range air defence has been identified as a capability which the Alliance lacks. After a period of drastic reductions of these kind of systems over the last two decades, most allies are currently rebuilding their potential in this regard. Germany is very much amongst the laggards and needs to catch up quickly. According to some media reports, Germany is going to need around 20 batteries of very short and short-range air defence to protect the brigades and headquarters which Berlin has identified as part of NATO Defence Planning Process.[3] Other sources mention 14 batteries.[4]

In April 2018, work was completed on the tactical and technical requirements for the Bundeswehr's new very short and short-range air defence programme, the NNbS (*Nah- und Nächstbereichsschutz*). In 2018, Germany plans to commence tests of the systems available on the market. In 2019, the Defence Ministry will receive the Army's proposals for potential solutions and make its purchasing decision. According to the plans, the initial units should become operational in the years 2023–2026, in time to protect some of the brigades and headquarters identified within the NDPP. In the programme's second phase, i.e. to 2032, all the brigades and headquarters will get very short and short-range air defence protection. According to media reports, full implementation of the NNbS programme would cost around 2 billion euros.[5] The German-French MBDA Group, which has offered the French Mistral 3 missiles for very short-range air defence (range up to 6 km, altitude to 4.5 km) on wheeled platforms, might

[2] For more information, see: J. Gotkowska, *The current state, problems and future of Germany's air and missile defence,* 'OSW Commentary', 10.04.2013, https://www.osw.waw.pl/en/publikacje/osw-commentary/2013-04-10/current-state-problems-and-future-germanys-air-and-missile

[3] A. Shalal, *German general sees closer missile defense ties with Dutch*, Reuters, 29.03.2018, https://mobile.reuters.com/article/amp/idUSKBN1H52AL

[4] L. Hoffmann, *Bodengebundene Luftverteidigung*, 'Europäische Sicherheit & Technik', No 4/2018, April 2018.

[5] A. Shalal, *Germany to move ahead on new short-range air defense system*, Reuters, 02.02.2017, https://www.reuters.com/article/us-germany-military/germany-to-move-ahead-on-new-short-range-air-defense-system-idUSKBN15H1Z9

be one of the programme's contractors. MBDA has also suggested integrating into the NNbS programme the IRIS-T SL missiles and launchers made by Diehl Defence for short-range air defence (range to 40 km, altitude to 20 km) on wheeled or tracked platforms. Moreover, MBDA has been developing laser weapon systems, which the German Defence Ministry wishes to integrate into the NNbS programme at a later date.[6] Rheinmetall, too, has offered the Bundeswehr its solutions for the NNbS programme, but without making public any detailed information about the offer.[7]

(3) Rapid development of capabilities supported by co-operation with The Netherlands. Irrespective of the above long-term plans, the Bundeswehr is looking for ways to expand its very short and short-range air defence capabilities in the short term. Germany has committed to deploying a fully modernised brigade for NATO Very High Readiness Joint Task Force (VJTF) duty in 2023.[8] This means that its mobile troops need air defence protection against drones, low-flying helicopters and aircraft. For this reason, the Germany Army has been developing a smaller project known as 'qualified air defence' – in addition to the NNbS programme and independently of the Air Force.[9] By 2023, it wants to have around 12 base vehicles (plus surveillance and command and control vehicles) equipped with a 30–40 mm automatic gun for air defence protection for the German units on VJTF duty. The 'qualified air defence' project currently covers a single brigade but, according to the Army's long-term plans, every combat battalion should include an air defence platoon of this kind. There has been media talk of integrating the Boxer armoured fighting vehicle with different weapon stations (e.g. made by Rheinmetall or Kongsberg) and potential use of Airburst munitions.[10]

The contract for the NNbS very short and short-range air defence system is expected to be signed in 2019.

The German Air Force has also started air defence co-operation with the Royal Netherlands Army as part of the Apollo project launched in 2016.[11] It adds to the existing co-operation between the two countries' land forces, which includes, inter alia, the affiliation of two of the three Dutch brigades to German divisions, the binational 1 German/Netherlands Corps' headquarters and joint participation in the VJTF rotation and in the NATO battlegroup in Lithuania. The Apollo project envisages long-term and wide-ranging German-Dutch co-operation on air defence. What is particularly important from the point of view of current needs is that the project will also help the Bundeswehr complement its capabil-

[6] MBDA, *Wie realistisch ist vernetzter Schutz im Nah- und Nächstbereich?*, 'Europäische Sicherheit & Technik', April 2018, p. 22–24.

[7] Rheinmetall, *Rheinmetall presents its future oriented concept for ground-based air defence*, 22.03.2018, https://www.rheinmetall-defence.com/en/rheinmetall_defence/public_relations/news/latest_news/index_16576.php

[8] Germany has committed three divisions to the NDPP. Because of shortcomings regarding arms and military equipment as well as readiness levels, the German Army proposed an army equipment plan (Project Land 2023). As part of the plan, one division is to be fully modernised by 2027, and the other two – by 2032. By 2023, a brigade equivalent is to be fully modernised and to achieve full operational readiness, in time for Germany's participation as framework nation in the VJTF in 2023. S. Schulte, *German Army proposes Project Land 2023 equipment plan*, Jane's 360, 11.04.2018, http://www.janes.com/article/79195/german-army-proposes-project-land-2023-equipment-plan

[9] L. Hoffmann, *Qualifizierte Fliegerabwehr soll Drohnen im Nächstbereich ausschalten*, 'Europäische Sicherheit & Technik', January 2018, p. 63–64.

[10] T. Wiegold, Rheinmetall macht Druck: *Entscheidung für mobile Flugabwehr für VJTF 2023 soll schnell fallen*, Augen geradeaus!, 15.03.2018, http://augengeradeaus.net/2018/03/rheinmetall-macht-druck-entscheidung-fuer-mobile-flugabwehr-fuer-vjtf-2023-soll-schnell-fallen/

[11] The Apollo project focuses on six issues: (1) development of joint doctrines, (2) creation of a binational Air & Missile Defence Academy, (3) co-ordination of procurement, (4) creation of a joint Binational Air & Missile Defence Task Force, (5) creation of a joint Binational Short Range Air Defence Task Force, (6) building joint command and control capabilities. See: *Gemeinsame Flugabwehr: Niederländisches Kommando führt deutsche Soldaten*, 4.04.2018, https://www.bundeswehr.de

ities in the short term. A bilateral very short and short-range air defence task force will be created as part of the project. Moreover, in April 2018, German Air Defence Missile Group 61 equipped with MANTIS and LeFlaSys Ozelot batteries was placed under the Defence Ground Based Air Defence Command in the structures of the Royal Netherlands Army.

The efforts to quickly rebuild Germany's very short and short-range air defence capabilities will face financial, technological and personnel difficulties.

The Netherlands currently has greater potential in terms of very short and short-range air defence than Germany: the Dutch Army Ground Based Air Defence System includes 18 Fennek vehicles with Stinger launchers and two NASAMS batteries.[12] The affiliation of the German air defence missile group under Dutch command will not fundamentally alter its position in the chain of command of the German Air Force. However, it is expected to facilitate joint training and exercises with the Dutch units and enable a joint deployment in NATO's framework.[13] The aim is for the joint task force to reach full operating capability in time to participate in the VJTF in 2023. The Netherlands will most likely take part in VJTF 2023 with a mechanised infantry battalion among other units, as for VJTF 2015 and VJTF 2019. In the future, the German-Dutch task force may complement the capabilities of the NATO battlegroup in Lithuania as an air defence component. Germany is the battlegroup's framework nation (with around 700 troops currently); The Netherlands deployed a reinforced mechanised company (around 250 troops) to Lithuania in 2017 and 2018.

[12] Ministerie van Defensie, *Army Ground Based Air Defence System*, 18.04.2018, https://www.defensie.nl/onderwerpen/materieel/bewapening/army-ground-based-air-defence-system-agbads

[13] *Bodengebundene Luftverteidigung: Von Kooperation zu Integration*, 5.04.2018, www.bundeswehr.de

(4) Challenges. Representatives of the German Air Force point to significant risks facing the NNbS programme. Firstly, the time for making decisions is short (the plan is to sign the contract as soon as 2019), and the selected contractor will also have to implement the programme's first phase within a short period (2023–2026). Secondly, the assumption is that in the first phase, solutions available on the market will be acquired, which may mean that not all of the Bundeswehr's technical requirements will be met. Thirdly, financing the programme may be problematic: with a total cost of 2 billion euros, the NNbS will probably require an additional increase of the defence budget in the coming years. It remains to be seen if that is going to be feasible politically. And finally, it will be a daunting challenge to train troops within such a short timeframe. By effectively dismantling very short and short-range air defence within the Bundeswehr, and moving the residual capabilities from the Army to the Air Force, Germany lost the personnel that had knowledge and experience in this sphere. It has been argued that rebuilding this potential may take 5 to 10 years. In view of the German Army's difficulties in attracting personnel with technical skills, this may become a major soft spot.

Medium-range air defence: protracted TLVS negotiations

(1) Today: modernised Patriots and the TLVS in negotiations. The German Air Force currently has one test and thirteen operational batteries of medium-range air defence Patriot system, upgraded to PAC-3 version with PAC-2 and PAC-3 CRI missiles. Their service life was initially planned to end around 2025 but will be extended to 2030.

In 2005, Germany (MBDA Deutschland), the United States (Lockheed Martin) and Italy (MBDA Italia) established the MEADS programme to develop a new medium-range air defence system. Eight batteries of the new system were expected to have replaced the Patriot

batteries by 2018. The MEADS was to be integrated with Germany's short-range IRIS-T SL air defence system (range to 40 km, altitude to 20 km) in order to reduce operational costs, since the PAC-3 MSE missiles are quite expensive. In 2011, the US withdrew from MEADS, but the programme continued until a prototype was ready in 2014. Germany chose not to buy the system in isolation but in June 2015 it decided to use the R&D results of the MEADS and IRIS-T SL programmes to build a German medium-range air defence system, the so-called TLVS (*Taktisches Luftverteidigungssystem*), while making a reservation that the contractor would have to meet certain conditions.[14]

In June 2015, Germany decided to use the results of the trilateral MEADS programme to build a German medium-range air defence system, the TLVS.

For now, Germany is the only state interested in a MEADS based system: France and Italy use the SAMP/T system, and Poland, Sweden and Romania have opted for the Patriot system (in different configurations).

The contract for the development of the TLVS and acquisition of the first batteries was expected to be signed after negotiations with the selected bidder (MBDA Deutschland). Then financing for the programme was to be authorised by the Bundestag. However, the negotiations process took longer than planned. In September 2016, MBDA Deutschland, the German subsidiary of the MBDA Group, presented its first offer to the Federal Office of Bundeswehr Equipment (BAAINBw) after a delay of several months. The stated reason concerned problems in co-operation with the US partners, including Lockheed Martin.[15] Because of these difficulties, MBDA Deutschland was asked to prepare studies of possible risks and alternative solutions for individual modules of the TLVS, including the exciter in the multifunction fire control radar, the surveillance radar and the medium range radar (interoperable with the IRIS-T SL).[16] The offer submitted by MBDA Deutschland was supplemented in May 2017 and the formal negotiations process was started. At the same time the German Defence Minister, Ursula von der Leyen, announced that the contract for TLVS would not be signed in 2017 as previously planned. The reasons concerned reservations as to the costs and schedules, and doubts as to whether a relatively small German subsidiary of the MBDA Group would be able to shoulder such a complex armaments programme. For this reason, in March 2018 MBDA Deutschland and Lockheed Martin created the TLVS GmbH joint venture (taking 60% and 40% stakes, respectively), which is going to be the programme's main contractor.[17]

(2) Upcoming decisions and challenges. The most recent armaments policy report released by the German Defence Ministry in May 2018, states that the main bidder (currently TLVS GmbH) will likely submit a second offer in spring 2018 and that the draft contract will probably be signed by the end of 2018.[18] This would be followed in early 2019 by a parliamentary endorsement procedure. According

[14] German Defence Ministry's reports on armaments policy, 2015–2018, https://www.bmvg.de/de/themen/ruestung/ruestungsmanagement/ruestungsbericht

[15] T. Wiegold, *Industrie legt Angebot für neues Luftverteidigungssystem vor*, Augen Geradeaus!, 29.09.2016, http://augengeradeaus.net/2016/09/industrie-legt-angebot-fuer-neues-luftverteidigungssystem-vor/

[16] L. Hoffmann, *MBDA Deutschland hat Angebot abgegeben*, 'Der Monitor für Defence und Sicherheitspolitik', 29.09.2018, https://www.hartpunkt.de/mbda-deutschland-hat-angebot-abgegeben/

[17] A. Shalal, S. Siebold, *MBDA and Lockheed form joint venture for German missile defense project*, Reuters, 8.03.2018, https://www.reuters.com/article/us-germany-military-meads/mbda-and-lockheed-form-joint-venture-for-german-missile-defense-project-idUSKCN1GK12O

[18] *7. Bericht des Bundesministeriums der Verteidigung zu Rüstungsangelegenheiten*, October 2015, https://www.bmvg.de/de/themen/ruestung/ruestungsmanagement/ruestungsbericht

to the plans, the first TLVS batteries would be delivered in 2025. It is still unclear as to which multifunction fire control radar, surveillance radar and medium range radar will be chosen. It is certain, however, that the TLVS system will include PAC-3 MSE and IRIS-T SL missiles and launchers, in addition to the BMC4IS Tactical Operation Center. It cannot be ruled out that the planned deadlines for the Defence Ministry's decision and for the programme implementation will be postponed yet again.

The cost of the TLVS programme was initially estimated at around 4 billion euros but, according to unofficial reports, it may be twice as high.[19] Added to this should be the cost of the MEADS programme development, i.e. around 3.5 billion euros, of which Germany covered around a quarter. The rising cost of the MEADS-based TLVS programme is seen as an opportunity by competitors. In early 2017, US company Raytheon signed an agreement with German Rheinmetall on co-operation in areas including air defence. In March 2018, the two companies presented a comprehensive offer to the German Defence Ministry, concerning very short and short-range as well as medium-range air defence systems, and stepped up lobbying activities among the military and members of parliament. For the medium-range air defence programme, the proposed solution is to gradually upgrade Germany's Patriot batteries to Patriot NextGen standard, if the Defence Ministry decides to end co-operation with MBDA Deutschland and Lockheed Martin.[20] While that is unlikely, it cannot be ruled out entirely because the TLVS contract will include a clause enabling Germany to withdraw from the programme if the costs increase significantly. The German Defence Ministry has commissioned studies to analyse the feasibility of integrating the IRIS-T SL missiles and launchers with the Patriot system, which suggests it might potentially use this option.[21]

The German Defence Ministry expects that the TLVS GmbH joint venture will submit a second offer in 2018 and that the contract will be signed by the end of 2018 or early 2019.

Irrespective of the progress of the TLVS process, the Defence Ministry has taken steps to further upgrade Germany's Patriot systems to the Config 3+ version. The process has already started and is expected to finish in 2023. Thus, the service life of the Patriot batteries will be extended to 2030. Germany has also been co-operating with The Netherlands on the Patriot system. As part of the joint Apollo project, a German-Dutch air & missile defence task force has been created and work is underway to enhance the interoperability of the German and Dutch Patriot units. The joint task force achieved initial operational capability in 2016. In the coming years, it is expected to achieve full operational capability, according to NATO standards, and may be deployed within the NATO framework.

(3) TLVS – a test for the Defence Ministry. The TLVS programme will be a test for the new armaments project management model which the Defence Minister, Ursula von der Leyen, has been implementing since 2013. Her main objective since taking up the post of Defence Minister has been to improve the transparency of procedures and make sure that the Ministry's new procurement projects stay within their budgets and deadlines. The German Defence Ministry does not want to repeat the mistakes

[19] A. Shalal, S. Siebold, *Exclusive: Proposed German missile defense system cost far above estimates – sources*, Reuters, 17.10.2016, https://www.reuters.com/article/us-germany-meads-exclusive/exclusive-proposed-german-missile-defense-system-cost-far-above-estimates-sources-idUSKBN12H248

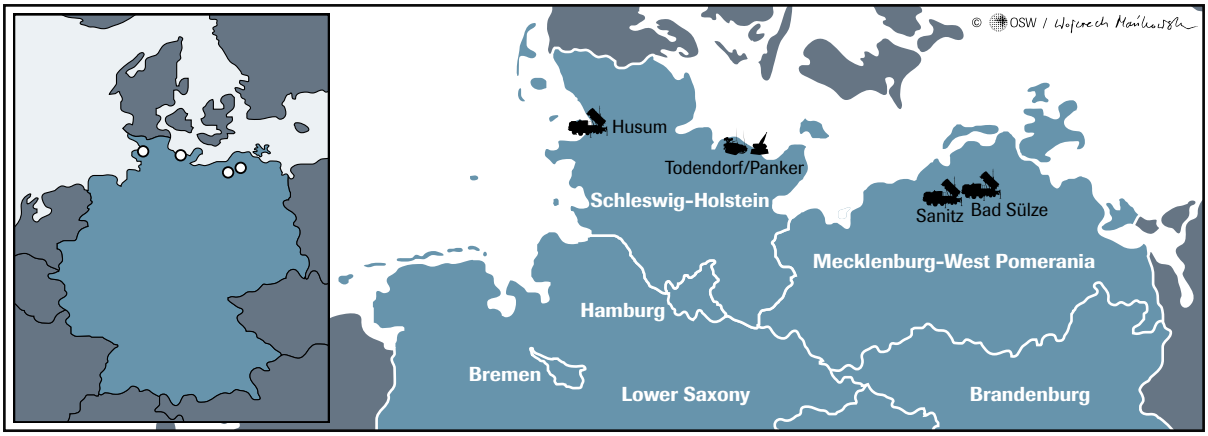
[20] See footnote 7.

[21] See footnote 4.

of the previous large armaments programmes, such as the purchase of Airbus 400M transport aircraft or the NH90 and Tiger helicopters, which were marred by constantly postponed delivery dates, rising costs and multiple defects. The protracted negotiation process for the TLVS programme is intended to ensure a new quality in German armaments policy – of costs and deadlines that are adhered to. Time will show whether the German defence budget will be sufficient to start the TLVS programme and whether the lengthy negotiations will indeed prevent delays and financial and technical problems at later stages. It also remains to be seen whether the German TLVS system will have any export potential and what the maintenance costs will be, assuming that Germany will remain its sole user for a longer time.

MAP

Air Defence Missile Wing 1 (Flugabwehrraketengeschwader 1) location of the subunits



Air Defence Missile Group 21 in Sanitz (Patriot batteries)
Air Defence Missile Group 24 in Bad Sülze (Patriot batteries)
Air Defence Missile Group 26 in Husum (Patriot batteries)
Air Defence Missile Group 61 in Todendorf/Panker (MANTIS and LeFlaSys batteries)

EDITORS: Mateusz Gniazdowski
Katarzyna Kazimierska, Anna Łabuszewska
TRANSLATION: OSW
COOPERATION: Timothy Harrell
DTP: Wojciech Mańkowski

Centre for Eastern Studies
Koszykowa 6a, 00-564 Warsaw
phone: +48 | 22 | 525 80 00
e-mail: info@osw.waw.pl

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