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# ACHIEVING SELF-SUFFICIENCY IN ARMS PRODUCTION TO ENHANCE DEFENSE CAPABILITIES FOR THE GEORGIAN MILITARY

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# 164

EXPERT OPINION





საქართველოს სტრატეგიისა და საერთაშორისო ურთიერთობათა კვლევის ფონდი  
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## **EXPERT OPINION**

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## **Introduction**

Some defense economists argue that the full-scale self-sufficiency of the defense industry, which can also be termed defense autarky, may not be necessary for future wars. Due to weapon systems becoming increasingly sophisticated and highly technological, producing these systems requires the growing importation of components and sub-systems for the manufacturing of indigenous and advanced weapons and equipment;<sup>1</sup> even the United States defense contractors import components and sub-systems from many different foreign countries. “The transformation of arms production has created opportunities for many states. Through defense industrial partnerships, recipient states can now exploit foreign component technology and technical knowledge to produce advanced military systems.”<sup>2</sup> Therefore, no country has a comprehensive domestic defense-industrial base (DIB) because all countries rely on technology imports. Even though defense autarky is not necessary, some countries with strong or moderate economies are still trying to develop an autonomous DIB to decrease the influence of arms supplier countries. However, even countries with developed economies have weaknesses in designing, developing and producing advanced weapon systems because they “suffer from shortages of skilled personnel and sufficient scientific and technical infrastructure to pursue breakthroughs and applied research in many critical defense technologies.”<sup>3</sup>

## **Georgia’s Need For Self-Sufficiency In Arms Production**

In August 2008, the large-scale Russian military invasion in Georgia and occupation of its two administrative regions, Abkhazia and the Tskhinvali region (the so-called “South Ossetia”) and the deployment of military bases on Georgia’s territory, significantly worsened the country’s security environment. During the August War in 2008, the GDF depleted most of its defense resources; many of them were destroyed by Russian air and artillery bombardment, ground troop attacks and stolen from Georgian military base stockpiles. After this conflict, the Kremlin exercised all its instruments of national power to influence European states to halt arms exports to Georgia. After the occupation, Tbilisi could only purchase a modest amount of military equipment from its allies for its basic military needs.<sup>4</sup> To protect its independence, sovereignty and territorial integrity, Georgia has implemented reforms to increase the effectiveness of its

security architecture, including the defense system.<sup>5</sup> The cornerstone of these reforms is the process that includes the modernization of the GDF so that it would be capable of deterring and defending against an adversary that has greater manpower and an overwhelming military force.<sup>6</sup>

As a result, the GDF needs advanced high accuracy and sophisticated weapon systems and military equipment that would be useful to conduct territorial defense operations. Taking into consideration their scarce resources, the Georgian MoD prioritized military capabilities that are critical for the combat readiness of the GDF, such as armor, air defense (AD), anti-tank (AT), counter-mobility, artillery and intelligence, surveillance and reconnaissance (ISR) capabilities.<sup>7</sup> Most of these types of weapons are expensive to purchase and maintain. That is why every country that requires developing the capabilities to defend itself from foreign aggressors needs to develop some level of self-sufficiency in arms production and avoid dependency on importing arms from abroad. As Kinsella notes: “The costs of dependence on external sources of weaponry reside in the possibility that weapons flow will be interrupted in the context of regional crises and warfare when threats to national security are most acute.”<sup>8</sup> A historical example of such a situation occurred during the August 2008 war when Israel transferred secret codes for unmanned aerial vehicles (UAV) belonging to the GDF to the Russian military in exchange for access to data on Iran’s missile systems.<sup>9</sup> Georgia’s intention to reunite with its European family and establish democracy and the rule of law poses a threat to Russia. This is an obvious illustration of why Russia invaded a sovereign state in the twenty-first century and used force externally for the first time since the Cold War.

## **Defense Economic Review Of Georgia**

Given the existing reality of limited resources, advanced weapon systems would be a luxury for Georgia. Military equipment has become more expensive as a result of technological development. In order to build capable armed forces, it is necessary to make the best use of scarce resources by purchasing state-of-the-art and sophisticated weaponry.<sup>10</sup>

### ***Military Expenditure***

Since its independence from the Soviet Union, the conclusion of two wars in breakaway regions against Russian-backed separatists and a civil war

at the beginning of the 1990s, Georgia started building its military from scratch. From 1997–2020, Tbilisi spent USD 7.7 billion on MILEX.<sup>11</sup> After the Rose Revolution in 2003, the economic situation improved for the country as a whole and, consequently, the allocation of resources for national defense increased. During 2005-2009, the Georgian government spent an annual average of 6.4% of the GDP and 22.3% of government spending on the Georgian military.<sup>12</sup> The Georgian MoD allocated an average of 44.1% from the defense budget to military equipment procurements during the same five years. These indicators are higher than NATO standards of a percentage of MILEX (no less than 2%) from the GDP and military equipment procurement (no less than 20%) from the MILEX. This rapid militarization was reflected in the Bonn International Center for Conversion's (BICC) Global Militarization Index (GMI) wherein Georgia climbed from the 64<sup>th</sup> to the 38<sup>th</sup> place in 2006. In the same year, the NATO average GMI rank was 56 out of 156 countries.<sup>13</sup> However, after the August war, Georgian economic growth shuttered and, consequently, spending on public goods was cut, including defense. From 2010-2017, an average 2.7% of the GDP and 8.7% of government spending were allocated for MILEX. From 2010-2017, the Georgian MoD spent on average 7.1% from its defense budget on arms procurement, both domestic and international.<sup>14</sup> This is six times less than it spent during 2005-2009. Here, we have two extremes: on the one end, a high militarization indicator and, on the other, three times less than the NATO standard. However, the overall average during 2005-2017 is 25.4% which is a pretty good indicator. In regard to the reliability of data, it should be noted that Georgia's military equipment and R&D calculations are based on this author's article<sup>15</sup> which in turn was based on the Georgian MoD's annual reports from the Georgian Ministry of Finances.

The most vital component of a country's defense industry is its spending on the country's defense R&D. Without efficient scientific research, it is literally impossible to build a defense-industrial base that would have the capacity to design, develop, modernize and produce advanced and sophisticated weapons systems and military equipment that could be competitive in the international defense market. The Georgian MoD allocated USD 135 million (an average of 2.8% from MILEX) for military R&D. This includes funding the DELTA military-scientific technical center with its six research institutes beginning from its establishment.<sup>16</sup> However, Georgia's spending on military R&D is minimal and it needs to grow dramatically in order to increase military science and development capacities.

However, investing in military R&D is not the sole instrument for developing military R&D; methods for achieving this extend beyond the realm of the defense sector. A country should invest in a wide range of public or private universities and research centers beyond the military technological sector.

### ***Arms Imports***

Regarding arms imports, the Georgian MoD procured USD 768 million worth of weapon systems from abroad which is 10% of the total MILEX during 1997-2020. Georgia purchased military equipment from Bulgaria, the Czech Republic, Israel, Kazakhstan, Uzbekistan, Poland, Turkey, Ukraine, the United States and France.<sup>17</sup> From 1997-2020, the Georgian MoD imported USD 90 million worth of aircraft, USD 80 million worth of AD systems, USD 301 million worth of armored vehicles, USD 35 million worth of artillery pieces, USD 3 million in engines, USD 72 million in missiles, USD 76 million in radars and sensors and USD 111 million in ships.<sup>18</sup> These defense platforms were the only weapons that Georgia acquired after three devastating wars. Before 2005, Georgia's armory consisted of MBTs, IFVs, APCs, auxiliary vehicles, towed and self-propelled artillery systems, multiple rocket launchers, patrol crafts and FGAs.<sup>19</sup> All of this equipment was aging badly due to it dating from the Cold War. Time after time, the GDF depleted its spare parts supply and could not resupply or was limited to acquiring the parts.

The Georgian MoD has procured only two major platforms since the August war 2008. First, three medium- and long-range air search radars with man-portable SAMs were imported from France and 410 man-portable ATGM systems were bought from the US (additionally, two second-hand patrol craft for the Coast Guard, Ministry of Interior). Besides the ATGM, Georgia acquired 70 diesel engines for a Turkish-made APC, ten APCs and two patrol craft from the US.<sup>20</sup>

Taking into consideration the Georgian GDF priorities, the MoD does not procure sufficient weapon systems to fulfill GDF requirements. For example, armor and artillery capabilities, which will be discussed in the following pages, could be developed domestically by Georgian SOE DELTA with foreign technical assistance. AD is very complex to develop by a Georgian DIB which does not possess advanced technologies and sophisticated know-how to this end. The same goes for AT, counter-mobility and ISR capabilities. Georgia should continue to import weapon systems of these categories.

## **Potential Of The Georgian Defense-Industrial Base**

After the loss of some military equipment in the August war, Tbilisi started filling in these gaps. It increased cooperation with partner states and NATO with the objective of increasing Georgia's military capabilities and interoperability. Several attempts were made to strengthen the country's defense-industrial base which will decrease dependency on weapon systems and military equipment imports.<sup>21</sup>

### ***Production Capacities***

In 2010, the Georgian government established the DELTA military-scientific technical center and placed six research institutes and the Tbilisi Aircraft Manufacturing (TAM) aircraft producer under its control. This was the result of the transformation of the defense system and the prioritization of local weapon systems and military equipment designing, developing and manufacturing. DELTA is the sole arms-producing SOE in Georgia. With 1,700 highly qualified engineers and specialists, DELTA designs, develops, integrates, manufactures and services a broad spectrum of weapon systems and military equipment such as small arms, AT mines, personnel protection equipment and towed mobile mortars (60, 82, and 120mm)<sup>22</sup> and currently plans to start producing small caliber ammunition. It also designs, constructs and assembles APCs and IFVs locally for the GDF and also for international customers. Besides weapon systems and military equipment, DELTA produces commercial products such as firefighting vehicles with the cooperation of the Austrian fire-service vehicles and firefighting equipment manufacturer Rosenbauer, and an indigenously produced anti-hail system.<sup>23</sup> With this production, DELTA had started the exploitation of dual-use technology.

The Georgian arms industry's crown jewel is the APC family Didgori which is a tactical armored wheeled (4x4) vehicle. It also has multi-purpose medical evacuation and C2 variations. These APCs are armed with a wide range of weapon systems including an open turret 12.7mm machine gun and a 7.62mm six-barreled mini-gun (M-134). It could also be modified with a 40mm automatic grenade launcher, ATGM or SAM platform. Moreover, one modification's platform is integrated with a mobile 120mm mortar system. From 2016-2017, DELTA sold 100 APC Didgoris to Saudi Arabia which were assembled there. The cost of the deal was USD 13 million according to SIPRI.<sup>24</sup>



DELTA's locally produced new-generation tracked IFV Lazika is equipped with a remotely controlled gyro-stabilized weapon station that is armed with a 23mm gun (2A14) and a coaxial 7.62 machine gun (PKT). Lazika is an ideal platform for mobile mortar, ATGM or SAM systems. DELTA also designed and produced a 122mm multiple rocket launcher (RS-122), which is a modified version of the Soviet-era BM-21 (Grad) that has complete armor protection and improved cross-country mobility, and few projects of assembling tactical UAVs. Taking into consideration the aging Soviet-era armory of the GDF, DELTA has an excellent opportunity to upgrade and modernize it in order to fulfill the requirements of the Georgian military. Using this occasion, DELTA overhauls, repairs and updates Mil-type attack and transport helicopters in cooperation with TAM and services and relives short-range AAMs (R-60 and R-73).<sup>25</sup>

Since DELTA's establishment, the Georgian government transferred one of the notable Soviet-era aircraft producers, Tbilisi Aircraft Manufacturing (TAM), under its control. TAM, established by the Soviet Union in 1941 near the beginning of WWII, contributed a wide range of advanced (at that time) FGAs and FTRs to the Soviet Air Force. TAM now has the capacity to produce, modernize, overhaul and repair military aircraft and produce different military products. TAM is an original manufacturer of the Su-25 Scorpion family of FGAs. To date, it has exported approximately 800 aircraft. Since 1959, TAM has manufactured more than 1,600 FTRs (Mig-21) with different modifications.<sup>26</sup> The production volume of TAM is not sufficiently exploited because of the lack of demand from the Georgian government and international customers. However, TAM's capacity should be endorsed to attract international investments and partners. The importance of TAM is far beyond the MoD's priorities; it is an asset of national significance which could contribute immensely to Georgia's aerospace industry and its economy as a whole. Meanwhile, TAM has already started on the renovation of the MoD's SU-25s with DELTA's material support.

Another champion of the Georgian DIB is the GDF's Logistic Support Command's Armament and Equipment Maintenance Base (AEMB). After the partial withdrawal of Russian troops from Georgian territory in 2005, excluding Abkhazia and the so-called South Ossetia where Russia still had thousands of soldiers and military equipment deployed, Russia transferred the Soviet Tank Maintenance Factory, established in 1943, along with its nine plants and facilities to the Georgian MoD. Nowadays, the AEMB possesses critical capabilities for the GDF that can conduct maintenance

and service of small arms and tactical communications equipment, armored vehicles, artillery systems (towed and self-propelled guns and multiple rocket launchers) and trucks as well as engineering and auxiliary vehicles with plants and machinery that are spread all over the base. The AEMB's armored vehicle maintenance plant has the capacity to conduct base, intermediate and depot-level maintenance, overhaul and modernization. The AEMB has a problem similar to that of TAM: its volume of operation is low and it has aging machinery and manufacturing equipment. Upgrading all of the AEMB's plants would reduce the maintenance time, the number of spare parts procured from foreign suppliers and would benefit the Georgian DIB capacity including collaboration with DELTA.

Aero-Structure Technologies Cyclone (ATC), a joint company together with the Israeli aerospace and defense platform producer, Elbit Systems, was established on the initiative of the Georgian government in 2018 in order to boost the capacity of local aerospace platform production. ATC has started manufacturing aircraft parts for the world's leading aviation producers such as Boeing, Bombardier and Airbus, etc., and is the first of its kind in the South Caucasian region. In the initial phase, ATC employed 130 highly qualified local professionals; this number will reach 300 in the coming years.<sup>27</sup> With the establishment of ATC, "the [Georgian economy] is gaining hundreds of jobs and another foothold vis-à-vis a global industrial-defense brand like Elbit Systems and, no less importantly, this marks another milestone for [the Georgian DIB]"<sup>28</sup> in its cooperation with Israeli defense industries.

### ***Research and Development Capabilities***

Military science and research had long traditions in Georgia during the Soviet occupation. As a part of the Soviet Union, it developed a wide range of military technology research centers. However, since the disintegration of the USSR, this capacity has declined. Currently, in terms of military R&D, DELTA owns its design bureau, research laboratories and production facilities. As mentioned above, it has unified six high-level research institutes under its umbrella in fields such as metallurgy, mining, machine mechanics, nanotechnology, optics, physics and technology. Additionally, these research institutes conduct explosive materials examination, assess the impact of tests and explosions, work on issues of safety for armored vehicles produced by DELTA, create semiconductors and electro-optical systems, and design and produce ceramic composite goods for individual protective equipment and hardware platforms. These institutes operate

with approximately 600 highly qualified and skilled scientists, researchers, engineers and specialists with decades of experience in R&D. These individuals provide, not only for DELTA but for the Georgian DIB as a whole, intellectual and technical resources capable of independent design, creation and mass production of military and dual-use products with a variety of purposes and technological complexity.<sup>29</sup>

In addition to military science and technology, Georgia has public and private universities that have research institutes, centers and laboratories with technological capacity and human capital in scientific research that could be used for enhancing military R&D. These entities include the Free University's Mathematics and Computer Science School laboratory that has capacity research in fields of software engineering, information technologies and other fields related to computer science. There is also the Georgian Technical University's Scientific-Technological Center for Sensory Electronics and Materials Science and its Institute of Structures, Special Systems and Engineering Maintenance which are conducting research in military-engineering and space systems, including radar and sensor sub-system designing. Last but not least, there is the Georgian Aviation University's Scientific-Research Center which has experience in designing sub-systems and components for aerial vehicles, including engines.

### **Transforming The Georgian Defense-Industrial Base**

The development of defense markets around the world increases the interdependence of domestic DIBs. This dynamic contributes to the emergence of globalization in the arms trade. Some scholars have suggested that the economic benefits of building self-sufficient arms manufacturing capacity are more profitable than gains from political influence in the international arena.<sup>30</sup> In order to decrease dependence and boost domestic arms production industry, one should analyze the capacity of its domestic DIB such as the proficiency of human capital, the size and the structure of the local defense market, the available resources and technologies, the complexity of weapon systems, timeframes of production and cost differentials.<sup>31</sup>

#### ***Human Capital***

As I have discussed above, Georgia does not lack educated, highly skilled and qualified scientists, researchers, engineers and specialists. However, this resource is fading because of a lack of industrial and technological

potential to use their knowledge; as a result, these professionals are scattered in different sectors around the country. With the intention of retaining and developing this expertise and knowledge base, it would be more desirable for the Georgian government, with the cooperation of a variety of state agencies including the MoD, to consolidate under one authoritative body to coordinate and manage the process on a national level. The government should endorse the private sector not only in defense but also in other fields of the country's business sectors with incentives of reducing taxes and other kinds of benefits that could be favorable to entrepreneurs. Under one umbrella, it is easy to combine disconnected specialists and create a database which could be used to re-educate and retrain them in order to maintain proficiency. Additionally, it is easier for the government to attract foreign investments in domestic industries and research and technology. For countries with an insufficient research base, it is of vital importance to advance sophisticated technologies. It is essential for the Georgian DIB to reverse the brain drain from the defense sector and create a more attractive and creative environment for academia and professionals. However, consolidating the majority of arms producers and R&D under one roof without checks and balances would create a monopoly in the defense sector which could deter the development of private firms and worsen competitiveness as a whole in the country.

### ***Characteristics of the Defense Market***

The defense market is similar to other markets and it functions similarly to traditional supply-demand concepts. Without participation in the international arms trade, it would lose competitiveness and the country would be required to aid and subsidize its defense industry. The biggest difference in the defense market structure with the rest is that it is monopsonistic. Most of the time, there is only a sole buyer: the government and the MoD. This composition is balanced by the demand from the armed forces that affects the shape and size of the defense industry as a whole. In addition to this, the government also decides what to produce locally and what to procure from foreign suppliers. Neuman observed the important dilemma of whether to *procure* or to *produce* when she said: "Unless a large number of a particular weapons systems or components is required by the armed service or substantial export sales are anticipated, certain military items are too costly to manufacture."<sup>32</sup>

The Georgian DIB is no exception to this rule. The Georgian MoD plans what to import and simultaneously directs its defense-industrial policy

towards domestic arms production. As shown in the previous section, all military equipment has been procured from foreign suppliers since its independence from the Soviet occupation without any technology transfers or joint production or under license. DELTA's production portfolio only could fulfill minimum requirements of the GDF in several priority directions such as small arms, armored vehicles and towed artillery. This limited capacity affected the size of Georgia's defense market and directed the GDF to import secondhand armament. Moreover, the economies of scale is another vital factor. Almost all countries with Tier I and II defense industries strive to diversify military goods and services towards dual-use production which could be demanded from commercial markets. These adaptations to the commercial market went not only for DELTA but for TAM and the AEMB. For both of these mammoths, it is essential to upgrade and renew their machinery and equipment in order to raise their production quality, effectiveness and competitiveness for domestic and international markets.

Moreover, the AEMB should widen its spectrum of operation from the maintenance and servicing of armored vehicles and other military equipment to designing, developing and producing. All three of these SOEs have huge potential and became leading aerospace and defense platform producers in the South Caucasus region. They should specialize in the high-quality production of niche weapon systems and equipment in order to become competitive. A similar situation was examined in the previous sections about armed vehicle manufacturer firms.

The government of Georgia should endorse not only DELTA's production volume and scale but also create incentives for the private sector to become a stakeholder in the domestic arms industry. For the Georgian private sector, defense clusters will be attractive with the government's tax reductions and ease of access to defense contracts, creating a hub for private and state companies in wide-ranging fields that will promote aerospace and land platform production. Besides business, this cluster will attract skilled and educated human capital and enable collaboration with cluster firms with research institutes and universities in the military science field to deliver high-tech products and provide R&D.

### ***Complexity of Weapon Systems***

Another constraint of limiting the local production of arms is the complexity of weapon systems and military equipment. Notwithstanding, the spectrum

of sophistication of the weapon system is limitless and could range from small arms to long-range ballistic missiles. For the GDF, this is not the case because DELTA, TAM and the AEMB possess a manufacturing capacity that only covers a limited number of defense platforms. With reference to Georgia's military requirements, they are far beyond that of Georgian DIB limits. Not only is the production volume absent in order to fulfill the GDF's need, but its financial resources are also insufficient for arms procurement and MILEX as a whole. With threats like confrontations vis-à-vis Georgian national security, 2% of the GDP on MILEX is insufficient. At least 4% needs to be allocated from the GDP and 20–30% on procurement share of the MILEX.

### ***Cost Differential and Available Resources***

The life-cycle of a weapon system varies depending on whether it is produced locally or procured from abroad. In the case of importing, the government has to take into consideration the acquisition of weapon systems, procurements of spare parts for its sustainment, paying specialists from the manufacturer for capital maintenance, modernization or upgrading the platform. These estimations make it easy for governments to decide whether to produce or procure a defense platform. Moreover, off-the-shelf procurement only benefits foreign suppliers and money flows out of the country which does not contribute to the national economy.

However, if the weapon system required by the military is one that the country lacks the capacity to produce, the only choice is to buy it from abroad. For Georgia, it is not easy to decide which weapon system to produce locally or procure from abroad. The MoD has very limited resources. For instance, the defense budget of Georgia was USD 308 million in 2017 which is 2% of the GDP. From Georgian MILEX, USD 52 million went for military equipment procurement and USD 11 million was allocated for DELTA and R&D combined. As we can examine, the Georgian government's meager financial contribution to the defense sector is insufficient. This provision should be changed and the defense sector, including the defense budget and allocations for weapons procurement and R&D, should be increased if Georgia desires to develop its DIB.

### ***Development of Industrial Infrastructure***

Developing domestic DIB entails support from other sectors of industries. These sister industries provide defense industry which "entails the production of castings and forgings, fabricating sheet metal, machining,

plating, as well as the manufacture of electrical and electronic equipment, gears, bearings and plastics”<sup>33</sup> with the objective of setting up an effective DIB capable of designing and developing advanced and sophisticated weapon systems and military equipment. Domestic arms production has implications on the development and expansion of secondary industrial sectors. However, forcing other sectors to support the defense industry is sometimes beyond the economic and technological resources of LDCs. In the case of Georgia, this is not far from reality; besides developing the defense sector, it needs to simultaneously develop other sectors with R&D potential as well. In upgrading and modernizing facilities, machineries and equipment for the AEMB and TAM and DELTA, there is also a need to allocate funds from the government to other sectors that could support the demands for non-military components and sub-systems, commodities and raw material.

In terms of the limitations and specifications of constraints regarding building domestic DIB, the Georgian government should take into account the necessity of human and financial resources, technological capabilities and enhanced infrastructure that generates the knowledge, the proficiency and the capacity to design, develop, modernize, upgrade and manufacture a spectrum of advanced and state-of-the-art air, land and naval platforms.

## **Conclusion**

To develop indigenous arms designing, developing and production, one’s defense industry should have mastered the above-mentioned steps with full proficiency. The majority of countries with developed defense industries look forward to building self-sufficient arms production capabilities. After achieving some level of defense autarky, they will decrease dependence on weapon system suppliers from abroad, including critical components and sub-systems. However, arms recipients should not abandon importing advanced weapon systems and parts, unless it affects their local production motivation. Autonomous military equipment manufacturing also boosts one’s volume and the quality of the domestically produced military goods and services which will be exported. Besides domestic customers, exporting indigenously produced advanced and sophisticated weapon systems could be used as a tool to influence foreign countries. Further, self-sufficiency in weapons production is beneficial for national economies, including other sectors beyond defense, and military and non-military R&D as a whole. A

moderate or advanced level of defense autarky is beyond the reach of most LDCs; it is necessary to have a developed economy vis-à-vis the majority of industry sectors. In addition, local production produces different level dependencies on local arms manufacturing companies.

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