ANALYSIS

ARMING UKRAINE

CAPABILITY REQUIREMENTS–A VIEW FROM KYIV

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NOVEMBER 2017

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UKRAINE

Title: Arming Ukraine: Capability Requirements—A View from Kyiv
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Publication date: November 2017
Category: Analysis

Cover page photo: Ukrainian servicemen prepare a shell for a 122mm D-30 howitzer during military exercises near the village of Divychky in Kiev region, Ukraine October 26, 2017. REUTERS/Valentyn Ogirenko

Keywords: defence strategy and policy, defence cooperation, defence technology, defence procurement, capabilities and capability planning, Ukraine, NATO, Russia

ISSN 2228-2076

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About the Author

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Introduction

International military-technical aid is currently one of the key factors that can transform Ukraine's security and defence capabilities, primarily those of the Armed Forces of Ukraine (AFU), into an effective instrument to contain Russian aggression. Much of the recent discussion in NATO capitals focuses on whether Ukraine should be supplied with "lethal aid" at all, and if so, what kind of weapons should be included or excluded (for example, defensive or offensive systems). This paper aims to highlight Ukraine's needs for international military-technical aid. It does so from three angles: first, it outlines officially stated needs (the "top down" statement of requirements); then it compares this with the needs identified on the ground in the Anti-Terrorist Operation (ATO) area (the requirement as seen "bottom-up"); finally, it gives an expert assessment (an "outside-in" perspective) of the spectrum of needs and the priorities. It also considers whether Ukraine is ready to actually absorb and use such aid effectively. The paper argues that issue of supplying weapons and military equipment to Ukraine should be viewed not within the lethal/non-lethal discourse, but rather in terms of the level of technology—be it of weapons, equipment platforms or various "force enablers" and "force multipliers". Supplying Ukraine with high-tech weapons, military technology and equipment, which are currently direly needed by Ukraine's security and defence structures, can change the balance of power not only in the ATO zone but in the entire region.

1. "Top-Down" View

According to the official representatives of Ukraine's political and military leadership, the following types of weapons and military equipment are of critical importance in the context of international military-technical aid to Ukraine[1]:

- anti-aircraft (AA) warfare systems;
- secure Command and Control (C2) systems;
- Intelligence, Surveillance, Target Acquisition, Reconnaissance (ISTAR) systems with fire direction function;
- electronic warfare (EW) systems;
- sniper rifles;
- mortars—both small and large-calibre;
- ammunition, mostly medium and large-calibre;

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- anti-tank guided missile (ATGM) and man-portable air defence (MANPAD) systems;
- light armoured vehicles;
- unmanned aerial systems (UAS) with secure datalinks.

It is also worthy of note that the Headquarters (HQ) of the AFU determined the following

[1] See Natalya Kuzina, "В. Муженко: Украине нужна летальная оружие и я думаю, что такое решение будет" [Ukraine needs lethal weapons and I believe this decision will be made], *UNN*, 3 September 2017 (accessed 17 November 2017); "Полторак в Конгрессе США рассказал, какая военная помощь нужна Украине" [Poltorak spoke in Congress of the types of military aid needed by Ukraine], Эспрессо.TV Espressp.TV, 25 September 2015 (accessed 17 November 2017); "Муженко рассказал, какое вооружение Украина ожидает получить от США" [Muzhenko explained what kind of military equipment Ukraine expects to receive from the US], 112 канал 112 channel, 5 October 2017 (accessed 17 November 2017); "Полторак: В этом году планируется значительно увеличить заказ для ВСУ противотанковых ракетных комплексов" [Poltorak: This year, the Armed Forces of Ukraine plan to significantly increase the number of orders for anti-tank missile complexes]. «ГОРДОН» GORDON, 10 October 2017 (accessed 17 November 2017); "Украина предлагает Канаде присоединиться к строительству завода боеприпасов – Полторак" [Ukraine offers Canada to join in the construction of an ammunition factory – Poltorak], УНИАН UNIAN, 26 September 2017 (accessed 17 November 2017).

underlying demands and priorities regarding weapons and military equipment purchased for the armed forces (this includes both equipment produced by Ukraine's defence industry, as well as received through military-technical cooperation with foreign partners), in particular to cover the needs of the ATO zone: (1) better personal protective equipment, (2) increased speed and precision of aiming, (3) night vision devices with a better range, (4) secure means of communication, and (5) precision-guided ammunition.

2. "Bottom-Up" View

It can sometimes happen even in the most mature and well-developed defence organisations that the real needs and priorities of the front-line soldiers are not reflected in the formal defence planning processes—especially if these processes are too slow, incompetent or detached from the operational and tactical "lessons learned". It is worth examining what the ATO participants regard as their pressing needs and comparing these with the official statements.

On the basis of the author's frequent communication with the representatives of Ukraine's units directly involved in ATO, in particular those near the Inter-Entity Boundary Line, their needs for weapons, military technology and equipment can be outline as follows:

- **UAS.** The military personnel in the ATO zone mentioned they need UAS at the disposal of combat units starting from companies, which means tens, if not hundreds of devices. Some would like to see at least 14 UAS in each air mobile brigade. As for the devices themselves, according to military personnel, they should be small in size, hard to notice, quiet, unmanned fixed-wing multi-rotors with a range of 10–50 km that relay intelligence information in real time, with a steady video signal and thermal-imaging equipment on board. The latter is especially emphasised, since firstly, most barrages happen at night, and secondly, UAS are less noticeable in the dark, which helps to significantly lower device losses from enemy fire even during flights at low altitude.

- **Secure means of communication.** Communication in the ATO zone is largely based on Soviet equipment, which does not guarantee efficient troop control as it is outdated and has a low security level. It was attempted to solve this issue through the bulk purchase of Motorola stations. However, these have no encryption and hence no protection against SIGINT and enemy jamming. Motorola devices are not resilient to wiretapping, they can be turned off, supressed and false information can be forwarded from the outside.

- **Night vision devices (NVD).** In current conditions, NVD largely play a decisive role in the efficiency of counter-fire, since one of the main characteristics of hostilities in East Ukraine is that they usually take place at night. NVD are supplied to ATO subunits mainly by volunteers. In the past (2014–2015), volunteer aid was more substantial, whereas nowadays the volunteers do not have the opportunity to supply the same quantities of NVD as before (for objective reasons). At the same time, the devices are still direly needed.

- **GPS navigation devices.** There are known cases of Ukrainian military personnel being captured by illegal armed bands because they were moving in foggy, low-visibility conditions, and substantially deviated from their route. The use of GPS navigation devices that allow for precise positioning in any visibility and passive receivers (meaning it is not possible to triangulate the position of the user) help to avoid such situations.

- **Optical devices and magazines for automatic and sniper rifles.** According to military personnel from the ATO zone, collimator sights on their firearms would allow for significantly faster aiming and, therefore, they could be

the first to shoot. Collimators are also superior to mechanics in low light conditions. As for SVD sniper rifles (which are the most common type used by Ukrainian military personnel in the ATO zone), hitting the target with "home-made" optical devices is possible at 700–900 metres. The likelihood of hitting the target at the distance of over 1 km rapidly decreases, in spite of high-quality aiming and excellent firing techniques.

- **Rangefinders.** According to military personnel, there are no new laser rangefinders in army warehouses, whereas the remaining bulky Soviet quantum rangefinders are inefficient. If every forward observer (FO) unit had a laser rangefinder, the efficiency of artillery fire would be much higher. Laser rangefinders are also necessary for snipers, especially in fighting enemy mortar or machine gun detachments.
- **Binoculars with rangefinder reticles.** First and foremost, there is a need for binoculars with illuminated ranging reticles. Very few of these are available right now and binoculars are expendable in combat situations.
- **Camouflage nets** are currently one of the most urgent necessities, since they are easily damaged, burned and torn.

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When comparing the statements of the official representatives of Ukraine's political and military leadership with the expectations of the Ukrainian forces directly involved in the ATO zone, there do not appear to be large-scale disagreements between the strategic-level and ATO zone field commanders on what is needed. At times, commanders in the ATO zone have somewhat more detailed demands regarding weapons and military equipment compared to what is officially stated by the high command. However, the level of granularity notwithstanding, this alignment inspires confidence that the assistance requested from foreign partners will be exactly what the soldiers on the ground need. It can be hoped that future modernisation and development of the AFU procurement processes will build upon the positive lessons of achieving this alignment.

3. "Outside-In" Perspective

Those inside the security and defence structures might occasionally lack a perspective both rooted in a broader strategic, doctrinal, organisational or technological context and detached from the daily pressures and demands of war. In this and following sections, a perspective from outside the official structures—drawing upon analytical work done at the Centre for Army, Conversion, and Disarmament Studies (CACDS)—is presented.

Ukraine's need for international military-technical aid is currently determined by a variety of factors. First, since becoming independent and until the beginning of Russian aggression, Ukraine systematically sold and plundered the arsenal it had received from the former USSR. Secondly, as before 2014 the political and military leaders of the country were not interested in developing the AFU, the forces were not technologically modernised through developing, producing and supplying new weapons and military equipment or modernising the existing ones. Thirdly, supplying Ukraine's security and defence structures with weapons and military equipment necessary for the deterrence of Russia's aggression is complicated by the fact that Ukraine does not have all the technologies needed for the production and modernisation in question. Fourthly, some of the new products as well as some of the existing weapons and military equipment used by Ukraine's forces are too low-quality and have a limited range of uses, which hinders the efficient deterrence of, and opposition to Russia's armed forces.

In turn, the armed forces of the Russian Federation have noticeably advanced in terms of technical modernisation, in particular owing to Serdyukov's military reforms and Russia's State Armament Programme for 2011–2020 (which involved funding equivalent to approximately 690 billion USD). The armed forces of the Russian Federation began to implement modern weapon designs and combat support systems, integrating heterogeneous forces and means into a single net-centric communications and management system, as well as a new, more precise and easy to understand system of controlling armed forces. In addition, there was a transition from the old Soviet task organisation structure to a new one, created essentially on the basis of a NATO blueprint (with battalion and brigade tactical groups). Also, largely owing to cooperation with Western suppliers and critical technologies obtained from them, the development of modern high-tech weapons and military equipment began during that period, and the results are now undergoing active testing in the Russian-Ukrainian conflict zone.

In light of the above, the balance of power in the Russian-Ukrainian conflict zone is currently not in Ukraine's favour. One of the possible ways to change this situation is to increase the possibilities of Ukraine's security and defence structures in the following basic areas: **level of technology**, **firepower** and **mobility**.

The first parameter **(level of technology)** can be improved by supplying the armed forces with high-tech equipment, which is not available in necessary quantities right now. This means, first and foremost:

- **Secure means of command and control (C2) with FHSS technology:** HF radio transmitters (20 W, 150 W, 400 W, 1000 W) and VHF radio transmitters (5 W, 10 W, 50 W);
- **EW complexes,** especially the means of combating UAS;
- **UAS** with secure datalink, first and foremost miniature UAS for Company Tactical Group and tactical UAS;
- **Target acquisition equipment:** counter-battery radars with increased range and counter-battery fire direction function;
- **Automated missile force and artillery fire control systems** to shorten the decision time for striking targets;
- **NVD for small arms and armoured vehicles.** Equipping armoured vehicles, even old models, with NVD as important aiming system elements increase the variety of their use significantly;
- **Optical surface monitoring systems** for the close-in zone of the Black and Azov Sea.

As for the second parameter **(firepower),** it can be improved with the provision of:

- **Anti-tank (AT) weapons.** A sufficient quantity of modern Javelin-type AT missiles can both lower the intensity of enemy fire with the use of armoured vehicles, and also become a method of deterring Russia in its attempts to continue military aggression in Ukraine;
- **Mobile mortar complexes** the efficiency of which is increased with the use of counter-battery radars;
- **Modern sniper rifles** (in particular, large-calibre ones) and **counter-sniper systems** (Boomerang, SLD 500);
- **Armour piercing ammunition for small arms;**

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- **Attack helicopters (AH)** with night combat capability armed with modern anti-tank complexes, which, in conjunction with ground AT weapons, can hold back the enemy's armoured vehicle and tank unit advances;

- **Naval systems** (high-speed missile boats, autonomous surface and underwater systems).

The third parameter (**mobility**) can be significantly improved by supplying the army with **lightly armoured 4x4 vehicles.** In doing so, the main requirements (based on the experience of using these vehicles in the ATO zone) are as follows:

- manufacturer uniformity;
- development and production according to military standards (this also applies to chassis);
- availability of necessary spare parts.

In addition, these factors in the ATO zone are currently in need of improvement:

- **Medical evacuation.** Increasing MEDEVAC funds (with all the necessary equipment) allows for timely aid to wounded military personnel and helps to save their lives.

- **Mine clearance.** According to the United Nations Assistant Secretary-General for Humanitarian Affairs Ursula Mueller (appointed in October 2017), the zone of the Russian-Ukrainian conflict is rapidly becoming one of the most mined areas in the world and this problem needs to be addressed right now.[2]

- **Camouflage.** Currently, ATO forces need camouflage nets for the protection of technology both in the winter and summer period. While the enemy actively uses intelligence UAS, camouflaging positions and technology has a key role in determining units' survival on the battlefield.

At that, according to our estimates, the order of priority for supplying weapons and military equipment through international military-technical aid should be as follows:

- secure means of C2;
- EW complexes;
- UAS;
- target acquisition equipment;
- anti-tank weapons.

4. Ukraine's "Homework"

Identifying and defining the operational and technical requirements which should be included in requests for military-technical assistance is only one part of the process. In order to accept that assistance, use it effectively and build upon it in future capability development, a number of prerequisites must be met. Without such organisational adaptation, or "homework", the long-term benefits of such assistance cannot be assured.

First of all, it is necessary to point out that the existing field manuals (and other regulatory documents), as well as the organisational structure of the AFU have not been updated so as to allow the introduction and most effective use of the modern versions of weapons and military equipment (UAS, EW, counter-battery radars etc.) supplied in the form of military-technical aid. The existing field manuals do not stipulate and the tactical structure of the AFU does not allow the use of an automated management information system (MIS). Other problems emerge from this, in particular: there are no bases for receiving, servicing and repairing the abovementioned weapons and military equipment, as well as for training military personnel, or the existing bases are unprepared.

A separate issue is testing, evaluation and certification of weapons and military equipment samples obtained through international military-technical aid, while the current system for introducing new weapons and military equipment in Ukraine's security

[2] Ursula Mueller, *Remarks at Member States Briefing on Ukraine* (New York, 23 October 2017), http://www.unocha.org/sites/unocha/files/statement-and-speech/ASGUkraineMSBriefingAsDelivered%2023102017.pdf (accessed 17 November 2017).

and defence structures reminds of the Soviet period. In other words, a weapon and military equipment sample that is to be adopted must be subjected to a certain procedure: assessment and testing in the Central Research Institute of Armament and Military Equipment of the AFU, which is followed by military (this might prove problematic until the organisation and structure of forces is not suited for the newest weapons and military equipment) and state testing (until now, the issue of standardising weapons and military equipment has remained just an idea).

Only now, first steps have been taken to adapt Ukraine's weapons and military equipment management system so it would be similar to that used in NATO. On 19 October 2017, the Government of Ukraine made the decision to establish the State Institute for Testing and Certification of Arms and Military Equipment, the purpose of which is to create a unified state policy of testing, certifying, developing and producing weapons and military equipment to meet the needs of the AFU and other security structures, taking into account NATO's standards. The state defence contract for 2017–2018 plans to reconsider the necessary financial resources needed for establishing a modern laboratory and field testing system. Therefore, according to the most optimistic prognosis, this system will be in place by 2019. In addition, a parallel task would be the creation of an international centre of cooperation with NATO in the field of testing, evaluating and certifying weapons and military equipment, mediated by the Institute.

The current system for introducing new weapons and military equipment in Ukraine's security and defence structures reminds of the Soviet period… Only now, first steps have been taken to adapt Ukraine's weapons and military equipment management system so it would be similar to that used in NATO

If the abovementioned system is created, and field manuals (other regulatory documents) as well as the organisation and structure of AFU and other security and defence structures are modernised, and troops receive appropriate training, in medium term the security and defence organisations of Ukraine will have a significantly wider range of opportunities for the introduction, efficient use and maintenance of weapons and military equipment received from western partners for their arsenal. Otherwise, the received international military-technical aid may still be inefficiently used and lost, without creating longer-term effect on the security and defence capabilities.

Conclusions

All in all, in order to tip the balance of power in the Russian-Ukrainian conflict zone in favour of Ukraine and to turn Ukraine's security and defence structures into an efficient instrument to deter Russian aggression, Ukraine needs high-tech weapons, military technology and equipment more than simply lethal aid. Supplying Ukraine with the necessary amount of high-tech weapons, military technology and equipment would allow effectively responding to the breaches of the ceasefire and decreasing or minimising the number of casualties among Ukraine's military personnel and civilians. In case Russia's hostilities continue, high-tech equipment would allow deterring the aggression by making the costs of attacks as high for Russia as possible. This, in turn, might force Russia adhere to the Minsk Protocol and contribute to the resolution of the Russian-Ukrainian crisis as a whole. Ukraine's high-command, in close coordination with the ATO units, has done a commendable job in defining and communicating the requirements for foreign military-technical aid, but a lot more needs to be done that such aid produces longer-term benefits to Ukraine's security and defence.

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Issn 2228-2076