FINABEL TIMES

The CaMo Programme

Major General Pierre Gérard

Study:

The Baltic's response to Russia’s Threat

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A European Centre with a Sector Focus

From our offices in the heart of Europe, Brussels, Belgium, we view the world through the lens of our key sector: land forces. For our Member States this means they benefit from an organisation fully focused on this sector, wholly understanding the challenges they face and completely tuned in to their needs.Over the decades we have been careful to build our international presence using a combination of local researchers with demonstrable local knowledge and fully integrated teams acting together at a global level.

Putting Collaborative Relationships at the Heart of our Work

Understanding exactly what each of our Member States needs and wants lies at the heart of our approach to harmonising land doctrines and promoting interoperability. We adopt a long-term view and we take time to understand the distinct demands that each Member State faces. This allows us to build a bespoke relationship to suit each Member State. Our approach means that we are consistent in the standard of excellence we bring to our service and flexible enough to build into each relationship value that is meaningful for each Member State.

Building Value Through Inclusivity and Diversity

Collaboration and flexibility are as vital within our own organisation as it is in our work with our Member States. The diverse range of professional people that Finabel attracts and nurtures has created a rich pool of talent. This makes a direct contribution to the value that we create, a real difference to the services that we provide and shapes the particular dimension to the advice that we give.

Foreword

By LtG Jaromír ZŮNA

1st Deputy, Chief of the General Staff
Czech Armed Forces

I am very pleased to introduce the first edition of the "FINABEL Times" magazine which represents the new initiative of the European Army Interoperability Centre. The new magazine comes to its existence in the right time, when questions of interoperability, modernization, capability development and harmonization of the land doctrines are in the focus of professionals across European armies.

The magazine provides for the new platform available to military practitioners, researchers, academia and members of the defense community to discuss and share their opinions on actual topics, best experience and results of their work. It also serves as a tool for encouraging debate among experts, searching for new ideas and promotion of innovative potential regardless where it sits in the structure of European armies.

With a genuine interest I went through the first issue of the "FINABEL Times" and only what I can do at this point is to express my gratitude to all the authors for valuable contribution and congratulate to the Finabel team for an excellent editorial and organizational work. Like in the case of any professional magazine, its success depends on a collaborative effort drawing extensively on expertise of its contributors. By launching the new magazine, once again, FINABEL has proven its responsiveness in meeting demands stemming from a broad professional audience for a high quality source of information. With this in mind, the new magazine is one more addition to the mosaic of overall effort to continuous adaptation of the European armies to ever changing security challenges.

By LtG Jaromír ZŮNA
1st Deputy, Chief of the General Staff

Content

Latest developments

The UK extends its training mission in Ukraine

One year after the annexation of Crimea, Operation Orbital began its mission to train Ukrainian military personnel in 2015. Since then, 1,300 British soldiers have trained 17,500 Ukrainian troops in a variety of crafts, such as IED identification, infantry skills and logistics. After Russia's incursion in the Sea of Azov in November 2018, the mission was expanded to include Royal Navy and Royal Marine training of the Ukrainian Navy and after meetings between the countries' defence secretaries, the whole operation has been extended to run until 2023. The Ukrainians' efforts have impressed the British troops, who spoke highly of their learning commitment, resolve and discipline.

Next-Generation Power for Future Combat Vehicles

The U.S. Army's Next Generation Combat Vehicle programme is developing new technological capabilities for power generation in order to support protection systems and tactical networking. By using alternative energy, it aims to innovate power generation and management, increasing fuel efficiency and operational effectiveness. Possible benefits include electric-only 'silent' mobility modes, higher system reliability and situational power generation. To meet the needs of the contemporary battlefield, the programme is also working on integrating AI decision-making platforms into the vehicles to facilitate conducting certain ground combat operations with unmanned vehicles.

The 13 new PESCO projects

Permanent Structured Cooperation (PESCO) is a framework and process to deepen defence cooperation between 25 of the 28 current EU Member States. Since the establishment of PESCO in December 2017, 47 projects have been created towards the implementation of the project, with 13 of those being added in November 2019. The new projects focus on enhancing EU collaborative actions, training and facilities, which will enable the creation of a common ground that will boost cooperation amongst the States. These new projects cover all the domains but are mainly centred around the cyber and space domains because these domains are likely to shape the future of warfare.

How will multi-domain operations change the Army's structure?

Multi-domain operations (MDO) is so far an experimental program with the purpose of learning how to combine and integrate all the domains, to be prepared for the rapid and continuous challenges faced in combat. In MDO, all the domains will need to be synchronised, despite the fact that they all have different tempos, which is why the Command and Control of operations still poses one of the most significant challenges. Lt. Gen. Eric Wesley, Deputy Commanding General, U.S. Army Futures Command, believes in the need to optimise and adapt the formation of land forces to better fit the new style of warfare. The U.S. is no longer the single dominant super-power and the other great powers have increased their capabilities in both technique and weapon range. This implies that Brigade Combat Team (BCT) centred fighting has become obsolete, and so the land forces will have to focus on long-range precision fighting in coordination with the other domains for a successful MDO strategy.

European innovation

Indra, a Spanish military electronics specialist, is leading a program with the participation of France and Sweden, with future involvement from Italy and Germany. This project is a direct consequence of the 13 new PESCO initiatives and aims to develop equipment for the future of European military aircraft with new electronic warfare capabilities that can be fitted inside the combat aircraft or carried in outside pods. Other companies are also starting to develop projects that can be fitted into the PESCO guidelines.

AI in the future of warfare

In the future, artificial intelligence (AI) will be able to interpret the world, find and classify targets, plot a course of action and then follow through to completion. But before being able to apply such futuristic

technology, armies first need to focus on gathering a database of the events that happen in battle, then process the collected data and refine it to provide useful information. AI will enhance the capabilities of soldiers and reduce the effort required of soldiers to process all the information and make a choice of how to proceed, speeding up decision making while in the battle and improving results.

The Next Generation Armoured Fighting Vehicle

Singapore's Armed Forces have created a next-generation armoured fighting vehicle (AFV), fitted with a remotely operated weapons system with digitised and automatic fire control. The turret can be armed with a higher calibre automatic cannon or a 7.62mm NATO-calibre coaxial machine gun. It is equipped with four smoke grenade launchers for increased defence against enemy surveillance and guidance systems. The vehicle's engine, having a power to weight ratio of 24.5hp/t, offers increased manoeuvrability and performance. It can travel at a maximum speed of 70km/h, with an operating range of 500km, can climb 0.6m-high vertical obstacles and cross up to 2.1m-deep trenches, at a maximum front slope of 60%.

EUFOR Multinational Battalion Achieves Full Operational Capability

The Multinational Battalion is EUFOR's high readiness unit, trained in a wide range of disciplines and ready to react quickly to any scenario in support of Bosnia and Herzegovina (BiH) partners to maintain a safe and secure environment. On 21 November, it received certification from EUFOR's commander to mark the achievement of Full Operational Capability. Captain Ali Karabas accepted the certificate on behalf of the Turkish Company at a ceremony held at EUFOR HQ at Camp Butmir. It marked the successful completion of training in Crowd Riot Control, Civilisation Evacuation and Medical Evacuation which was conducted in Rajlovac earlier this month.

The usage of UAVs by the army

Usage of Unmanned Aerial Vehicles (UAV) by the army has vastly increased. They are used as a forward-deployment remote-controlled system that allows reconnaissance of terrain and aids soldiers to locate targets. These drones have been upgraded from previous models with night vision, a more powerful engine and better sensors. These improvements seek to create an integrated system between UAVs, manned and unmanned ground vehicles in the future.

New applications for TerraMax Unmanned Ground Vehicle

TerraMax has created a modular kit that can transform Warfighter vehicles into an Unmanned Ground Vehicle (UGV). This system enables one operator to control various vehicles at the same time, granting more autonomy. The autonomy that such vehicles posses is especially useful to avoid putting soldiers at risk in situations such as road clearing. The aim for TerraMax is to function as a scalable kit that could be used in a different range of vehicles, with the possibility of making them remotely operated as well as manually operated, depending on the user's needs.

FLIR's Common Robotic System-Heavy to handle explosives

The U.S. military has allocated funding of more than $100 million to FLIR Systems for the purchase of 350 Common Robotic System-Heavy (CRS-H) systems. These devices will improve the protection of soldiers who eliminate explosive devices by allowing them to detect, access and obtain the final disposition of dangerous devices in a safe place. It will deliver an enhanced capability to deal safely with improvised explosive devices (IEDs), weapons of mass destruction

and vehicle-borne IEDs. The CRS-H system will have a radio relay, cameras, manipulator arm, cargo carrier rack and operator control unit. The system's manipulator arm lift capacity, close to the platform, is expected to be more than 275lbs. The CRS-H has a speed in excess of 6mph and obstacle clearance of more than 3in.

Nato Alliance Ground Surveillance Aircraft

At the Alliance Ground Surveillance (AGS) Main Operating Base in Sigonella, Italy received the first Nato AGS aircraft in November. The RQ-4D remotely piloted aircraft will provide persistent wide-area terrestrial and maritime surveillance capability to all Nato allies. The system is designed to give commanders in-theatre situational awareness. The RQ-4D is a derivative of the US Air Force Block 40 Global Hawk wide-area surveillance aircraft built by Northrop Grumman. The AGS aircraft will provide ISR capability to protect ground troops, civilians and international borders during conflict and peacetime. The AGS system is expected to reach initial operational capability in the first half of next year.

Indirect fire protection capability

The U.S. Army is redeveloping indirect fires protection capability to prevent rocket, artillery, mortar, missile and drone attacks. The army is working on capacity gaps for cruise missile defence on a temporary basis. Congress mandated the Army to deploy two batteries by 2020 in its 2019 budget. The Army is now experimenting with components, from sensors to shooters, that can be integrated into the IFPC system which will be combined with the Integrated Air and Missile Defence Battle Command System (IBCS). IBCS is already under development for the Army's future Integrated Air and Missile Defence system that will replace the Patriot air and missile defence system.

German and U.S. armies strive for integrated operations by 2027

In October, the chiefs of staff of the U.S. and Germany signed an agreement to start a unique level of interoperability between their formations within seven years. The envisioned strategy sets out an agenda focused on the idea that the forces will be instrumental in keeping the peace in Europe. By 2027, the two countries' ground forces want to push interoperability at an integrated level in regional and global operations. The armies will have aligned information systems, for a common procedure at brigade and division levels for intelligence collection and sharing and joint targeting.

Quantum Radars: Warfare revolution?

Thanks to Austria's Institute of Science and Technology, a new high definition radar, known as quantum radar, presents itself as a

revolutionary upgrade to the radars of today. By pairing photon particles together a much more detailed radar system can be achieved whereby identification will be based on physical characteristics rather than electromagnetic signals proceeding from the target. An added value is the low emission of energy, meaning lower detectability, offering a tactical advantage in warfare.

Next-generation missile?

Fitted with armour-piercing warheads and high explosives, with a speed of 2000-2500 km an hour, the Ukranian defence contractor Yuzhnoye seems to be creating an unstoppable missile. Currently under development, the Bliskavka "Lightning" missile could become a threat to Russia's Black Sea Fleet. However, the real question is whether this missile would certainly be unstoppable. According to different sources, the main problem will be its flight altitude, which will be similar to a cruise missile. Similarly, detecting and shooting down a Lightning missile would take 30 seconds, which makes it a difficult but not impossible task. Regardless, it is hoped that Lightning will contribute to increasing the cost and risk of Russian military action, with the hope of deterring Moscow from such attempts.

DSEI 2019

Held in London from 10-13 September, the 2019 edition of the Defence and Security Equipment International (DSEI) expo showcased a multitude of defence technology and innovation, with a strong emphasis in the Land Zone. Comprised of 1,500 exhibitors and more than 80 countries, industry kingpins met with next-generation pioneers and armed forces officials to discuss, discover and demonstrate the vanguard of the defence and security landscape. This year's edition's focal point included the relevance of drones within land forces as well as the development and modernisation of vehicle platforms. DSEI serves as an intermediate platform for the European armies to progress and achieve interoperability.

NATO's 70th anniversary

NATO's 70th anniversary comes at a delicate time for member states. Having prevented conflict and preserved peace for the past seven decades, the alliance currently faces several challenges. Tensions with Russia keep rising and the U.S. President's commitment to the alliance has become questioned. Other challenges include European efforts to create an alternative security alliance excluding the U.S. as well as the question of how to address the security of the Baltic states. There is no clear path as to the actions the alliance will take, but if the 29 members want to overcome these challenges, strong commitment and willingness will be needed.

Dubious claims of autonomous armed strike drones

In September 2019, Russia held its huge strategic-level military exercise, Tsentr-2019, in conjunction with forces from China, India, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan and Uzbekistan. Reportedly involving 128,000 troops and over 20,000 pieces of special military equipment, the wargame also included a first test: small drones that autonomously located and bombed targets. However, the drones in question, Orlan-10s, purportedly have a maximum takeoff weight of 15kg, limiting the weapons they are able to carry and raising queries over the authenticity of the claim.

Increased European involvement and cooperation in Mali

France has long been trying to convince European partners to assist with Operation Barkhane in Mali and the Sahel region. The force already includes a small Estonian contingent and helicopters from the United Kingdom, with Denmark deploying two of their own helicopters and personnel in December. France is aiming to set up a Combined Joint Special Operations Task Force for the Sahel in 2020, with Estonian special forces already set to join. The increased cooperative effort is promising and may lead to more successes like when in October, French troops eliminated the 'second most-wanted terrorist in the Sahel', Ali Maychou.

Worldwide shortage of cybersecurity professionals

Cybersecurity nonprofit (ISC)²'s workforce study, 2019, revealed that the demand for cyber expertise is going vastly unfulfilled. To make matters worse, the shortage is growing at a blistering rate, with over a million more vacant positions in 2019 than in 2018. In an environment where cyberattacks are becoming more frequent and sophisticated, cybersecurity professionals are of paramount importance. Significant progress must be made soon to close the talent gap as the report stated that the workforce would need to grow by approximately 145% to be sufficient.

THE ARTICLES WERE WRITTEN BY CATALINA LOPEZ, FLAMINIA DEL MONTE, PAULA ESPUELAS, ALEXANDER JEACOCKE AND LAZAROS GALANOMATIS

EXERCISE CELTIC UPRISE
Source: © Martin Gillet

The CaMo Programme

A Strategic Partnership to Modernize the Belgian Army's Motorized Capacity.

Interview by Paul-Alexander Cramers

Major General Pierre Gérard

Belgian Land Component Commander

Could you quickly present the CaMo partnership?

The CaMo Programme is a partnership between two countries: France and Belgium. The most visible aspect of the programme involves the acquisition of new military vehicles by Belgium. We'll start by buying the Jaguar and Griffon armoured vehicles and we hope it won't be limited to just that. However, the partnership is not solely about the acquisition of new military vehicles. Because the CaMo programme involves a partnership with France for the modernisation of our motorised capacity, it links us to their new interconnected weapon systems under the Scorpion Programme. Therefore, there are two parts to the CaMo Programme, the first being the purchase of new combat vehicles and the establishment of a partnership with France. The second and less visible part, which can be considered as the backbone of the project, involves acquiring new communication systems, new software, and digitalisation of our motorised capacity which stems from being part of the Scorpion Programme. For the Belgian Land Component, this second part is very important, possibly even more so than the acquisition of new vehicles and hardware.

Beyond the purchase of new equipment, an important consequence of this intergovernmental agreement signed between Belgium and France is the de facto alignment between the two countries at an operational level. Thus, the CaMo program clearly allows a rapprochement between our two armed forces in terms of training and will also facilitate operational collaboration.

Why did Belgium decided/needed to create a strategic partnership with another country to renew its motorized capabilities ? And why with France ?

On a purely technical and military level, and not technological, the choice to pursue a partnership with another country to modernise the Belgian motorised capacity is the result of a combination of three main factors:

1. The complexity of today's weapon systems. Unlike a few decades ago, it's not just about replacing a few guns and ammunitions anymore. Nowadays, weapon systems are technologically much more complex and they evolve at a much quicker pace.
2. The challenges ahead. At present, in stark contrast with the period which followed the fall of the Berlin Wall and where we were mainly engaged in Crisis Response Operations (e.g. Afghanistan and the Balkans), what is being asked of the Belgian Land Component is to defend NATO's territory within the framework of Article 5 of the Alliance's Charter, and therefore potentially engage in warfighting. In order to be able to achieve this, what is required is mass.
3. The lack of resources in Belgium to coherently develop and manage such programmes, especially in light of the fact that each of the three components of the Belgian armed forces have one or more major modernisation programmes underway. The Air Component is replacing its F-16s and C-130s with F-35s and A400Ms. The Navy will be replacing its frigates and its mine warfare vessels. Finally, the Land Component is aiming to modernise its

motorised capacity. Thus, given the unprecedented scale of the projects being undertaken by each component of the Belgian Armed Forces, it can not afford to embark on such a project alone. Hence the decision to develop partnerships with other countries in order to minimise the burden of the overall process for the Belgian Defence.

The willingness to create a partnership is also linked to the fact that, today, no one works alone anymore. This is particularly the case in Belgium, where the Navy has been working for a long time with the Dutch Navy, and in a similar fashion, the Air Component works in a very integrated way with its Dutch counterpart, whether it's in Afghanistan or in Jordan. Moreover, with the purchase of the F-35s by both Belgium and the Netherlands, the two air forces will increase their level of cooperation even further.

For the past twenty years, Belgium has not deployed its military forces alone. Our participation in the Balkan operations in the 1990s was the last time that Belgium had a large national footprint in an operation abroad, as highlighted by the deployment of a "Battle Group". However, since the beginning of the 2000s, Belgian military operations abroad were, without exception, carried out in an integrated manner with partner nations. Particularly in Afghanistan from 2002 and 2003 onwards, where the Belgian forces worked jointly with German forces. In Belgium, there is a general tendency towards building partnerships. Even if there is no European army, we already extensively work with our European partners. There are two main

"For the past twenty years, Belgium has not deployed its military forces alone."

reasons for this phenomenon. Firstly, this allows single countries to reduce their contribution to military operations. Secondly, multinational operations are often seen as much more legitimate than those being launched unilaterally.

Now, concerning the question about the choice of France as the partner for modernization the Land Component's motorized capacity. In addition to being our neighbor and culturally quite similar to us, France has one of the most proactive, militarily committed and experienced armies on the European continent. By excellence, the French Army, is the army that can pull up the Belgian Land Component.

Emblem of the Belgian Armed Forces

It is often pointed out that Belgium is not only buying new armoured vehicles, but new capabilities. Could you elaborate on that?

Clearly, we are buying new vehicles, radios and software. However, as far as the rest is concerned, and by that I mean everything intangible, our investments go more into the frame of a partnership rather than a purchase. From my point of view, we are not buying commitments to take part in operations, we are not buying doctrine and we are not buying training. All those elements are part of a partnership and the desire to create synergies between the two armies in order to operate together. It is precisely that desire to train and work together that lies at the heart of the CaMo partnership, alongside the purchase of new vehicles for the Belgian Land Component.

As far as doctrine is concerned, Belgium does not buy doctrine from France. Rather, the two armies will align their doctrines. This makes it possible to pull our doctrines together in order to bring out a common doctrine. However, it is important to note that Belgium has never had an extensive doctrinal culture. Since the end of the Cold War, in Belgium, there has not been any major doctrinal initiatives and the doctrine being taught at the Royal Military Academy has been highly inspired

by that of the US armed forces. In addition, as far as the higher echelons are concerned, there is a sort of doctrinal vacuum in Belgium. Therefore, it is not a bad thing to fill this void with the help of the French army. More particularly, because I believe there are many good things in the French doctrine, such as the emphasis on "l'initiative" and "l'effet majeur", which in the American doctrine are referred to as "Mission command".

However, we should be under no illusion since a doctrine is merely a manual and an operating concept. It will not change the "mindset" of our soldiers, or at least, not in the short and medium term. Besides, this is not what we are seeking to do. Even after the alignment of our doctrines, there will still remain differences between a Belgian and a French soldier, especially in the way they execute their missions.

To summarise the path we have chosen with the CaMo partnership, I would say that this is a joint acquisition of equipment and weapon systems, which represent the tangible part of the agreement. Parallel to that, there is a quest for synergies and mutualisation between the two countries for all that is in support of those weapon system, that is to say: training, maintenance, logistics, etc. Concerning the doctrine, it's a question of synthesizing the best ideas on both sides, because Belgium also has valuable input and strong points, compared to France, in this domain. All this, of course, in line with a philosophy of "win-win" for both countries.

What are the operational consequences for the Belgian Land Component in light of this partnership with France ?

A partnership must be a deal where both sides are gaining something. Although some believe that France is receiving money from this agreement, the total amount that Belgium is paying remains marginal for France in the long run, especially if you compare it to the scale of the French economy. What France probably expects from Belgium from this partnership is greater cooperation in terms of military operational commitments. For France, this is probably where there is political value. Thus, for the Belgian Land Component, I am convinced that the direct consequence of the CaMo partnership will be more targeted, more decisive, and more concentrated operational commitments. Indeed, rather than having military personnel deployed in small units as is now the case, we are aiming for commitments in operation at the company level starting from 2021 and at the battalion level from 2025. If possible, in partnership with France, for two reasons. First, it was with them that the CaMo technical-military partnership was established. Second, (with other European partners) we share common regional security interests that roughly translate to the north African and Sahel regions. For my part, I remain convinced that the security situation in Africa is Europe's greatest challenge for the next thirty years.

in the future, with the modernization of Belgian motorized capacity, is it conceivable that the Belgian land forces will be engaged in a more intensively in military operations?

The CaMo partnership could probably translate into a more intensive operational involvement for the Belgian land forces. However, rather than intensive, I would prefer to use the words "more decisive operational implication". By this, I mean that the Belgian Army will go where there is a strategic value and where it will

EBRC Jaguar
Source: Army Recognition

have a decisive role to play - a role that will be linked to our national and European security interests. Moreover, the arrival of new vehicles from 2025 will not prevent us from already operating alongside the French forces with our current vehicles, regardless of whether those vehicles are in the meantime "Scorpionised" with new radios and the required software or not.

Do you believe that this partnership can be extended (opened-up) to other countries ? Can it serve as the framework for multilateral cooperation at the European level ?

The CaMo partnership involves two major risks. In the Belgian Land Component there are two main capacities: the motorised capacity that will be "Scorpionized" and the Special Operations Regiment (SOR). However, each one of them is moving at their own rhythm and with different starting points. The SOR is currently one step ahead and is moving in a direction that has largely been set-up for and by itself. As the Land Component Commander, my role is to get those two pillars of the Belgian Army to move in the same direction and keep them aligned. The second risk is that interoperability with the French land forces will be detrimental to interoperability between the Belgian armed forces themselves. For example, it is absolutely essential that the soldiers of the motorised units - who will eventually be "scorpionised"- continue to be able to communicate with their Special Operations colleagues. This operational risk is currently being addressed and I am convinced that in the long term we will be able to resolve it. Nevertheless the risk exists.

Moreover, when I speak of the risk to our internal interoperability, I am not speaking solely about the Belgian armed forces but also the interoperability within the Benelux region. This is a topic that remains very important to us, especially given the high level of cooperation and integration of the Belgian Navy and the Air Component with their Dutch counterparts, as well as the very strong operational cooperation that we have with Luxembourg. Moreover, in some aspects such as the ISTAR (Intelligence, Surveillance, Target Acquisition, and Recognition) domain, we believe that Benelux is one step ahead of France. For these reasons, we do not want interoperability with France to be detrimental to our current level of cooperation and interoperability within the Benelux.

This positive dynamic within the Benelux countries can be very beneficial to the European defence project. Indeed, if within the Benelux, cooperation remains strong and we have, on the one hand, Belgium which has a partnership with France, and on the other, the Netherlands which has a partnership with Germany, in the long term, we can very well imagine CaMo acting as an additional bridge between France and Germany. There are already a number of bridges between Germany and France, either through the Franco-German Brigade, the Eurocorps or through other more limited projects in terms of more limited ambitions. Thus, in the longer term, the CaMo partnership can serve as an additional link between France and Germany, while including the Benelux in it and has the potential to become the nucleus of a European interoperability project that can unify future initiatives.

Strategic Autonomy in European Defence

Interview by Alexander Jeacocke

Prof. Dr. Sven Biscop

Director of the Europe in the World Programme at Egmont Institute.
Professor at the Ghent University

Can you introduce some of your recent work and research?

I focus on two main areas. The first is the big picture - grand strategy. We are back in a world of great power competition, though the powers also still cooperate. So, I look at how to position the EU within this world where the other global players are continent size actors: China, Russia and the U.S. The other topic is specifically European defence and how to organise the military dimension of European power.

As the director of the Europe in the World Programme at the Egmont Institute, can you tell us what the programme has recently been doing?

We look at everything that the EU does outside its borders. Some of the topics in this big picture include the grand strategy of Europe and its relations with other great powers, European defence including NATO, geo-economics - an ever more important dimension of strategy, and then the EU response to various threats with a focus on counter-terrorism plus also a bit of non-proliferation and cyber.

In general what do you think the contemporary drivers are of European defence?

I think that what is driving it now is, on the one hand, the realisation that, although we within the EU might be nice to each other, not all governments outside the EU are; some states regard the use of force as a normal instrument of statecraft and won't hesitate to use it. So we have kind of woken up to that. And then there's a realisation that there's a lot of really high-level competition going on between great powers. At the same time, one of the great powers that is our ally, the U.S., is rapidly changing. They have shifted their focus to Asia and China, so we're no longer number one. That can be managed but it has to be managed, it will not solve itself. We have to decide on how to deal with it. But of course, the current administration and its political approach makes this more difficult. So I think that plus Brexit drives it. That is what I think is, in reality, driving it. I would say that one should realise all of this has much deeper structural causes. The moment the Cold War ended is when America and European grand strategy were logically going to diverge somewhat.

Because what held them together was the common threat of the Soviet Union and the Warsaw Pact, it is logical that when that disappeared other priorities came to the fore and that they were not going to be as convergent as before. Already from the post-Cold War period, the early '90s, the Americans have always said that in Article 5 situations they will be there but we have to pay our share. But in non-Article 5 scenarios around Europe, you have to deal with it. That's why we began with first the ESDP and then the CSDP. So in a way, the Americans themselves wanted EU strategic autonomy even though the term was not used in the '90s - for us to be able to take care of our business for crises around Europe, that we would achieve, in other words, strategic autonomy in the expeditionary field. So in a way, I don't see why this has now become a contentious word, this is the official purpose of the CSDP since 1999. So we should not be too apologetic. I think it's a deeper structural reason and added to that now is that since the 2000s the Americans have realised that history has not ended. They have another peer competitor in China and so added to this divergence is the fact that the U.S. has shifted priorities: China first, Europe second or third, but certainly not first. We also view China very

differently, so it's not just that we're not the focus, China is, but that we see the role of China differently. That's a deeper structural cause. Hence, this divergence would have happened regardless of who sits in the White House.

So you don't think the U.S.'s position is so much determined by Trump being president?

The basic thing about China and how to see the world order was going to happen anyway. The fact that the U.S., in the end, will always put its own economic interests first is also logical but probably another president wouldn't have gone to such extremes and would have found a more conciliatory way of doing that. But it's clear that no one's going to defend our interest for us, that's the main conclusion. But still, many European leaders are tempted to pretend none of this is happening and to pretend that in the end, when push comes to shove, the U.S. cavalry will come. That's tempting of course, because if that's true then nothing is urgent as the Americans will always save us. But I think that is becoming a really big gamble because they might not come in some cases or they might come later or in smaller numbers than what we counted on.

You've spoken about how the goal of NATO is to proceed towards EU strategic autonomy, but recent attempts Europe has made to do so, for example with PESCO projects, has been met with criticism from the U.S. Do you think this is a bit of a contradiction from their part?

Yes, and that's why Europeans were so surprised. I think what is irritating about it is that it's so clearly driven currently by concerns about U.S. defence exports. If the U.S. market were open to our defence exports then at least you could say 'alright', but it isn't. Again, it goes deeper than the current administration. It's an ambiguity that's been there since the moment we launched the ESDP. On the one hand, they want us to do more but on the other, they still want to remain in full control. And those are not reconciliable, the one that does more will also want to have more of a say in the decision making. But it cannot be solved because we also can't really make up our minds, we want to be autonomous but not too much - we want to be autonomous while holding onto mum's sleeve. That's why we remain in this limbo forever. My take is that if we are serious about strategic autonomy we should just disregard the American criticism and just do it, with full transparency and tell them this is what we are doing and why we are doing it. Then the results will speak for themselves. If however, we are not serious about it then, of course, we have to ask ourselves whether it's worth upsetting them if we're not actually going to do it, if we are, just like in many other cases, just pretending. But if we are serious about it then I would say just do it. Then let the results speak.

> "...the U.S., is rapidly changing. They have shifted their focus to Asia and China."

Do you think the PESCO projects are a substantial step in that direction or is it a bit of a halfway house? Are you enthusiastic and encouraged by the recent additions?

No. There is too much of a focus on the projects but the projects are not the purpose, they are a way to the purpose. The purpose for me is the coherent full spectrum force package that Europeans together need to put into the field and so what I think PESCO has come to lack is an organising principle that I would propose is the force package. And it kind of fits, I think, with the Finabel mandate, if we look at one of the PESCO projects, which so far exists only on paper, the CROC - the Crisis Response Operation Core. Let's say we should see this as the beginning of this force package. Let us put together a corps, of which the national building-block that member states contribute is a brigade, except for the smallest member states. Because for the bulk of the member states, the brigade is

PESCO
Source: EUROMIL

the level they can still autonomously achieve, but the smaller states have difficulty making it fully employable because they don't have the scale to organise everything around it that you need. If you put these brigades together in a bigger structure then you can, through a combination of pooling and sharing, organise all the combat support and combat service support that you need. So let us focus on this CROC as the central project of the PESCO projects which the others will aim at supporting. The aim then, of the project, should not just be that member states do joint procurement to then equip purely national forces, we're not going to get strategic autonomy that way. Let the aim be that we do projects that support the building of this CROC, of the full spectrum force package, because ideally we then harmonise equipment and so on, and if you want to use that corps you need enablers. The other projects should create the enablers that no member state alone can design and build. And of course, we would also later have to do the same in the naval domain and the air domain. But somehow, intuitively the logic works. In the Cold War, there was a national building block that was actually a corps. Even a small state like Belgium put a corps into the line, by the Iron Curtain - the 1st Belgian corps. So all of that was national and it was supported by themultinational NATO command structure and a few select ultinational assets, like AWACS. Now, of course, we don't have that scale anymore, so I think the national building-block should be the brigade integrated in a multinational corps with coordinated support structures and multinationalised enablers. And that can be used both to meet our EU targets and our NATO targets. But for now I think there is too much of a focus on projects and there's no organising principle. I think we lost sight of the purpose.

Going back to before when you mentioned the natural divergence between the U.S. and Europe, do you think there's a natural divergence in threat perception within the EU which is often reflected in defence spending. Do you think this is a problem or something that is easily overcome?

I would phrase it a different way. Let's take Poland and Portugal. Of course, Poland is much more sensitive to any threats from the East and Portugal probably more to any threats from the South - that's their national view on it. But the fact is, for the EU as a whole, both matter equally because the national borders don't matter much in terms of security and defence as we are a single market, it's one economy in a way. And for most member states one currency and the Schengen zone. So if I look at it as a Belgian, it's not the national border of Belgium that matters much for our security. It's the border of the single market, of the Eurozone and the Schengen zone. If that border is breached anywhere there will be an immediate effect economically on Belgium, Portugal and Poland. It is one entity and even though the first impact of a threat may hit a specific member state or a specific flank more than others, it will have an immediate effect on the others in my view. But of course, this is the economic basis - in a way, it's a bit of a Marxist picture - the political superstructure when it comes to defence is still organised on a national basis even though the reality of what we are protecting and defending is actually a multinational economy. And that's the mismatch that we have created.

Do you not think that until that is realised and understood by the people and populations of the nations then those nations may not necessarily be willing to sacrifice their own people to defend something that they don't consider to be a direct threat to them because it's outside their national borders?

Well, I do think people in a way know this, because we've seen

this with the migration issue. I would not put it in the category of security and defence, but with the migration issue people arrive at a point of entry but will end up in another part of the EU. We see that all this is connected. The question is how do you then respond: do you respond by saying "oh obviously we need a joint European approach" or do you say "oh let's retreat on to the nation-state", which is not going to work because the European nation-state no longer has the scale to deal with this. That's why we should be smart and be frank with the public instead of the easy populist way of using national sentiment to gain power or stay in power. We should be frank and say we can no longer do this, this has to be Europeanised.

What do you think of the current and perhaps near-future role of land forces in a strategic sense? Do you think there's a need to reinvest in this area? For example, if you consider artillery, recent studies have shown that the UK, for example, would be extensively outgunned in a major ground operation against Russia who has already shown its artillery capabilities in the Donbas region. Do you think this is an area Europe is} particularly weak in and needs to develop?

Sometimes people say that there is no need for all of this because they say future wars will just be fought in cyberspace or they will be fought by unmanned platforms. I think that's a mistake because cyber is just another dimension. Adding a dimension doesn't mean that land, the sea and airspace disappear. They're also still there. So if ever we'll be in a war, it will be fought in all dimensions at the same time. There will probably be more unmanned platforms but in the end, to hold ground you still need people. To govern, you will still need people. So you will definitely still need the army land forces in my view. Plus, we need to be sure we can deter any aggression against us. That includes sufficiently powerful land forces because I would argue that Europeans need to think of themselves as a first line of defence, even within NATO, that has more staying power, even without our non-European allies. Not because I think they would give up on us, but because the focus of the Americans is on Asia and China and it might well be that if there is a crisis in Asia, the U.S., although it will be very willing to help us in a crisis here, might be slower in responding. So we need to make sure that that first line of defence - deterrence and defence - at least in conventional terms, is sufficiently powerful. But you also need to be able to deploy outside Europe and there I think our approach if we can, should be very much centred on the human domain. We try to enable our partners to deal with our security problems and that means putting highly skilled people on the ground to train them, to assist them, to enable them. So I think it's short-sighted to say we can do without the boots on the ground because, in the end, you are not going to send an unmanned platform to talk to people in Mali or to train the special forces in Niger. You're going to send people, both civilians and military people. If you're going to train special forces in Niger, then you're going to have to send European special forces.

What are your thoughts on the Defender 2020 exercise? Do you think it might point Europe back in the direction of relying on the U.S.?

Deterrence is all about creating a perception on the other side, so we have to do these things. And I'm not doubting the U.S. commitment to

Egmont Palace
Source: Egmont Institute

NATO and collective defence. I may doubt the commitment of certain individual Americans, but I don't doubt U.S. commitment as such. I'm also not advocating that we take our distance from the U.S., although I think the current administration has taken distance from us. What I'm saying is that if you just look logically at the geopolitics of today it could very well happen that there is a crisis in Asia that would absorb a lot of U.S. attention and even resources and that therefore we better be prepared to increase our own staying power pending non-European reinforcement. So the one fits perfectly well with the other, we need these big manoeuvres with the Americans but at the same time, we need to know what we can do ourselves if needs be.

What kind of timeframe would you suggest is feasible to reach strategic autonomy?

In my writing, I distinguish three dimensions. In the first, domestic security, of course, we have strategic autonomy, it's mostly a national competence. I would just suggest there are fields where we can do more together to make it more effective; we are doing that with FRONTEX for example. In the second, expeditionary operations, I would say that is now the focus. In theory, we have been committed to this for 20 years, but we haven't done it. So we should now just do it. This is between 5-10 years that we should be able to do this. Then the next dimension is to create a degree of autonomy in territorial defence and that is, of course, a long term project that can only be achieved in my view by more integration of defence efforts. Spending more alone will not get us there, we also need to build the coherent full spectrum force package and integrate it.

Do you think that puts us in the inevitable direction of a European army, do you think that's something that's completely far away and do you think it's even viable?

Objectively speaking it would, of course, be the logical thing to do. If you were to start from scratch and say here's €200 billion, organise the defence of Europe, you would create one army, one navy, one air force. But you can't start from scratch. You also know that the term and the idea antagonises lots of important players so its probably not smart to make this the official goal and to say that PESCO, for example, is a step towards a European army. It could be but it doesn't necessarily have to be. So I would say that although this to me is a sort of European defence community type thing of the 1950s, it would still be the most rational thing to do. But there's a lot that we can do short of that that would also create great effect. I do think we should move from cooperation to integration. It's not just about creating interoperability because if you're perfectly interoperable between 28 armies who are not very capable anymore, what does that buy you? You can just be not very capable together. So the next step is more integration of efforts and I see that happening at two levels. One, clusters of member states that anchor their manoeuvre units into bigger formations, such as in the CROC. But you could also say you could engineer air squadrons into bigger groups. That's one level where, in each capability domain, you can have various clusters of three or four states in each. And they can then within each cluster organise pooling and sharing of support. But then there are certain areas that are so capital intensive there's really only space for one big cluster - a space program, a drone program, FCAS. So there will be one big cluster that will hopefully lead to one jointly operated capability that can support any of the smaller clusters that go into operations. That's how I see the coherent full spectrum force package can work. That's not one European army but it would be a much more coordinated modular set of forces, the basic blocks of which would still be national but they will be national elements of what together will be a truly multinational force package, which is not now what you have.

"My ideal future is that NATO would be a bilateral alliance [...] between the US and the EU as such."

Finally, what do you foresee as the future of NATO?

My ideal future is that NATO would be a bilateral alliance. So instead of being an alliance between the U.S. and all the individual European states, which are actually no longer players on the world stage, I would say ideally if we, through the EU track, take integration seriously, that ultimately you'd create an alliance between the U.S. and the EU as such. And then you have a much more balanced alliance. Of course, other members will still also be welcome. The UK, for example, if it goes ahead with Brexit and others - Turkey and the Europeans that are not in the EU. But the core of it, in my view, is that it would be much more logical to have a bilateral alliance between two equal halves so to say. That's obviously not a short term task but that for me would be my line of march.

Some people say that in the direction of a European army there is no place for NATO. Do you think its more a matter of cohesion?

I think that we're back in a world of great power rivalry, so if you have an alliance with one of those great powers, it would be rather silly to give that up. So we have to maintain NATO, but we have to reconfigure it. I would say that in reality, the political centre of gravity of Europe is the EU. Its the only viable political centre of gravity. It has many imperfections, specifically in the fields of foreign policy and defence policy, but its the only potential centre of gravity that can hold its own in a world where the other powers are continent-sized. So that's the actor which the U.S. should engage and make an alliance with. I think it's a false dichotomy that people create, to say that what we do with the EU is bad for NATO because NATO is just a tool. The EU, however, is an actor. Saying that if you strengthen the EU you weaken NATO is the same as saying if you strengthen the U.S., you weaken NATO - no of course not, because what the U.S. has can be used for NATO. So if you strengthen the EU, you also strengthen NATO because EU members are a constituent part of NATO. That's my longterm view of it.

> "...we have to maintain NATO, but we have to reconfigure it."

Drone - Belgian Army
Source: © Benoit Denet

The Culture of Innovation in the Belgian Army

Interview by Alexandre Vissoky

Maj. Jeroen Franssen

Information & Innovation manager of the Land Component Command at Belgian Defence

The title of your current position is Information & Innovation manager of the Land Component Command. What are your main obligations and the challenges you encounter?

My position was created ad-hoc in light of my research paper on Innovation and Defense organisations and the interest demonstrated by the Land Component Commander of the Belgian military in the area. The main idea was to institute a bottom-up approach to innovation and create a more innovative culture within the military itself. My role as an information manager is similar in the sense that while a lot was already achieved, there is still a lot of work ahead of us. I tend to focus on possible disruptive solutions, such as a proposal to create a mobile app for soldiers, on the information side. Both positions entail a new paradigm, and at times that is met with resistance. Currently, there are important discussions ongoing on how to integrate innovation into the military.

The main challenges relate to the culture of the Belgian military. Senior management is at times unconvinced on the importance of these disruptive technologies. Particularly so in the land component, our mission is to prepare units for deployment, so we are dependent on other branches. The bureaucracy can be at times crippling, so we tend to try to work around these issues where possible. According to relevant literature, innovation tends to start with senior management otherwise the mid-level officers kill projects, so this support from high-level officers is fundamental to develop a culture of innovation within a military. Relating to our own military, we need to develop a culture of accepting more risks related to innovation. By its very nature, innovative solutions are susceptible to failures and setbacks, so sometimes innovation is met with suspicion. Another issue relates to procurement power and the fact that we can only suggest the purchase of equipment, the Land Component Commander himself included. The current political situation also limits our budget at the moment, and of course, the amount of money that can be dedicated to innovation. We need a cultural and bureaucratic change to foster innovation within the Land Component Command.

What are the main disruptive developments in the Land Component Command, in particular, those related to the supply chain and maintenance?

One of my goals currently, and it fits with your question, is buying drones for transporting cargo. They are small, portable and serve to spot the logistic and supply chain needs in a particular situation and also do surveillance from a supply chain perspective. I wrote a paper regarding the future of robotics and autonomous systems and I see a very big disruptive development in that area. Also, besides the ISR and surveillance drones I mentioned earlier, using land-based semi or fully autonomous systems will reshape our entire supply chain.

I am also a supply-chain/logistics officer and the way we currently handle things is by relying on centralisation of stocks. These new technologies might enable us to be more flexible and, with this flexibility, be less vulnerable to problems related to centralisation. In addition, it slows our logistic systems down since it requires drivers and a warehouse. So, I believe these things will completely disrupt supply chains and maintenance and, in turn, create a

more cost-effective and efficient military. We see technologies like platooning of vehicles already being tested in the United States and those types of developments are very important in my opinion

On the maintenance side, I believe something that could help tremendously in the future is robotics. I am not sure if you have seen the new Boston Dynamics "dog-like" robots; they could be used in a wide range of situations. For example, if we have trucks stuck in the mud, you could have tens of those robots pulling the truck out of its situation and tests were undertaken by Boston Dynamics to prove that possibility. These capabilities were already proven by Boston Dynamics in their labs. They are flexible in their utilisation and could become a very important tool from the maintenance and logistics side especially regarding recovery solutions. On the other hand, we need to adapt our maintenance requirements to be prepared to welcome these new and smaller (in comparison to big tanks and vehicles for example) technologies..

What is the importance of innovation for the militaries and in particular land forces?

As I stated in my research, in the '50s and the '60s defence organisations and armies were the primary drivers for innovation that would later trickle down to civilian uses. A very well-known example includes the development of GPS systems by DARPA. Unfortunately, that is not the case anymore, with most of the developments coming from the private sector, particularly with the advent of the IT revolution. As a result of that, we have lost the initiative in regard to innovation following the fall of the Berlin wall. While the military also profits from these civilian innovations, so do our foes. A great example of this is the usage of small and micro weaponised civilian drones by ISIS. The DGIs first came into the market around 2013 and the group was quick to take advantage of this situation effectively creating a new class of threats that the military was not prepared to cope with. This was mainly because the military focused on bigger aircraft such as planes and helicopters that can be seen or heard from a long distance. I believe that if innovation was still centred around the military, we could have not only used these tools ourselves but also created ways to deal with the usage of it by our foes prior to them having access to these technologies. But since that is not the case, we have had to catch up to its usage.

With the acceleration of the propagation of knowledge, we need to reform our procurement systems. These systems were designed to work well with bigger, more expensive technologies and unfortunately are not as effective for newer developments. An example is the recent purchase of F35s by our military. We are not capable of addressing those technological evolutions with our current systems, it is just impossible. I am currently drafting a request for using augmented reality and in the best-case scenario, it will take us 3 years until we procure something. This is not compatible with the current pace of technology. Innovation does not only relate to technology itself but also to the processes by which a military acquires said technology. Innovation is an engine that can drive cultural change and ensure that you have the possibility to be on the forefront of not only developing technology but also employing older technology creatively. As a human-centric part of the military complex, the land forces, unlike the Navy and the Air force who primarily deal with equipment such as planes and ships, are historically the slowest to adapt to innovative solutions and technologies. In this context, innovation becomes even more important for the land force components of the army.

"I tend to focus on possible disruptive solutions..."

How does 3D printing change the field and impact new technologies

That is a very good question. It is also a great example to show how slow we can be with the implementation of these innovative technologies. I did a project on 3D printing where we bought entry-level printers to explore their capabilities and military applications as a way to convince senior officials of their usefulness and versatility. Three or four years later, despite efforts, we are still not procuring printers on a larger scale. This technology might also have gigantic implications on the supply chain side of operations particularly relating to spare parts.

The availability or lack thereof, of these spare parts, is problematic. I started my career as a spare parts supply chain officer and it is very complicated to make correct estimates of the necessity for spare parts during deployment. For example, the A400M was designed to be able to use 3D printed spares. For example, they have an oil filter that in the past we used to replace with consumable parts - it is 3D printed nowadays. Furthermore, companies like Airbus have a long-term view to get rid of warehouses and focus on 3D printing. 3D printing is a very broad term that encapsulates various different processes. For example, you have the most commonly known 3D printing which takes material and effectively "prints" a structure, but you also have other types such as the "chiselling" down of a block of aluminium until you have the necessary spare part. If we focus on the first type, it will have an enormous impact on the supply side of things and it's imperative that we get on with the times in that matter.

> "...I believe something that could help tremendously in the future is robotics."

Printing 3D weapon
Source: Cellebrite

We have guys in Mali now that only receive one resupplying aircraft every five or six weeks. When I was in Afghanistan and Kosovo it was the same, there were times where I had to wait six weeks for a resupply. In Lebanon, I had a truck disabled for four weeks because I was missing a small plastic part of a couple of millimetres that could have been easily printed.

The technology itself is not new, I bought my first printer almost seven years ago, so it's not per se an innovative technology but our implementation within the Belgian military is still slow, unfortunately. We have lots of cultural problems that slow this development down. There is a distrust in these technologies and safety concerns usually slow down the implementation even though these machines are significantly more accurate than any human welder, for example. When I was a company commander, I had welders working for me and nobody ever questioned their work. To me, this disparity is a strange phenomenon. Thankfully 3D printing is becoming more common and widespread, for a fact I saw today that you can even buy those at Aldi. Even if we only applied this technology for the small plastic parts, which are cheap, it would be a game-changer. You can have, as I

mentioned earlier, a vehicle out of order because it is missing a small plastic piece worth cents at most. For those situations, it would be truly revolutionary to adopt this technology more widely. Other armies seem to understand this, for example, the United States army now deploys alongside their missions a small trailer equipped with all sorts of 3D printers in the field. The European Defense Agency has a proof of concept of a 20ft container where they have an FDM printer and other types of printers inside that container. They used those in an exercise in Spain last year and printed spare parts for their A400s very successfully. The biggest advantage of implementing 3D printing is what I call the dematerialising of your supply chain. Even if the part is not available, or if there is no available design of it, I can have it drawn and have the project sent electronically to the battlefront on demand. This is a big revolution in the field. There are people talking about 3D printingparts in Belgium and storing those at warehouses. This is not the best way to use that technology in my opinion. It should be as close as possible to where it is needed.

The Dutch Navy is doing this very well, as theystarted putting printers in their frigates. They also have officers tasked withreverse engineering parts that do not have available drawings for 3D printingand that is something that, if we had the budget, I would love to seeimplemented in the Belgian military. That way we can save money on orderingthose designs, for example. Also, some of our equipment consists of legacydevices where the design for3D printing is not always available, so having the necessary manpower and technologies would be truly revolutionary.

Are there any plans to harmonise maintenance for the land forces that use the same vehicles?

No, for the moment it is complicated. Even with the current partnerships in place such as the CaMo project, despite us planning to have the same vehicles and a certain level of embeddedness with the French military, even there logistics (maintenance included) remains a national responsibility. So, there is a lot of work that could be done to harmonise this. We have a common contract for a few European countries with Airbus and we lack something similar for land forces. The problem is that there is a lot of variability of equipment. For example, the Germans have Dingos and so do we. While the body and wheels are the same, the entire rest of the cars changes, including the engine, interior designs and radios. It is a very complex national budget-driven process. Enhancing interoperability is unfortunately not an argument accepted by the procurement side of things. If we state that we want to buy Dingos for interoperability reasons that is a point that will be largely ignored. It is a matter of the institutional culture within the land force component and even the army. Not everybody likes to hear that, but even for ammunition, we have issues. It is a field where we could easily reach interoperability but unfortunately, we are not quite there yet. In Belgium, we have over 15 types of land-based systems we have to support. This serves as an example of how we are still lagging behind in relation to interoperability. Twenty years ago, the armies were looking at integrated platforms like the Boxer for example that was created back then to use one common vehicle terrain and engine that could be modified and adapted with “lego-box” like components depending on its usage. It was a project that I liked a lot, but for reasons unknown to me, Belgian defence bought something similar to it a couple of years ago but from American origin, the Piranha. Despite it being a great vehicle, it is one that no one else around possesses and these types of decisions slow down the possibility of interoperability. We have Piranhas, Dingos then UNIMOG trucks, we have Volvo trucks and several others with no commonality between spare parts. Achieving interoperability should be a long-term goal to achieve but so far it remains very difficult.

"What could be a game-changer is the direct energy weapons."

Simulation of Directed Energy weapons
Source: UASvision

What do you believe will be the biggest game-changing technology in the next 10 years regarding land forces?

What could be a game-changer is the direct energy weapons. The U.S. is alreadyimplementing those on their strikers to take down drones. Another developmentthat is not necessarily revolutionary for the civilian sector but grows inimportance for military circles is the hybrid propulsion systems. Electricity is becoming more prevalent, both propulsion andweapon wise. If you take the U.S. Army as anexample again, they have stopped talking about fuel per se and now talk aboutenergy resupply in more general terms. This could be in liquid form, by fuelbut it could also be by hydrogen or battery packs for example. Electricity isbecoming very prevalent, even more than it currently is. It is incredible thatwe have an ideal profile to use these types of technology and yet we arereluctant or slow to do so. Take a tank, forexample, they spend large amounts of times stationary, then sprint towards anew position, then remain stationary for a long time once again. For thesevehicles dual propulsion systems are ideal. The way we solve these problems noware by using very powerful engines and gas turbines that consume giganticamounts of fuel, but we could be using battery packs for the stationary periodsand a combination of propulsion systems to enhance this "sprint".

I think this also relates to this fear orreluctance to adopt "unknown" technology. We had a discussion a couple of yearsago regarding vehicle payload, which is a big problem. Instead of using thelead-based batteries we are still using, we could replace them with more modern lithium-lithiumbatteries. This was rejected because according to them the technology was toonew. We are talking about a technology that has been out for over 5 years. Ibelieve that we have to rethink our approach to a more guerilla-based ideology, at least in terms of innovation. If you think about it,guerilla-based groups are more creative in their usage of technologies that arealready developed, as we saw with the ISISexample earlier. In this sense, I believe we could learn from them and be morewilling to embrace creativity and innovation. I would like to see our militaryhave a similar push to that of the French army relating to innovation. Macronhimself said that he wants innovation, not unlike what the head of the U.S.army mentioned recently. They are willing to take more risks to remain in thevanguard of innovation. These types of behaviourand requests are what drive disruptive technologies. Of course, some projectswill fail, but these failures are necessary to remain ahead of the competition.

If you had unlimited funding and resources, what would your main project be?

I would focus on the unmanned ground vehicles.There is a lot of room for improvement as well as a lot of new excitingtechnologies in this area. It is not only a problem of technology but primarilyan ethical and legal problem. We also have some budgetary constraints relatingto that. This project is also closely linked to AI and cannot be separated.That is because to have unmanned vehicles in a sensible way, unlike theRussians, if you want to go towards platooning like I mentioned earlier or evenswarming you need at least semi-autonomous systems that are capable of making small decisions on their own. To dothat you need explainable AI and that is something that is inherently linkedfor me. So those two would be my two main focuses if given the funding,resources and supply.

Long Live the King (of battle)

The Return to Centrality of Artillery in Warfare and its Consequences on the Military Balance in Europe

BY PAUL-ALEXANDER CRAMERS, EUROPEAN DEFENCE RESEARCHER AT FINABEL

Because of its devastating role against troop formations during the two world wars, artillery gained the title, the "King of battle". During those conflicts, the majority of casualties were inflicted by shell fire rather than by bullets, bayonets or grenades. Despite this fact, since the end of the Cold War, Western armies have neglected their ground-based indirect fire support capabilities. The main reason for this being that European NATO members and the United States have been preoccupied by counterinsurgency campaigns and peace operations where, in an effort to avoid collateral damage, precision strikes have been preferred to mass of fire. In time, this phenomenon has led Western land forces to rely overwhelmingly on airpower for battlefield support. However, in the event of a future conflict, air support for manoeuvring Western forces cannot be guaranteed because of the progress made in Anti-Access/Area denial (A2AD) systems. This problem is even more acute in the case of a near-peer adversary like Russia.

The prevalence of indirect fire support in Russian dogma

Traditionally, in Russian military doctrine, manoeuvring troops support the artillery rather than the reverse. The preferred role of massed artillery and rockets systems is to destroy enemy formations, whilst manoeuvring infantry and tank formations have the role to fix the enemy. This last point is in stark contrast with Western military thinking, where artillery is used to support manoeuvring troops. For this reason, it is widely recognised that the use of en masse indirect fire support at the tactical level is a signature characteristic of the

Russian way of war. This explains why Russian military formations have a quantitatively superior artillery, with a broader variety of munitions available and the ability to strike at longer ranges than similar Western formations.

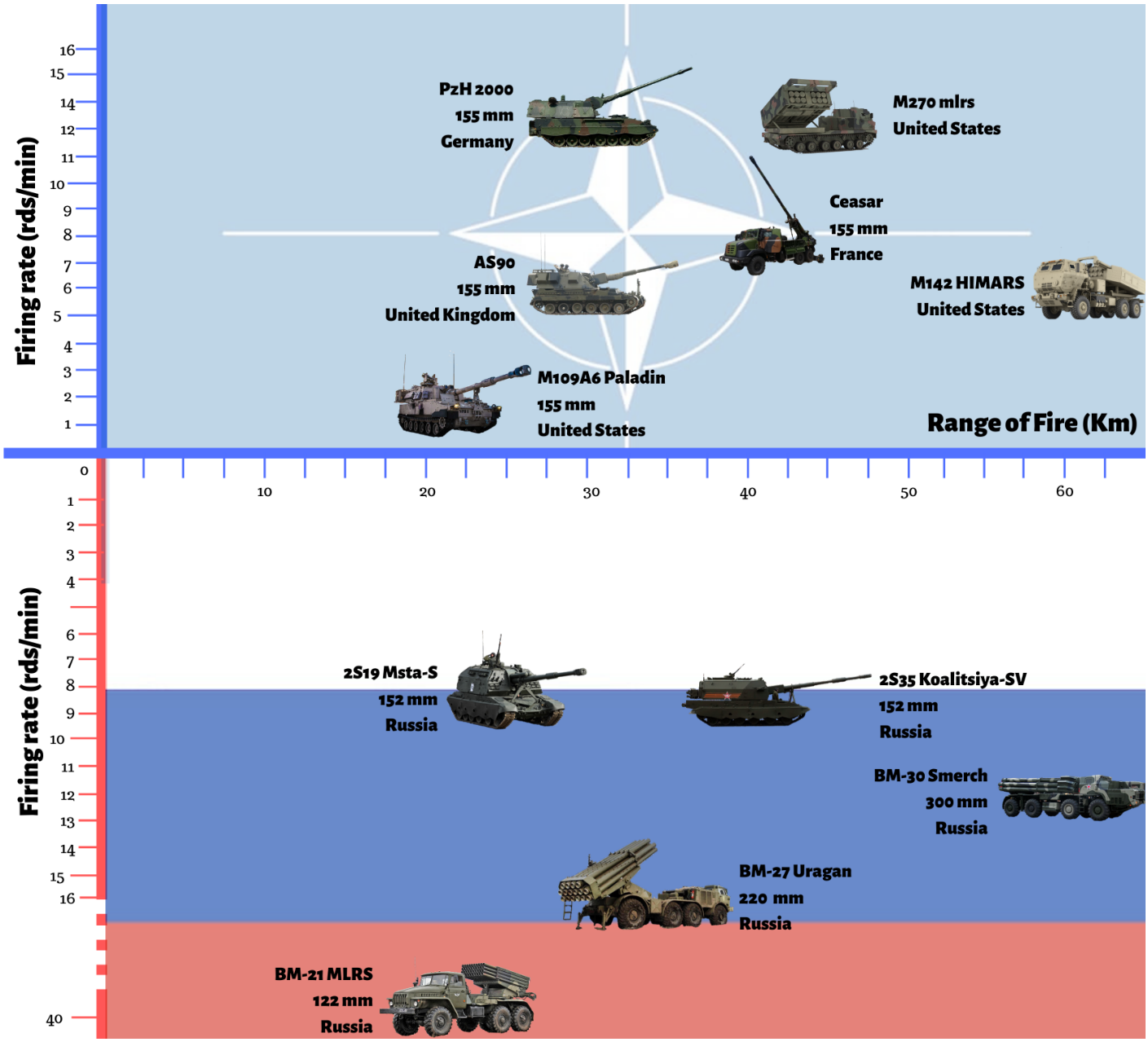
In view of the importance of indirect fire support in Russian doctrine, it is no surprise that the Missile and Artillery Troops (Raketnyye Voyska i Artilleriya) of the Russian Ground Forces are prime beneficiaries of the country's overall military modernisation. This modernisation process has been realised through the development and acquisition of new artillery and multiple launch rocket systems (Koalitsiya-SV and Tornado -G/-S), by efforts to modernise existing ones (2S1 Akatsiya and 2S3 Gvozdika) and by returning some Cold War legacy systems (2S7 Pion) to service. The central theme of this modernisation is to integrate all the artillery and missile systems in a unique information space where targeting data gathered by forward spotters, UAVs and electronic intelligence equipment is transmitted in real-time to fire support units so they can execute quick and high precision strikes. So far, the improvements produced by the modernisation of the Russian ground-based artillery and missile systems have been on display in Ukraine and Syria. In both of these theatres, the Russian forces have demonstrated the lethality of their reconnaissance-strike complex, made possible by the effective use of drones and electronic intelligence gathering equipment to direct and adjust artillery strikes missions to devastating effect.

The current imbalance of artillery in Europe

Unlike their Russian counterparts, the European and American militaries have, for the most part, overlooked the modernisation of their ground-based indirect fire support capabilities. This is a result of years of fighting low-intensity conflicts, where artillery has a minor role and most of the fire support to the troops on the ground is delivered by air. This is, in part, thanks to the Western air forces' ability to establish undisputed air supremacy over the various battlefields and provide around the clock quick-precision-strikes. Consequentially, most Western artillery forces now lag behind their Russia counterparts in terms of quantity and capabilities. As an example, the main self-propelled howitzer in service in the US Army is still the M109A6 "Paladin", with a firing range of 22 km (unassisted), a firing rate of one round per minute and no ability to conduct multiple-round, simultaneous impact fire missions. In stark comparison, the newest Russian artillery system, the 2S35 Koalitsiya-SV, has a firing range of 40 km (unassisted) and a rate of fire estimated to be between 9 and 16 rounds per minute. Although the inferiority of the American M109A6 in comparison to the latest Russian artillery system should be worrisome, there are a limited number of much more capable artillery systems in service with some European land forces, such as the German PzH2000 and the French CESAR.

The current artillery imbalance between Western and Russian ground forces is aggravated by the fact that most European nations have signed the 2008 Oslo Convention on Cluster Munitions, but Russia hasn't. Moreover, although the United States is also not a signatory of the Oslo convention, because of political and humanitarian reservations, they implement their own policy that essentially holds them to the terms of the treaty. This results in an additional limiting of the area of effect and effectiveness of Western artillery strikes. To the contrary, Russian artillery and missile units have made frequent use of cluster munitions in combination with thermobaric and conventional HE warheads to great effect against Ukrainian mechanised formations.

Artillery capability from NATO members and Russia (Firing rate & range of fire)



By Fernando Chuecas

A solvable problem

In recent years, efforts made by countries like Russia to offset the traditional Western air advantage means that European and American land forces need to rebuild and improve their artillery and rocket forces or risk leaving their ground forces vulnerable to superior enemy firepower. So far, it would appear that Russia's investments in artillery could give its forces a certain tactical advantage on the battlefield. Nevertheless, Western land forces can still close the gap by once again equipping their ground-based fire support units for high-intensity conflicts and training them to carry out strikes against large formations of mobile armoured vehicles.

Furthermore, the current long-range challenge that Western land forces are facing with an adversary like Russian can be solved with the help of new technical solutions that are currently being studied. One such was recently showcased by Nammo, a Norwegian company, who is developing a 155mm solid-fuel ramjet artillery shell that is advertised to be capable of striking targets at ranges of almost 100 km and would (by far) out-range any Russian artillery system presently in service.

Conclusion

The conflict in Donbas should serve as a reminder to Western militaries that artillery can still reign supreme on the battlefield. So far, it is estimated that about 80-85% of all casualties in that conflict were caused by artillery fire. If Western land forces wish to maintain their edge against a near-peer adversary such as Russia, they need to refocus their efforts on putting more rounds and rockets down-range, in less time, from a greater range.

DEFENDER EUROPE 20

An exercise in interoperability

WRITTEN BY ALEXANDER JEACOCKE & CATALINA LOPEZ, EUROPEAN DEFENCE RESEARCHERS AT FINABEL

On 7 October, U.S. European Command (USEUCOM) officially announced what will be the largest deployment of U.S.-based land forces to Europe for an exercise in 25 years. The exercise, Defender-Europe 20, will be Europe's third-largest since the Cold War, with over 37,000 service members and eighteen countries participating. The U.S. contingent will operate in conjunction with its European and NATO allies in activities focused on strengthening readiness and interoperability, showing recognition amongst the countries that capability in partnership is essential. Lt. Gen Christopher Cavoli, U.S. Army Europe commanding general said:
"Conducting tough, realistic training alongside our allies and partners in Europe enhances those professional relationships that build trust and confidence in each other and increases our overall interoperability, readiness and the ability to collectively deter potential threats."

In recent years, Europe has seen some of the biggest military exercises and war games in its history. NATO's Anaconda-2016 in Poland and Trident Juncture-2018 exercise in Norway, Sweden and Finland involved 31,000 and 50,000 troops respectively. However, these numbers pale in comparison to those of Russia's exercises; VOSTOK 2018 involved approximately 300,000 troops, including 36,000 tanks. In spite of criticism from NATO and its partners over VOSTOK and its other large-scale exercises, Moscow has been very public about their size, in an effort to present a show of force. The escalation in size and frequency of military exercises

conducted in Europe and Russia has further fuelled the deterioration of relations and in turn, Europe's security environment. Defender is part of NATO's mission to adapt Europe's collective defence to this new environment and propagate readiness through interoperability.

Source: US Army Europe

Key Details

The main objective of Defender is to test Europe's capability to respond against an act of aggression. In 2014, Russia annexed Crimea; Defender asks what the response might be to a similar incursion and indeed whether it would be sufficient. The exercise itself extends throughout Europe, from Western European countries such as Belgium and Italy through to Poland and the Baltic States, even going as far as Georgia. Comparisons have been made to the Reforger exercises during the Cold War, but Defender differs in one key aspect. Whilst those exercises concentrated on getting a reaction force into a single country (Germany), Defender aims to deploy a large force across the continent, operating in and moving across many countries, a wholly different task.

Specifically, the force comprises eighteen countries – sixteen NATO members in conjunction with Georgia and Finland. Of the 37,000 service members expected to participate, there will be 20,000 U.S. service members deployed from the U.S., 9,000 U.S. service members already based in Europe and 8,000 European service members. In terms of equipment, the U.S. Army will bring most of the 37,000 pieces it will use from the U.S., with the remaining 13,000 pieces drawn from the Army Prepositioned Stock located in Europe (APS-2). The logistic effort required will be immense due to the sheer numbers involved; deployment begins February 2020, with the essence of the activities taking place in April-May 2020.

Defender and Interoperability

Defender-Europe 20 is built for and upon the tenet of interoperability. The coordination efforts required for the exercise to run smoothly demands a high level of interoperability. The exercise will thoroughly examine recent developments and improvements and reveal any shortcomings. One particular development that has been worked on by the European Union (EU) over the last few years is the issue of border crossings and military mobility in general. After issues experienced in the U.S. Army-led exercise, Saber Guardian-2017, highlighted the red tape that prevents the ease of movement through both EU member and non-member countries, efforts have been made to improve this to facilitate rapid movement. The logistical strain of Defender will evaluate the progress made in this and test the infrastructure of the participating countries.

The cornerstone of the exercise is military interoperability in its purest sense; NATO will be evaluating its ability to receive, move and integrate U.S. forces and equipment. The only way to really develop this capability and generate the required understanding between countries' land forces is by conducting joint operations, training and exercises. Lt. Gen. J.T. Thompson, head of NATO Allied Land Command, stressed the importance of the drill: "In this case, we're not simulating it, we are doing it. Once those forces get integrated, we're actually going to conduct defensive operations collectively." He also noted how, although "we are headed in the right direction on interoperability", it is not often that it can be worked on such a huge scale and as such, Defender "is an outstanding opportunity to do it at division, corps and joint task force level."

Also on the agenda to be trialled in Defender-Europe 20 is Multi-Domain Operations (MDO). In order to evaluate MDO, command headquarters, subordinate corps, NATO and multinational corps, together with a tactical unit – the 1st Cavalry Division – will undertake simulations to assess capabilities such as long-range precision fires. There will be other exercises, such as a division-minus-sized wet gap crossing at Drawsko Pomorskie training site in Poland, aimed at using MDO to reduce vulnerabilities. The overall aim is to transition the concept of MDO into a doctrine that will bolster operational effectiveness.

Conclusion

Defender-Europe 20 provides a multifaceted opportunity. Firstly, it provides a platform for the evaluation of the readiness of Europe's armies to respond to a threat. This readiness encompasses a number of things, principally the level of interoperability between the countries. The exercise will also facilitate the development of interoperability as the land forces operate together, increase understanding between each other and discover the areas that require improvement. The exercise is also a testing ground for MDO and can catalyse the development of the concept into a working doctrine. Finally, Defender is an exhibition of European strength and as Thompson notes, "from a land forces standpoint, the demonstration of collective defence is our best deterrent."

The Baltic's response to Russia's Threat

How Estonia, Latvia and Lithuania reacted to the recent actions of the Russian federation

by Ms. Ilaria La Torre, European Defence Researcher, under the supervision and guidance of the Head of the Permanent Secretariat.

The Baltic's response to Russia's Threat

INTRODUCTION

Sharing a border with Russia has always been a major cause for concern for Baltic countries. However, the fear of a potential invasion from Moscow has strongly increased in the past decades, due to a multitude of factors: Russia's militarisation policies and the illegal annexation of Crimea. This paper aims to assess the key threats to the Baltic states coming from Russia. It will also look at the way the Baltic states, Estonia, Latvia, and Lithuania have reacted – both autonomously and supported by the international organisations they are part of –, and the necessary issues that must be addressed in the future.

After the collapse of the Soviet Union, Estonia, Latvia, and Lithuania had to develop their autonomous concepts of security and defence. The Baltic states needed to create a new security policy: neutrality, trilateral alliance, or joining the West were three possible options (Szymański). Of these choices, joining the Western organisations seemed to be the best option. It provided a guarantee against the state the Baltic states feared most: post-Soviet Russia. In the mid-1990s, Russian resurgence and revisionism was a frightening reality, and Russia's wish to influence Estonia, Latvia, and Lithuania began already on the first day of the brand-new Federation (Maliukevičius). The Baltic countries feared most of all the possibility of a Russian invasion. This fear was rooted in the 50 year-long previous occupation and the presence of large Russian minorities in the Baltic territories (Szymański). Indeed, Russia had developed a specific policy towards the Russophone minorities abroad – defined in the Compatriots Act of 1995 and in the Foreign Policy Concept of 2013 –, which stated that Moscow has clear responsibilities towards theseminorities. Even if this can be seen as motivated concern for its formercitizens, many Western scholars underline that the Kremlin mostly uses the Russophoneminorities as political instruments against the West (Nielsen and Paabo).

Post-Soviet Russia had one key objective: maintaining its international profile. Indeed, the country wished to keep the legacy of the USSR intact, just as the USSR had sought to maintain the legacy of Tsar Russia. On the one hand, what modern Russia wanted was, to create a buffer zone between its territory and the West, and, at the same time, to keep a strong leverage-hold on the post-Soviet territory, the Baltics included. In order to do that, Moscow created a strategy which involved military and non-military instruments (Maliukevičius).

To face Russia's strategy, the Baltics had to respond rapidly after becoming autonomous states. The states had to first create a capable and effective Armed Forces from scratch: to do so, they enforced a two-pillar scheme, based on conscription, with a large reservists list and, and on a voluntary territorial defence force (Szymański). The second step was guaranteeing high-level co-operation among the three countries: BALTBAT, BALTRON, BALTNET, BALTDEFCOL were created in the mid-1990s to do exactly this. The areas dealt with start from foreign deployment, to airspace defence, and military education. The final step was approaching the Western world, in particular the two following organisations, which could ensure stability and wealth for the Baltic states: the North Atlantic Treaty Organisation (NATO) and the European Union (EU). Consequently, Estonia, Latvia, and Lithuania joined NATO's Partnership for Peace programme (1994) and signed Association Agreements with the EU (1995), in order to prepare future membership to the two organisations.

For many in Estonia, Latvia, and Lithuania, 2004 was perceived as "the end of history" (Lawrence and Jermalavi). Indeed, in this year the three countries had become part of the world's strongest economic block – the EU – and had joined the world's most important security community – NATO. Baltic leaders were convinced that after joining these organisations, a prosperous future would arise for their countries. Article 5 of the North Atlantic Treaty guaranteed, that legally an attack on one of the Baltic states, would cause the intervention of the Allies and, at the same time, the European Community's economic support would grant new life to the weak and Russian-dependent Baltic economy.

Focusing on the military aspect, the rapprochement to the West implied increased cooperation in the acquisition of military equipment, and in the sharing of best practices, deployment, and the training of troops. This had a substantial political consequence, as it affected the so far shared path for Baltic states, who then started to develop more specific national strategies. As underlined by Andžāns and Veebel, two different models soon appeared in Estonia and Latvia. In Estonia, probably due to the geographic position of the country, being farthest from the Allies, a total defence approach was adopted, focused on the necessity to protect the territory (Szymański). The population was required to support a high degree of involvement in defence and security, and conscription was maintained and reinforced. A voluntary paramilitary armed branch, the Defence League, supported the traditional forces. Despite involvement in NATO, the country devoted considerable

attention to its autonomous capabilities of defending its territories. In Latvia, where the population feared Russia less as a potential attacker, the security and defence approach was more general, and global, and involved the civilian population less directly. Conscription was abolished, with the creation of a solely professional army, and the expenditure on security and defence decreased. In 2012, the spending reached its lowest point, amounting to only 0.88% of GDP (Figure 1). Moreover, the involvement in NATO strongly influenced Latvia's foreign policy and its relations with Russia. Indeed, the post-Cold War NATO raison d'etre, which included a wide-ranging concept of threats and considered Russia more as a partner than a rival, required normalization of relations with Moscow. To demonstrate good will to the Allies, Riga renounced, for example, its rights to the Russian-controlled Abrene District in 2007, for the sake of closer relations with the Kremlin (Andžāns and Veeber).

Lithuania on the other hand, chose a mixed scheme for its defence and security strategy: compulsory military service remained mandatory until 2008, which was then substituted by selective conscription which supported the professional military scheme (Szymański). In 2005 around 3,330 soldiers were called upon for basic compulsory military service. In 2013 there were only 634 soldiers (Andriškevičius). Undoubtedly, funding strongly influenced the organisation of the Lithuanian Armed Forces. The command of the AF strongly pushed for a bigger share of the budget allocated for the state's defence capabilities. As noted by Andriškevičius, in the first years of the new Republic of Lithuania, it was expected that the country would allocate a large share of its GDP – around 6% – for national defence and security. However, in 1995 only 3.7% of the GDP was assigned, and, even after joining NATO, the country

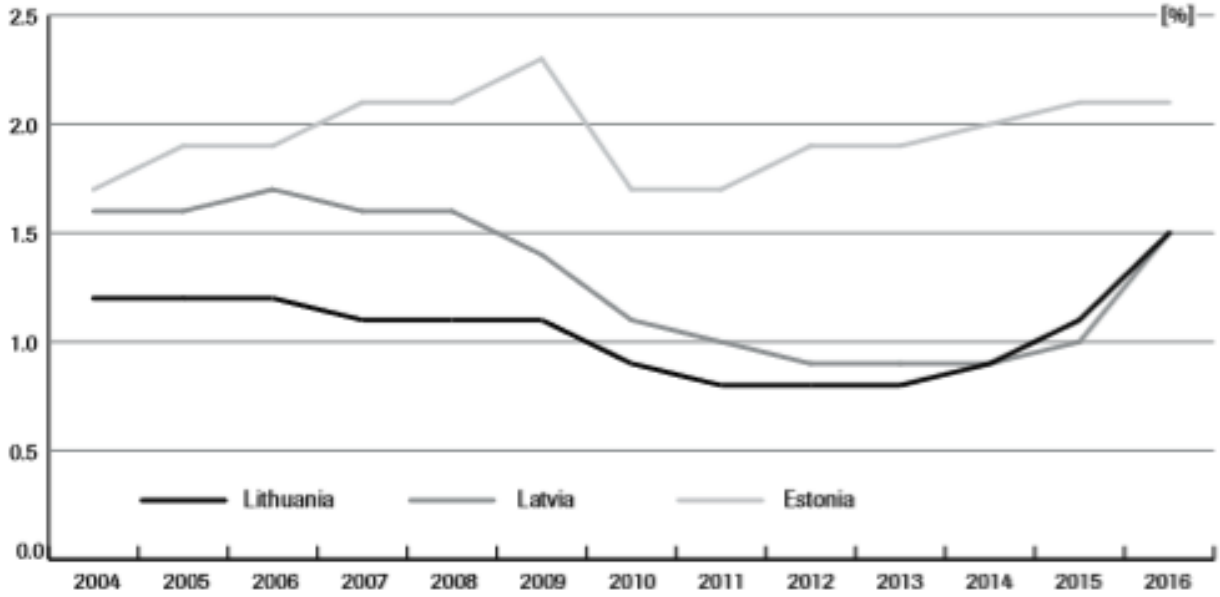


Figure 1: Defence expenditure in Baltic States 2004/16.

maintained a low level of defence and security expenditure. In 2003, the share became even lower – 1,48% of GDP – while in 2013 only 0.77% of GDP was allocated. This strongly influenced themilitary capabilities of the country.

In general, the Baltic countries, in the first decades of their existence, relied strongly on the NATO Alliance for their defence, decreasing the expenditures they dedicated to this area, especially during the financial crisis. This is particularly true for Latvia and Lithuania. Estonia, for many reasons – such as its geographic position as we saw before – has always maintained higher spending for defence purposes. However, the situation for the three countries changed after Russia's illegal occupation and annexation of Crimea. This event altered the priorities for the Baltics, as they perceived an increased need for investment in their security and defence sectors, as well as the involvement of the NATO Allies. Pertinent questions are then, what is the nature of Russia's threat today for Baltic states? How will the Baltic countries decide to respond to this threat?

THE TYPE OF THREAT?

Ulman defines a threat to national security as: "an action or sequence of events that threatens drastically and over a relatively brief span of time to degrade the quality of life for the inhabitants of a state, or threatens significantly to narrow the range of policy choices available to the government of a state or to private, nongovernmental entities (persons, groups, corporations) within the state" (Ulman, 1983 in Jakniunaite). The threat posed by Russia to Baltic security is multi-faceted, long-term, and sharply different from traditional threats. More recently, there has been growing awareness of the seriousness of these threats, since the annexation of Crimea effectively ended the debates on the strategy of Russia vis-a-vis its Western neighbours, making the aggressive intentions of the Kremlin clear. This is demonstrated by the December 2015 Russian Security Strategy, which elaborated that Moscow considers the United States and NATO openly as potential opponents. This is on top of Russia's Military Doctrine of December 2014, which viewed NATO's self-appointed role as global leader, as violating the rules of international law, especially due to its approach on the Russian Western borders.

Threats to national security have never remained consistent over time, as new actors and methods continually arise and develop. According to Valery Gerasimov – the current Chief of General Staff of the Armed Forces of Russia – "the very 'rules of war' have changed."For example, a war can begin without ever having been declared, with spontaneous military actions, without massive physical clashes. This gives priority to short-term precision actions, and attacks to infrastructures and information facilities. Figure two shows the main changes between traditional and renewed military actions (Figure 2).

In brief, the Gerasimov doctrine tells us to consider warfare in a broader manner (Monaghan), no longer separating between conventional and non-conventional instruments. In the words of the General, "the role of non-military means of achieving political and strategic goals has grown, and, in many cases, they have exceeded the power of force of weapons in their effectiveness" (VPK).

Many scholars group the new methods of conducting a conflict under the notion of hybrid warfare. On the 6th of April 2016, The European Commission defined hybrid strategy as a "mixture of coercive and subversive activities, conventional and unconventional methods (i.e. diplomatic, military, economic, technological), which can be used in a coordinated manner by state or non-state actors to achieve specific objectives while remaining below the threshold of formally declared warfare." Even if hybrid warfare was somehow already present in the past, e.g., during the Cold War, its relevance vis-a-vis traditional conflict makes it much more relevant today (Takacs).

Traditional Military Methods	New Military Methods
• Declaration of War at the beginning of a conflict • Frontal clashes between large units • Defeat of manpower, firepower, with the objective of gaining territorial control • Combination of land, air, and maritime operations • Strict hierarchic system within the AF	• No Declaration of War • Non-contact clashes between interspecific fighting groups • Use of armed civilians • Annihilation of the enemy's military and economic power through specific strikes on key infrastructure • Combination of land, air, maritime, and cyber operations • Use of non-traditional and unconvention-al methods • AF organised in a unified informational sphere

Figure 2: Changes in the Character of Armed Conflict According to Gerasimov.
Credits to De Gruyten Open

In Russia, the notion of hybrid warfare is not the same as in the West. Indeed, this word – transliterated literally in Russian as 'gibridnaya voina' (гибридная воина) –, is only used by Russian commentators while debunking Western theories of Russian hybrid action in the West. Generally speaking, Russians prefer avoiding labelling these actions under different terms. Moscow considers unconventional tools as the principal means to neutralise Western military superiority: likely this is the reason that in Russia hybrid is considered merely on par with traditional strategies since separating them means belittling the capacity of Moscow to fight back the West (Monaghan).

Russia's challenge vis-a-vis the West consists of a hybrid approach which encompasses instruments of hard and soft power. When speaking of Russia, Drent et al., suggest that the word 'soft force'- which translates into Russian as 'myagkaya sila' (мягкая сила) – should be used to substitute the terms 'soft power', as it is to be a different type of use of force. The concept of soft force is described by Russia's Foreign Policy Concept (2013), more as a destabilisation tool, than a

diplomatic one (Drent, Hendriks, and Zandee). This means that Russia considers it – as it is stated in the Russian Foreign Policy Concepts of 2013 and 2016 – as a way "to exert political pressure on sovereign states, interfere in their internal affairs, destabilize their political situation, manipulate public opinion."

In the eyes of the Baltic countries, during the past decade, Russia has developed a robust strategy to threaten their territories, using hard and soft power, and putting into place threats towards diverse sectors of the countries' security. Generally speaking, five sectors of security policy are often identified in this regard, using Buzan's sectoral approach: military, economic, political, societal, and environmental (Stone). The following sections are devoted to the analysis of these main threats, looking at Russian behaviour towards the Baltics. While the next paragraph will concentrate on military threats, the following paragraph will provide an overview of the most critical non-military threats.

Military threats

Military threats are probably the most visible and direct threats the Baltic countries perceive since the fall of the USSR. For post-Soviet countries, the relations with Russia have been firmly rooted in past Russian domination, both during the Soviet and Tsar Regime periods. Consequently, the image of Russia is still as a potential aggressor. Since the restoration of independence, the possibility of military intervention of Russian forces in Baltic territories was considered as highly improbable (Jakniunaite). Yet, the guarantee from NATO membership assured regional stability for Estonia, Latvia, and Lithuania, making the possibility of intervention practically impossible.

Nevertheless, the Georgian-Russian conflict of 2008 slightly increased the fears of Baltic countries (Jakniunaite). The conflict showed the capabilities of Russia, and the failure of the West to respond firmly. However, as reported by Jakniunaite, during the conflict in Georgia, Russian officers also understood the inadequacy of Russian equipment and facilities (Lucas in Jakniunaite). Indeed, most of the technologies and the weaponry used were the ones developed in Soviet times. Consequently, in the following years, the Russian Armed Forces underwent profound internaltransformations, supported by an increase in military spending.

In 2008, through the New Look reform plan, Moscow tried to improve the Armed Forces and give them modern, and thus more efficient, equipment. The purpose of the reform was to turn the Soviet-style mass-mobilised army structure into a purely professional one: Soviet-type specialised divisions – such as tank and motorised infantry – had to become all-arms brigades, "formed on the basis of deployment and warfighting criteria – light, medium, heavy – rather than equipment-driven" (Drent, Hendriks, and Zandee). The budget devoted to defence and military purposes by the Kremlin gives an overview of Moscow's wish to improve the efficiency of the Armed Forces. As Figure 3 shows, how the defence budget during 2006-2015, has more than doubled. The most significant effort put in place by the Kremlin was launched in 2011 by President Putin: The State Armaments Programme 2011-2020, or GPV 2020, which consists of a $500 billion rearmament agenda. The plan's goal was to substitute 70% of Soviet equipment by 2020 to give Russia advanced weapons befitting of a resurgent power(Johnston and Popescu).

Despite an overall increase in the share of the GDP devoted to military expenditure from 2008 with a stiff peak during and after the Crimean crisis, after 2016 a profound fall in defence expenses can be noticed. Indeed, the lower oil prices and international sanctions which followed the intervention in Crimea interfered with the growth in expenditure, as they fuelled the economic recession of 2014. This is demonstrated by the fact that in January 2015 the Minister of

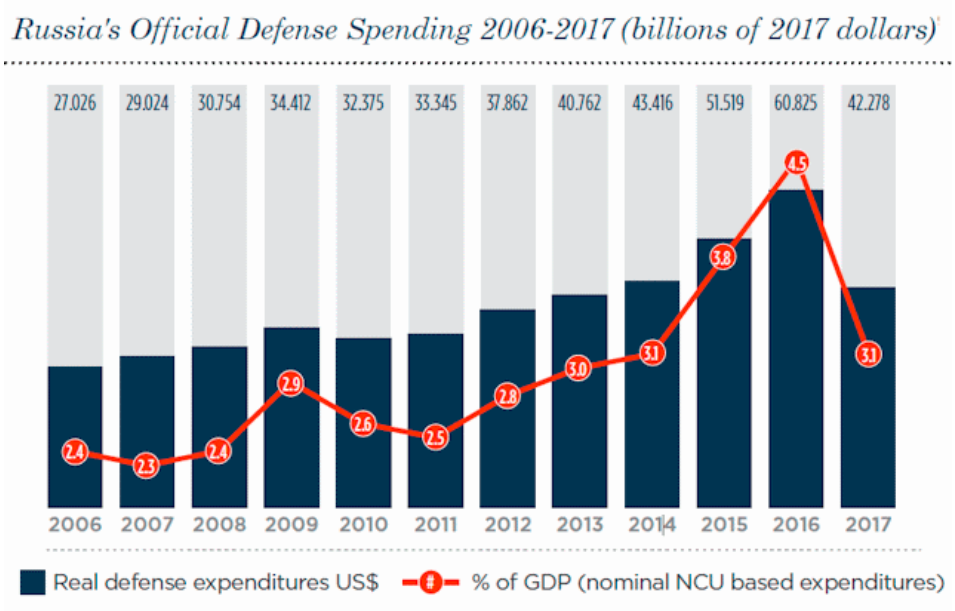


Figure 3: Russia's Official Defence Spending. Credits to GlobalSecurity.org

The Baltic's response to Russia's Threat

Finance Anton Siluanov announced a 10% cut across all government expenditure, defence included (Drent, Hendriks, and Zandee). However, the Russian administration has tried to maintain the ambitious level of military spending. As noticed by Persson, "[t]his reflects the leadership's commitment to the modernization of the Armed Forces and more assertive security policy since 2012 when Vladimir Putin became Russia's president for the thirdtime." (Drent, Hendriks, and Zandee)

Reforms of conventional forces elaborated on the need for restructuration of the entire army. Firstly, the acquisition of new ground vehicles – such as the Armata Universal Combat Platform- improves crew survivability. According to NATO, Russia will buy by 2020, around 2,300 tanks and 30,000 armoured and unarmoured vehicles (Turner). New navy capabilities will modernise the defence fleet, the submarine force, and the amphibious ships. Moreover, new long-range destroyers will become part of the Russian Navy. The Airforce will be provided with new equipment, such as the T50 aircraft, over 4,000 Unmanned Aerial Vehicles (UAVs) and 1,150 helicopters. Regarding air defence, the missiles systems S-400 and S-500, devoted respectively to short-medium and long-range air defence, will be improved (Turner).

Russia is also actively investing in the development of each component of its strategic nuclear triad: air, ground, and sea. NATO estimates that Russia currently deploys 7,700 nuclear warheads, including 1.735 installed strategic warheads and 2,000 tactical weapons. The modernisation of nuclear air forces includes the upgrade of bomber aircrafts – the Tu-95MS (Bear), Tu-160 (Blackjack)and Tu-160M2 – and the investment in a brand-new stealth bomber PAK-DA. Concerning the Inter-Continental Ballistic Missiles, a strong emphasis is put on mobility – in particular, RS-24 Yars (SS- 27 Mod 2), RS-26 Rubezh / Yars-M, Sarmat, and Barguzin missiles. The sea-based forces SSBNs will be substituted with a new Submarine Launched Ballistic Missiles (SLBMs).

The modernisation of the military has a direct impact on Kaliningrad Oblast. The Russian enclave has assisted, in the last decade, to a deep modernization of military equipment: in 2016, the last step was the deployment of the high-performing Iskander-M missiles, which now already supports the present S-400 Triumf surface-to-air missile system and the P-800 Oniks anti-ship cruise missile. As reported by the ECFR Commentary, Kaliningrad was supposed to be, in the eyes of many, "Russia's answer to Hong Kong": it has become a super-militarised bastion in the centre of Europe. The acceleration of the deployment of military capabilities along NATO's borders has also impacted Kaliningrad Oblast: the air defence and coastal defence systems have been reinforced, e.g., with the implementation of the so-called 'Anti-Access Area Denial' (A2/AD) (Turner). This directly affects the security of the Baltic region, Lithuania in particular. Seen as a vulberability for the enclave – as it depends on Vilnius for gas, electricity, and connections – Lithuania has now become a region which could be threatened by Kaliningrad Oblast, as unrestricted transit in the corridor of Suwalki would allow Russian troops to pass through Lithuanian land. This passage makes the country and the entire NATO alliance more vulnerable to the direct intervention of Russian forces in their territories (Jakniunaite). As stated by the Lithuanian Foreign Minister, Linas Linkevičius, in an interview to The Times: "the military build-up in Kaliningrad is a challenge for NATO." Consequently, the country decided to build up a 45 km long barrier along the border with the enclave, following its need for increased security. Even if it was officially built up for smuggling reasons, the security challenge posed by Russia with the militarisation of this area has without doubt influenced the fence construction. Apart from the modernisation of the military and the increase in spending for defence purposes, other factors also influence the current perception of threats for the Baltic countries.

Firstly, Russia often puts into place, along the borders and in Kaliningrad Oblast, a high number of provocations against NATO and the individual allies. These provocations involve air and land activities close to the borders, and sometimes include violations of sovereign territory. For example, Russian air activity close to the European airspace increased by around 70% in 2015 (Turner). Another provocative action was the deployment of two additional divisions in Russian Western military districts, announced by the Defence Minister in 2016. Focusing on Baltic territories, one of the landmark cases of Russian border provocations happened in 2014, on the second day of the NATO summit in Wales. As reported by the BBC, "The incident saw the abduction of an Estonian security official by 'unidentified individuals from Russia' on the border." A completely different type of provocations is what is often referred to as nuclear 'saber-rattling'. This practice involves threatening the enemy to deploy nuclear- capable missiles and bombers against its infrastructures and key objectives (Turner).

Secondly, the Russian Federation is conducting various elaborate military exercises along its territory. The Zapad and Ladoga exercises – which involves Russian and Belorussian Armed Forces in the

Figure 4: Zapad 2017 Wargame. Credits to info.BILD.de

Western and Northern borders – are the most worrying in the eyes of the Baltic countries. The last wargame practiced by Russia in the West was Ladoga 2018, held from the 26th to 29th of March, which did not receive wide media coverage, as it involved only fifty pilots – who practiced on their detection capacities and on the launch of missiles. This exercise was considered a small thing compared to the enormous exercise often piloted by Moscow – such as the Zapad and Vostok wargames. Nonetheless, the exercise involved roughly one hundred aircrafts, including the 4++-generation Su- 35 interceptor, and the new nuclear-capable Su-34 bomber. As noted by Myers, the latest version of the Ladoga wargame was much more similar to the Soviet simulations, and this should garner the attention of the Baltic countries (Myers). Another exercise that took place last year in Eastern Europe, was Zapad 2017 – meaning West 2017 –, which has been actively observed and analysed by Western public opinion and policymakers. As officially stated by the Belarusian Ministry of Defence, the wargame involved 7,200 Belarussian and 5,500 Russian troops, using 250 tanks, 200 artillery units, 40 helicopters/aircrafts, and 10 ships of the Baltic and North Fleet (Dyner). Nonetheless, according to Szymański, L. and Dyner, the possibility of a higher number of troops involved is probable. For the Chairman of the NATO Military Committee, Petr Pave, the drills could have involved between 70.000 and 100.000 soldiers. As argued by the Lieutenant General Ben Hodges, Russia and Belarus have divided Zapad into multitude of small exercised – Ladoga included –, which are in reality all connected to one another and are actually a part of the same simulation (Szymański, L.).

Even when compared to the previous Zapad wargames, Zapad 2017 differed strongly from previous operations. The exercise simulated aconventional large-scale conflict, which saw NATO countries as potential enemies – as confirmed by the exercise maps presented by the Belarusian Ministry of Defence. Many studies conclude that Russia used Zapad 2017, as a tool to verify the experience gained in recent combat operations, in Crimea and Eastern Ukraine (Dyner). Moreover, Moscow wanted to make its non-equal relation with Belarus clear, for it is considered to be a dependent ally, and not a partner (Szymański, L.). However, the most significant result of the exercise was that the operations showed that despite NATO's presence in defending the Eastern flank, Russia could likely break the defence system of Baltic countries within a few hours (Dyner).

Finally, the last and maybe most important factor that urged Baltic states to increase their security and defence, was Russia's invasion of Crimea. The invasion, together with the following illegal annexation represented "the first example of a state seizing territory from another

sovereign state in Europe since the end of the Second World War" (Turner). Russia had already begun a restoration of such use of force in Georgia, with the so-called 'peacekeeping' forces, which invaded and occupied Georgia's sovereign territories to consolidate the control of the regions of Abkhazia and South Ossetia (Turner). Surprisingly, the reaction of the West after this action has been quite weak: even if Russia's intervention was considered disproportionate to the initial skirmish in the region, Western countries seemingly have not yet put in place truly effective measures to punish Russia's behaviour. The principal consequence of this weakness was that it emboldened Russia, allowing it to place pressure on the Ukraine some years later.

In the case of Crimea, the violation of the United Nations Charter and other international law commitments was clear. Therefore, these actions in Eastern Ukraine had a stronger impact on Europe and NATO as a whole. As stated by Jakniunaite, "[t]hrough taking control of Crimea, instigating unrest in Eastern Ukraine and facilitating the creation of quasi-states, though never getting openly involved in direct actions, Russia expanded the limits of imagined possibilities" (Jakniunaite). Consequently, after the events in Eastern Ukraine, the possibility of a Russian intervention in these territories began to be discussed seriously in the Baltic countries. What worries the Baltic countries the most, is the risk of an escalation of conflict somewhere else which could spill over in the Baltic space. Indeed, as Baltic officials recently stated, Russia's capabilities give the Kremlin a time-space advantage that Russia can easily exploit. As noted by Pezard et al., for example, one Latvian official *"assessed the warning time for a conventional attack to be only 48 to 72 hours, while a former official – also from Latvia – hypothesized a scenario in which Russian airborne forces could seize Riga with virtually no warning"* (Pezard et al.).

To conclude, considering the various military activities that Russia has put in place internally and in the Western neighbourhood, the threat towards Baltic countries is increasing. Even if Russian military action is considered as improbable, the West should be ready to respond to any threat coming from Moscow.

Non-military threats

Baltic states should not only prepare for military interventions or threats coming from the Russian Federation. Russia has experimented and reinforced less tangible, measurable, and direct types of menace, which can be grouped under the definition of non-conventional threats. These threats include political, societal, economic and environmental actions, carried with the use of the information and cyber domains, often using the supply chain and infrastructure as leverage means. Also, it is important to assess that, when talking about non-conventional threats, the various sectors do not operate in isolation from each other but are strongly linked (Stone). As underlined by Pezard et al., Europeans are more concerned about the risk of Russia employing hybrid warfare, than a conventional attack (Pezard et al.).

Political and societal threats are mostly aimed at the political stability and socio-cultural cohesion of countries, through various sets of instruments, such as propaganda, counter- information, and intimidation (Stone). As underlined by Jakniunaite, these menaces "are more complex and interact with the internal, domestic processes, and are multi-causal" (Jakniunaite). In the case of Baltic states, a Russian non-military strategy was present since the birth of the Russian Federation, but it is during Putin's presidencies that this has become much stronger, and thus more relevant. Putin talked openly of "humanitarian dimension of Russian Foreign Policy", underlining the need for aiding those people who supported Moscow from abroad and, from the other to oppose the Western-imposed model in the post-Soviet space (Maliukevičius).

Russian socio-political action abroad, intensified from 2012 onwards, when Putin's dominance of the Kremlin became stronger. Russia presents itself as a counter-balance to the West, which has propagated its model worldwide. Russia's rising opposition to the Western model, has brought with it, the questioning of certain realities, and value systems. This in turn, leads to the unveiling of weaknesses, shining an unattractive light on Western domination (Pugačiauska). One of the instruments by which the Kremlin tries to influence the pro-Russian community is the media. For social media, the community is highly influenced through the spread of fake news.

The television also plays an essential role in the Baltics. Indeed, the audience share of Russian TV channels is quite high: 15,7% in Lithuania, 29% in Latvia, and 19% in Estonia. The Kremlin exploits this large share through the production of pro-Russian, anti- Western shows, movies, and documentaries (Jakniunaite). As reported by Pezard et al.: "Estonians and non-Estonians live in different information spaces, often with contrasting content. […] Most of the Russian-speaking population derives its information and views on history and current events from Russian television channels that are directly subordinate to the Kremlin and can be used as a mechanism of propaganda." The products of Russian media mainly address historical topics, portraying the Soviet times as a period of glory invoking nostalgia, and Lithuanian independence as an attitude based on aggressive nationalistic –

EXERCISE IRON WOLF
Source: SHAPE NATO

sometimes even fascist – values (Maliukevičius).

For example, in 2013, the Russian TV channel 'Pervij Kanal' (Первый канал) broadcasted the documentary 'Chelovek i zakon' (Человек и закон) concerning the events which took place in Vilnius in January 1991. It stated that the activists for Lithuanian independence, the group Sąjūdis, started shooting at the crowd and not the OMON police (Maliukevičius). During, and after the invasion in Crimea, funding devoted to this type of action increased, concentrating on the popularising Russia's orchestrated formats. For example, the Kremlin strongly influences the output of Russia Today (now RT) and pro-Russian NGOs abroad – mostly connected with Russkyi Mir Foundation (Фонд Русский мир), the Gorchakov Foundation (Фонд поддержки публичной дипломатии им. А.М. Горчакова), and the Historical Memory Foundation (Фонд Историческая память) , as well as the visibility of pro-Russian perspectives on the social media (Kojala and Žukauskas, 2015; Veebel, 2015; Wake, 2015 in Jakniunaite).

Additionally, Russia currently threatens the national security of the Baltic states through economic leverage. Notably, one specific segment of an economic threat – that of energy – is often employed. Gas and oil exports, were first used as a political tool during the Cold War, to keep members of the Warsaw Pact reliant on the Soviet Union (Newnham). In post-Soviet times this has continued, even more so during the Putin era. The Kremlin strives to keep its neighbours in a state of energy dependence. In order to achieve this task, Russia *actively invested in the construction and management of pipelines and energy facilities during the past two decades (Newnham). Consequently, nowadays countries such as Finland, Estonia, Latvia, and Lithuania depend on Gazprom for around 100% of their energy needs, as clarified by Figure 5 (Nielsen and Paabo).*

As pointed out by Newnham, energy is used, both as a reward to allies, and as a punishment to rivals and enemies, and these two strategies can be identified as "petro-carrots" and "petro-sticks", following a carrot-andstick model. An example of a "petro-stick" strategy, is Russia's dispute with the Ukraine which lasted more than a decade. As for the event in 2014, Gazprom not only became the owner of Chornomornaftogaz, which was the Crimean subsidiary of the Ukrainian state-owned company Naftogaz, but Russian strongly increased the gas and oil prices for the Ukraine, cutting off the supply.1 As reported by Deutsche Welle, more recent events have seen a small improvement in relations, at least when discussing energy disputes. Moscow and Kyiv, are supposed to cooperate in the construction of a new pipeline through Ukrainian territories – Nord Stream 2. As concluded by Nielsen and Paabo, generally speaking, the energy strategy alone is not one ultimately favoured by Moscow, as it inevitably endangers the state's income, which is strongly dependent on this: it accounts for a total of 80% of the income. Yet, the Kremlin undoubtedly still uses energy supply as a political tool to place pressure on post-Soviet countries. This is exactly what occurred in relation to Kiev during the Crimean crisis. In contrast to the Ukrainian example however, the Baltic countries, are even more at risk of receiving political pressure, as unlike the Ukraine, they are not an essential route for the pipelines.

Another type of non-military threat, which should receive particular attention, is that of cyber. Cyber is not included in the previous discussion – the five categories of threats –, as it should be considered to be a cross-cutting threat. Indeed, cyber-attacks are the means by which many fora – such as the social, political, economic, and cultural ones – can be weakened simultaneously. Cyberspace can provide robust destabilisation tools, through which malicious actors can undermine the functioning of essential infrastructure systems. Indeed, the provision of water, electricity, healthcare, finance, food, and transportation has become increasingly reliant on software, which manages their allocation and connects the systems (Gandhi et al.). This dependence makes facilities more vulnerable to remote attacks, which can prepare, or support other military, and non-military actions, or that can be used as a retaliation measure. Russia considers cyberwarfare in an unusually broad way, encompassing military defensive and offensive capabilities, cyber-attacks, information warfare, and hybrid warfare strategies (Turner).

In the last two decades, Russia has developed two broad Information Security Doctrines. Compared to the first one from 2000, the one signed by President Putin in 2016 embraces a broader concept of national interest when it comes to the information sphere – including social, cultural, psychological, and even spiritual effects. As noted by Sean Lawson in an article for Forbes "Actions carried out based on this broader understanding could provide a serious challenge to the West, one that it might not at first recognize or be equipped to counter."

The broad definition of cyber warfare includes, for example, the attacks of 2007 which took place in Estonia. Estonia faced a powerful cyber-attack which tried to undermine the functioning of the Government and the Parliament, through dismantlement of the apparatus of these bodies together with the Presidency, political parties, and some news

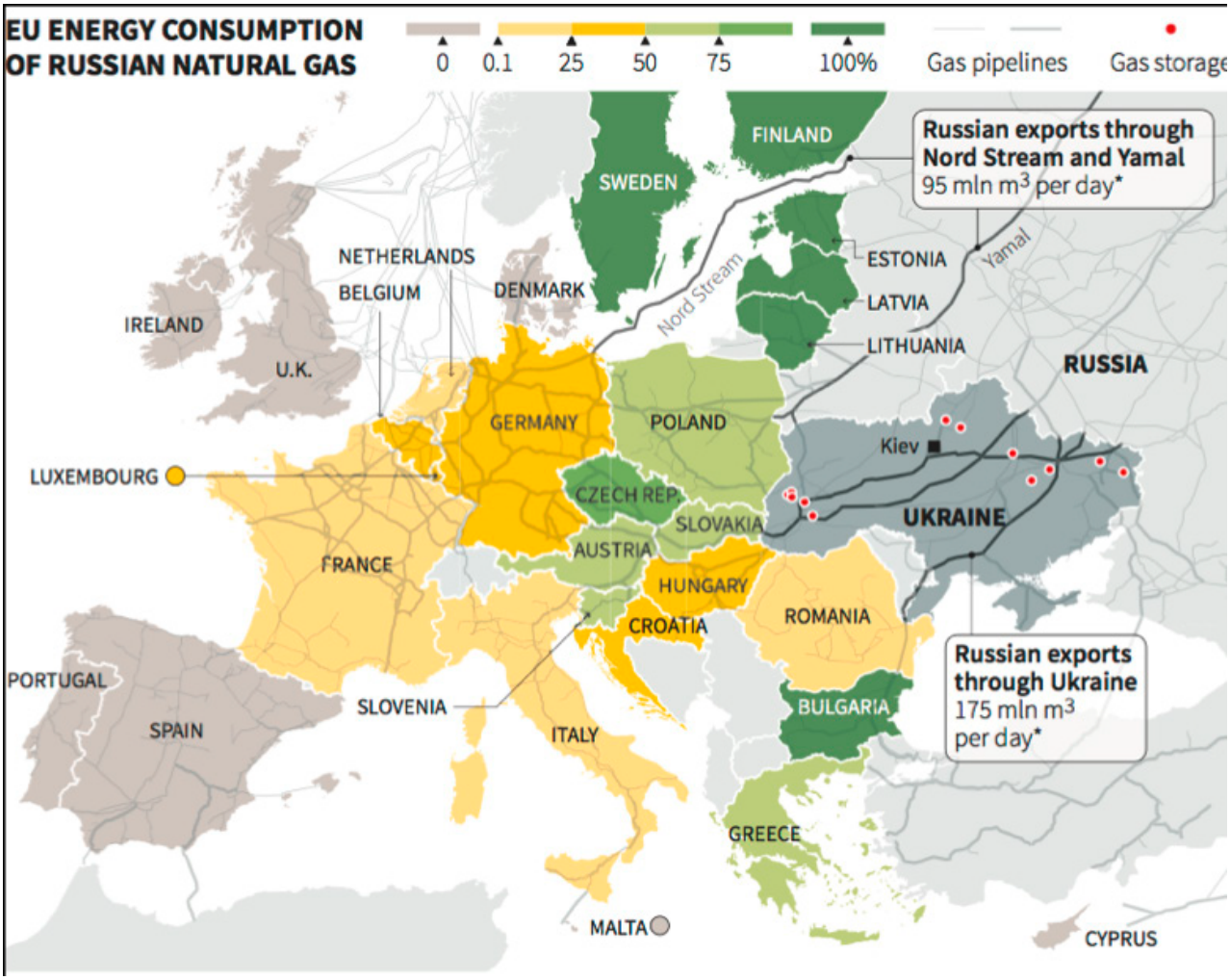


Figure 5: EU Energy Consuption of Russian Natural Gas. Credits to Bloomberg

agencies (Thomas). The attack came during a dispute between Russia and Estonia over the removal of a Soviet war memorial from Tallinn. Even though Russia never admitted its involvement, Estonia claims to have identified specific Russian addresses as the origins of the attacks (Thomas). Another case is the informational warfare which took place before the intervention of Russian troops in the Ukraine, which involved a massive propaganda operation, and a series of attacks conducted against Ukrainian and Western official websites, as well as upon infrastructure and media.

Notably, the attack against the Ukrainian electricity grid in December 2015, and the attack conducted against Kyiv's international airport in January 2016 alarmed the West because it showed the high level in which Moscow mastered the ability to conduct cyber-attacks which could cause serious damage to key infrastructures (Turner). Taking this into account, Russia's high investment directed to the development of offensive cyber capabilities is even more disturbing.

To conclude, non-military means are a worrying and evolving character of the way Russia can interfere in Baltic national stability. These threats should be first strictly identified, and then fought against with a strong and specific security and defence strategy, in order to maintain the internal stability of Estonia, Latvia and Lithuania.

HOW HAVE THE BALTICS RESPONDED SO FAR?

After having assessed the threats to the Baltic states coming from the Russian Federation, the second part of this paper is devoted to the analysis of the instruments adopted by Estonia, Latvia and Lithuania to face these challenges, especially vis-a-vis the renewed threats of the past decade.

Since 2014, the international scenario which the Baltic countries are faced with has changed strongly. Russia's illegal annexation of Crimea, was a clear sign that the status quo, which was enforced after the fall of the Berlin Wall, was less stable than expected. Indeed, most scholars considered Russia's invasion in the region not only as a violation of international law, but

also a demonstration of Russia's wish to revise the post-Cold War structure of Europe. According to Takacs, the events in Crimea occurred, because the Ukraine was not able to put into force an effective deterrence strategy (Takacs).

Deterrence can be defined as the capacity to persuade a potential aggressor, that any action against the targeted country's territory, would cause undesirable damages, and that these costs far outweigh any potential gain (Paulauskas in Takacs). Following this reasoning, the actions of Moscow were effective because Kyiv was not ready to face the threats which were put in place. Consequently, the Kremlin exploited the various vulnerabilities of the country, to support the separatist forces of Crimea, and this process resulted in the loss of the region for the Ukraine. Undeniably, Ukraine tried to deter the actions of Moscow, but in the end, it was not effective enough. The potential gain for Russia, which was preventing the Ukraine from integrating into the European and NATO structures, was more significant than the potential losses which arose from the invasion in Crimea.

Russia's aggressive behaviour in the Eastern flank has increased the fears of the Baltic states. While in the previous decade the possibility of a conventional invasion in their territories by Moscow was low, in 2014 it seemed highly probable. Consequently, enhancing deterrence practices soon became a pressing necessity for Estonia, Latvia, and Lithuania. Contrary to the Ukraine, the Baltics could count on two types of deterrence – direct and extended deterrence. This meant that discouragement measures were put in practice not only by the country whose territory was at risk – direct deterrence – but also by its allies – extended deterrence (Andžāns and Veeber). In the case of the Baltic region, pre-emptive actions were also operated by NATO, which wanted to demonstrate robust political solidarity against their potential aggressor, Russia. The European Union played a key role, too, by setting up economic sanctions against Russia in response to its illegal annexation of Crimea. Therefore, when discussing the response of the Baltic states to Russian assertiveness in the East, three levels that should be considered: national, NATO, and the EU.

National Level

At the national level, the Baltic countries sharply increased their spending in the military sector. In the past three years, investment grew mostly in the area of land forces – mechanisation, artillery, anti-tank, air-defence – and territorial defence (TDF). Notably, in Latvia and Estonia, TDF has been integrated with manoeuvrable forces; on the other hand, in Lithuania, TDF is included in the land forces (Szymański).

The Baltic countries responded to Moscow's aggressiveness with a fast modernisation of their Armed Forces. For example, in 2014 – as a direct response to what was happening in Crimea – Lithuania bought the Polish GROM man-portable air-defence systems in 2014 (€37.6 million from non-budget funding) and in 2015, Latvia acquired three medium-range TPS-77 Multi-Role Radars (MRR), to complement the already deployed three AN/TPS77 radars. In general, the Baltic countries have purchased second-hand and cheaper armament and military equipment, as part of more extensive negotiations. As pointed out by Szymański, some changes also occurred in the structure, training, and organisation of the Armed Forced of the three countries. For example, war-gaming practices focus mostly on urban warfare, and place protection of critical infrastructure and public administration buildings, as a top priority (Szymański). Each of the three countries developed specific features to counter Russia's assertiveness in the East, trying to fill the gap in their defence and security strategies.

As noted before, Estonia was a country that perceived itself to be more geographically removed from its allies, and therefore it has always relied more on its own local population in its security strategy. Thus, Tallinn has devoted finances for defence spending or a considerable amount of time. Of the Baltic countries, it is the one with the highest investment in defence budget, even before Russia's invasion in Crimea. Indeed, already in 2014, Estonia allocated 2% of its GDP on defence expenditure. After the invasion, new features were developed, e.g., the introduction of the "two plus two rule" which adds to the essential 2% of GDP, additional funds for support, and a defence investment fund from the general budget pool.

As the National Defence Development Plan of 2017-2026 underlines, cyber defence is a factor of utmost importance for the Baltic country, which relies on a strongly digitalized public administration system. Consequently, Tallinn wishes to establish a separate cyber defence command before 2021. Emphasis is also placed on the relevance of the readiness of the battalions, which should be mechanised in a stronger manner – CV90 infantry fighting vehicles – and better armed. The 1st Infantry Brigade will be equipped with self-propelled artillery, becoming a mechanized force ready for engagement and the 2nd Infantry Brigade will have increased combat capabilities, thanks to an additional artillery battalion equipped with 122mm howitzers. Finally, the Development Plan underlines the need for strengthening military

ESTONIA

Equipment	Quantity	Delivery
Javelin anti-tank missiles (new)	80 launchers	2015/16
CV90 infantry fighting vehicles (used)	44	2016/19
Mistral 3 air defence and Milan 2 anti-tank missiles (new)	n/a	2015/20
K9 Thunder self-propelled howitzers (used)	12	Since 2021

Figure 6: Most Important Armament Programmes in Estonia. Credits to OSW Studies.

intelligence and surveillance capability with the aim of also enhancing early warning capacities.

Looking at Latvia, the country invested less in its military sector before 2014, compared to the other two countries. According to data from NATO, Latvian defence spending in 2012, and 2013, was around 0.9% of its GDP, due to the heavy cutbacks in personnel and funding following the financial crisis. After Crimea, the country openly addressed Russia as a potential aggressor in its Defence Concept and Priorities. The government's 2016 defence priorities, stressed the need for reaching an investment of up to 1.7% of GDPby 2017 and 2% of GDP by 2018, to ensure the capability to strengthen the defence and security structures of the country.

As elaborated by Szymański, the modernization programme for 2016–2028 sees three main priorities –early warning and command, combat readiness, and host nation support. Due to the proximity of the airborne forces in Pskov, Riga invested on the acquisition of radars – AN/MPQ-64F1 Sentinel and TPS- 77 radars –, and motorisation of the First Battalion with CVR[T] armoured vehicles. Moreover, to enhance the readiness of its AFs, the land forces have been moved from Riga – strengthening the militarisation of the Eastern region of the country. For example, from 2018, the base of Latgale now hosts a regular army unit. Latvia is not following the same steps as Estonia regarding compulsory military service, as the country's plan to reinforce the AFs does not involve reinstatement of compulsory conscription due to financial shortages, a lack of military instructors, insufficient infrastructure, and the ambiguity of a part of the population regarding Russian assertiveness (Szymański).

This notwithstanding, its renewed defence strategy pushes for voluntary involvement in the training of the National Guard. The involvement of the civil sector is demonstrated, for example, by the invitation from the government directed to large firms, in order to show greater flexibility in allowing their employees to participate in these trainings – as reported by the LRT. Finally, the country has also developed a Cyber Security Strategy (2014-2018) to strengthen Latvian awareness and responsiveness to threats in the cyber domain.

In Lithuania, as analysed in the first chapter, a mixed structure of professional and selective conscription for the army was set up

LATVIA

Equipment	Quantity	Delivery
CVR(T) armoured vehicles (used)	123	2016/20
AN/MPQ-64F1 Sentinel radars (news)	4	2016
RBS70 Mk2 missiles (new)	n/a	2015/17
TPS-77 radars (new)	3	since 2017
M109 self-propolled howitzers (used)	47	since 2017

Figure 7: Most Important Armament Programmes of Latvia. Credits to OSW Studies.

in the past two decades. After the Crimean crisis, Lithuania put in place a strong strategy to overcome its military shortcomings. The country has effectively increased its defence budget, which enlarged the percentage of GDP from 0.8% in 2013 to 2,06% in 2018. The White Paper on Lithuanian Defence Policy of 2017 includes three priorities – modernization of the AFs, rapid reaction, and a prepared reserve. For the first priority, the White Paper demands the restructuring of the AFs and a significant investment in equipment and infrastructure. Dealing with the internal organisation of the Army, Vilnius set up a structure of two brigades at peacetime, and three at wartime, including a trained reserve.

Moreover, the White Paper proposes a new mobilisation system which should provide financial incentives to professional services to increase their participation in the AFs. Since the country could be potentially attacked through Kaliningrad Oblast and Belarus, or the Pskov Oblast via Latgale in Latvia, Lithuania is supporting the spread of defence capabilities in critical areas, e.g., through the formation of two additional brigades in Klaipeda and Vilnius.

Turning to investments, air defence has been reinforced through the acquisition of the Norwegian air defence system, NASAMS, together with the mechanization of the infantry with 88 Boxer infantry fighting vehicles, and the increase of their efficiency through self-propelled PZH2000 Howitzers. Regarding the cyber domain, setting up the National Cyber Security Centre and later the Cyber Security Council – to ensure cooperation between public and private sectors – Vilnius is prioritising the implementation of measures to increase the resilience of critical infrastructures and public administration institutions against cyber threats.

In relation to the rapid reaction component, it has already been partially strengthened since 2014, giving this section the support of Air and Special Forces, as well as logistics backing. To ensure the speed of their deployment, Lithuania amended its laws to give the Presidency the power to authorise the deployment of the AFs directly, without needing parliamentary approval (Szymański). Despite the steps already taken, the White Paper underlines the need for improving the Rapid Reaction Component, due to its small size – it is currently only composed of 2,500 troops – and the ongoing barriers for its deployment.

Finally, the third priority for a prepared reserve has been addressed strongly so far. Already in 2015, selective conscription was reinstated in the country so as to enhance the participation of the citizens in the security of the country. The White Paper stresses how, through an increase in voluntary military service, Vilnius wants to fix the deficit problem of many units, with those who are sincerely motivated in fighting for their country.

NATO Level

Historically speaking, since its foundation, NATO's main goal has been the collective defence of its members, especially vis-a-vis the threats coming from the Socialist block. After the collapse of the Soviet Union, NATO sought a new raison d'etre, taking into account the changed post-Cold War international environment. Indeed, the unique threat posed by the Warsaw Pact gave place to diverse and multi-directional risks, such as inter-ethnic conflicts, state instability, the proliferation of weapons of mass destruction, and international terrorism, which needed the development of new range of policies and activities. The possibility of traditional military intervention in the territories of a NATO member were considered to be very unlikely. Yet as mentioned

LITHUANIA

Equipment	Quantity	Delivery
Javelin anti-tank missiles (new)	n/s	2015/17
PzH 2000 self propelled howitzers (used)	21	2016/19
UNIMOG trucks (new)	340	2016/21
Boxer infantry fighting vehicles (new)	88	2017/21
NASAMS air defence system	2 batteries	by 2020
M577 support vehicles (used)	168	2016/17

Figure 8: The Most Important Armament Programmes of Lithuania. Credits to OSW Studies.

before, this changed slightly after Russia's actions in Georgia and Eastern Ukraine.

Baltic countries have demanded an extensive involvement of NATO in their territories since the moment they joined the Alliance. In short, joining NATO was considered by them to be the most robust deterrence strategy against Russia. What counted for Estonia, Latvia and Lithuania was mostly Article 5 – the collective defence commitment – and its statement that an attack on the Baltics would mean an attack on all the members of the Alliance. During the history of the organisation, Article 5 was invoked only after 9/11, for the terrorist attacks in the United States. This meant that the 'collective defence' definition was also extended from the traditional definition of an armed attack.

After the annexation of Crimea by the Russian Federation, the notion of extended deterrence became essential for the Baltic countries, as it was clear that the involvement of NATO and its "robust political solidarity" – as stated also by many NATO PA reports – was a key factor in strengthening the credibility and capability of the deterrence against Russia (Takacs). NATO set up a doctrine focused solely on this issue. NATO understood that the current times are "a pivotal moment in Euro-Atlantic security" and changed the vision of Europe as ultimately free and at peace (Drent, Hendriks, and Zandee).

NATO's 2010 Strategic concept underlined three priorities for the Alliance, namely collective defence, partnership, and cooperative security and crisis management. These priorities became even more urgent to face the new threats coming from Russia, who turned from a partner country to potential opponent and adversary. Consequently, the Wales Summit of 2014 set up a range of short- and long-term measures to face the new threats from the East. As a direct shortterm measure, NATO decided to address the issue of Russia's intervention in Crimea and Eastern Ukraine, putting in place, as a counter- measure, a freezing of the diplomatic dialogue between NATO and the Kremlin. All cooperation arenas and lower-level political dialogues with Russia were suspended, even if it was stressed that "the Alliance (…) poses no threat to Russia" (Turner).

In the long term, NATO developed a complete strategy to fight against the new hybrid threat coming from Russia, enforcing a credible deterrence strategy through a commitment to its conventional and nuclear forces. Even before putting in place new measures, the deterrence capability of the organization stood on solid bases. Indeed, in the cases of both conventional and nuclear forces, the multipolar character of NATO assures a solid response to any action from an adversary. Firstly, decisions are not made by a supranational authority but by the members of the Alliance. The presence of multiple centres for decision-making makes various members able to respond to a potential aggressor both autonomously, and within the mechanism of the Alliance, making the response to an action wider and stronger. Moreover, the multiplicity of the Alliance increases the survivability of the forces, as troops and equipment are not concentrated spatially and can, therefore, resist a potential attack to a better degree (Turner). NATO also decided to put in place additional measures to reinforce its deterrence capabilities.

Focusing on conventional forces, the Wales Summit enforced a Readiness Action Plan (RAP), which included a series of actions to improve the capacity of the Alliance to protect its territories and citizens. First, some assurance measures were necessary, aimed at the reinforcement of the Eastern borders. These actions included the immediate deployment of land, air, and maritime forces in NATO members bordering Russia, with the objective of reassuring the population and deterring any possible aggression. For example, NATO enlarged the missions to patrol the airspace and the seaside in the Baltic territories and enhanced the exercises and ground troops stationed in the Eastern flank. Furthermore, the Allies wished to develop a series of adaptation measures to intensify the presence in the Eastern flank, as well as the speed of response in the case of an attack (Drent, Hendriks, and Zandee).

Some of these measures are already in place, such as the investment on the NATO Response Force (NRF) which increased the troops to up to 40,000 units and the creation of the Very High Readiness Joint Task Force (VJTF) composed of 5,000 ground troops which could be deployed in only 48 hours, supported by the specialists of the NATO Force Integration Units (NFIU) (Pezard et al.). Finally, during the Warsaw Summit in 2016, the Allies agreed to enhance NATO's military presence in the Eastern flank, setting four battalions in Estonia, Latvia, Lithuania, and Poland. The battalions will be led by four framework nations – Canada, Germany, the United Kingdom, and the United States, on a rotational basis, but they will effectively constitute a continuous presence (Pezard et al.).

Turning to the nuclear deterrent, this is considered by both the Strategic Concept of 2010 and 2012 Deterrence and Defence Posture Review (DDPR) as the "supreme guarantee of Allies' security" (Turner). Nonetheless, a strong focus on nuclear weapons reduction appears, especially in the DDPR.

Exercise IRON TOMAHAWK
Source: SHAPE NATO

Currently, a wide variety of nuclear systems are in place, such as short-range weapons at the battlefield level, long-range weapons based in Europe, which are able to strike targets behind the front line, and strategic weapons, mostly in the hands of the U.S. The United States' strategic triad – land-based intercontinental ballistic missiles (ICBMs), nuclear-armed bomber aircraft, and submarine-launched ballistic missiles – is considered to be the cornerstone of their deterrence capabilities. The functioning of many systems in Europe is linked to a 'dual-key' arrangement in which the U.S. retains custody of the warheads and cooperates with an Ally who provides the delivery system. France and the United Kingdom retain an independent nuclear force which contributes to the Alliance deterrence capabilities. At the Warsaw Summit and the Munich Security Conference in 2016 nuclear weapons were reaffirmed as the ultimate guarantee of the Allies' security: "We keep them safe, secure and effective. For deterrence and to preserve the peace. Not for coercion or intimidation" (Turner). Moreover, the Warsaw Summit declared Initial Operational Capability of the NATO ballistic missile defence system. NATO command and control will be in charge of making specific U.S. ships located in Spain, a radar system in Turkey and the interceptor site in Romania.

Apart from deterrence, NATO is playing an essential role concerning the capacity of its members to enhance their resilience vis-avis all types of armed attacks. Developing a functioning civil preparedness is central to NATO as a critical aspect for the Alliance's collective defence. NATO can support its Allies in assessing and, upon request, enhancing their civil preparedness, helping them to enforce the NATO Baseline Requirements for National Resilience, which focus on the continuity of government and essential services, security of critical civilian infrastructure, and to support the military forces with non-military means. Moreover, as the Allies recognize cyberspace as an operational domain, they wish to enhance cybersecurity as a means to reinforce the resilience of civilian structures.

European Level

The deterioration of the security environment in Europe has stressed the necessity for the EU to boost its Common Security and Defence Policy. Indeed, the instability of the Southern border, coupled with the increasing threats coming from the East has urged the Union to develop renewed external action initiatives. Additionally, the European Union wishes to revive its international posture, following the request of the United States in asking its European Allies to take on more responsibility on the issues of security and defence. The stance of the European Union in international affairs is critical, taking into account the existence of non-NATO EU-members such as Sweden and Finland, which, in the challenging environment of today require a higher degree of assistance for their territorial defence.

Within the EU, in legal terms, there are explicit clauses regarding the mutual assistance and support among the Member States. The mutual defence clause of Article 42.7 of the Treaty on the European Union stresses "the obligation (for the Member States) of aid and assistance by all the means in their power", with the requirement for mobilising "all the instruments at its disposal, including the military resources made available by the Member States" to assist any MS in need (Drent, Hendriks, and Zandee). Even if we cannot talk of the common external action of the European Union, it is clear that cooperation of the country in the issues of the Common Security and Defence Policy is considered essential for each MS, who wishes to act more strongly visa- vis certain countries and partners. Before 2014, EU-Russian relations centred around the concepts of 'strategic partnership' and 'interdependence.' As noted by Popescu, Russia's actions in Crimea have turned the situation into a condition of '

Service members with the Czech contingent of the NATO enhanced Forward Battle Group Lithuania prepare for their journey to Latvia.
Source: SHAPE NATO

selective engagement' more than an overall partnership, with the concepts of resilience and defence reaching the top of the priority list for the European Union (Popescu).

Facing the new threats coming from the East, the EU has sought deeper cooperation with its natural strategic partner, NATO. In July 2016, the President of the European Council, the President of The European Commission, and the Secretary General of NATO signed a joint declaration to strengthen the EU-NATO strategic partnership, in order to better address the threats coming from a range of conventional and unconventional actors. As a follow-up, in December 2016 EU and NATO ministers endorsed a package of 42 measures addressing the need for cooperation in the field of countering hybrid threats, operational measures, cybersecurity, defence capabilities, industry and research, exercises and training, and security capacity-building (Andersson and Balsyte). A tangible example of this collaboration is the new parallel or joint EU-NATO crisis management exercises. Indeed, on the one hand, NATO participated in CYBRID – EU hybrid exercise in Estonia – and, on the other, EU representatives took part in NATO's CMX and Cyber Coalition exercises.

Apart from cooperation with NATO, the EU has put in place a multitude of autonomous measures to respond to Russia's invasion of Crimea. Firstly, they set up a series of retaliation measures, especially in the economic domain. In 2014, the consensus of the 28 MS on sanctions against Russia included a series of asset freezing and travel bans for specific individuals linked to Russia's invasion, as well as targeted economic sanctions against Russia. The measures were prolonged in 2015, when the President of the European Council, Donald Tusk announced that "the duration of economic sanctions will be clearly linked to the complete implementation of the Minsk agreement" (Pezard et al.). On the 13th of September, the sanctions were prorogued until March 2019.

The EU has overall set up also a range of actions to face hybrid threats. The primary objective of the EU is to raise awareness and the resilience capacity of MS, though the protection of critical infrastructure, energy diversification, cybersecurity, health and pandemics, and financial service security. In addition to that, emphasis has been placed on solving the issues of fake news and foreign propaganda. The first example of policy put in place by Brussels was the establishment of the Hybrid Fusion Cell as a body of the EEAS to "detect, deter and respond to hybrid threats", as stated by the conference report on Hybrid issued by the Commission. However, the most substantial effort of the Foreign Affairs Council was finding an agreement on the creation of the European Defence Fund, which was done only in 2018. This instrument can be used to fund both conventional, and hybrid-related programmes, and is essential to increase the awareness and resilience capacity of the countries. Moreover, the EU has also understood the necessity for exploiting better strategic communication: as other actors often use this tool as a weapon, the EU needs more effective communication within and outside its borders to fight against malicious actors. The EU launched a communication programme in this regard, and created a Strategic Communications Team in April 2015. This team should address the issue of disinformation through explaining the vision behind EU policies in nontechnical and engaging terms rather than engage in counternarratives. (Pezard et al.)

Turning to cyber threats, the European Commission created a 'blueprint' for advising action to other bodies and the Member States in case of large-scale cyber-attacks. Moreover, the development of a Cyber Diplomacy Toolbox could create the guidelines to address issues such as sanctions, international cooperation, dialogue, capacity building, joint investigations, etc. In 2017, the Commission has also proposed to build on the existing European Agency for Network and Information Security (ENISA) and create an EU Cybersecurity Agency.

Estonia, Latvia, and Lithuania have shown the possibility of improving security capabilities actively through a massive budget investment in defence. This notwithstanding, it is clear that despite the increase of the defence budget, there is little the Baltic countries can do on their own in the case of a Russian invasion. The international organisations they are part of are an essential factor that should not be forgotten. If NATO plays a leading role regarding military capability, and deterrence strategy, the EU has reached an inestimable stance regarding, on the one hand, the pressure put on the Russian Federation through economic means, and, on the other, the capacity- building for critical topics such as hybrid and cyber threats.

Conclusion

This paper elaborates on the significant threats to the Baltic countries coming from the Russian Federation and on the current strategies put in place to deter them, both on the national and supranational level. As noted before, when speaking of the Russian approach vis-a-vis to Western neighbours, there is not

one type of threat that presides above all the others. Indeed, the various actions carried out by Moscow are considered to be all on the same level, and having the sole aim of destabilizingthe internal solidarity of the targeted country. Nonetheless, considering theevolution of the threats and the type of response of the Baltic states andtheir allies, some key points should remain a priority for combating theRussian threat effectively.

Firstly, regarding conventional military threats, the Baltic states should maintain a high level of expenditure for defence purposes, focusing this spending on areas that need restructuration and renovation. Troops should be distributed all along the borders to increase the responsiveness and the survivability of the forces. Moreover, the efficiency of the rapid reaction component should be improved, through guaranteeing their quick and effective deployment, following, for instance, the example of Lithuania – where the President retains the power to deploy these troops without having to wait for prior approval from the Parliament. Also, where the rapid reaction component already exists, it should be enlarged to guarantee the necessary strength to react to an armed attack at the Russian border. Secondly, focusing on rapid response, NATO should address its NRF (NATO Response Force) and VJTF (Very High Readiness Joint Task Force), the two quick reaction components of NATO. On the one hand, the Allies should address the issue of cost-sharing– as now they fall only on the creator of the component. On the other hand, the decision- making around the deployment of VJTF should be streamlined, as the need for authorization from the Allied governments at the moment slows down the process. To maintain the essential character of the rapidity of deployment, the Allies should consider giving SACEUR the possibility to pre-authorise the deployment of the VJTF.

Thirdly, NATO should conduct more extensive and realistic war games, to understand the real capabilities, and the practical obstacles that its forces could face in the case of a conventional attack against its territory. This type of exercise alone can train the ability of the troops to react rapidly and effectively to a military threat coming from Moscow. It is evident that in these exercises the land component, the VJTF, and the NRF should play a key role and be given particular attention in order to increase their interoperability, responsiveness, and capacity to adapt.

Fourthly, turning to the strategic component, NATO should reaffirm its nuclear capability to increase its capacity to deter adversaries. This does not mean going against the steps that have been made so far to reduce nuclear weapons at a global level, but reviewing its nuclear policy to reaffirm the stance of NATO as a nuclear-based alliance. In a time when Russian officials do not hesitate to threaten the pre-emptive use of atomic weapons against the Alliance, it is important to ensure that the nuclear component remains the backbone of the Alliance.

Fifthly, an increasing level of attention should be placed on the cyber warfare which is currently increasing its relevance in many armed conflicts. Thus, the Baltic states should work closely with the EU and NATO to improve their resilience capacities and ability to counter a cyber-attack. In this regard, the creation of an EU Cybersecurity Agency is the first step to aid the Member States in their fight against cyber threats. The cooperation with the NATO Cooperative Cyber Defence Centre of Excellence can be a crucial factor for setting up some guidelines for the actions of the MS in responding to this type of attack. Moreover, as Estonia is a leading player regarding the use of digital tools, increased collaboration with Lithuania and Latvia could reinforce the common defence of the Baltic countries in the cyber domain, through sharing good practices and "lesson learned".

Sixthly, hybrid warfare should be addressed firmly. The Baltic countries should develop long-term measures to increase their capacity to resist these types of attacks. For socio-political attacks, a strong counter information campaign should be set up, in order to fight against the propaganda coming from the Kremlin. Moreover, some measures to increase the participation of the emarginated Russophones groups in the social environment of the Baltics should be set up. The cooperation of the EU and its bodies is essential to ensure expertise and funding. Concerning energy threats, the dependency of the Baltic countries from Russian gas and oil imports should be diminished, to reduce the possibility of Russia intimidating Estonia, Latvia, and Lithuania through this leverage. At the EU level, the creation of the Hybrid Fusion Cell to monitor the awareness of the MS for these threats should be considered only to be the first step among many, for gaining full capability of the EU to counter, with the help of all Member States, any type of hybrid threat. The possibility for using the funding of the European Defence Fund for hybrid purposes should be enlarged, in order to include a broader range of hybrid threats, which everyday threatens the European Union.

To conclude, these are the main recommendation that arise from the analysis in the previous chapters. They are not supposed to provide extensive cover on all the topics, but rather to assess the most urgent steps that should be done, in order to create a safe environment in the Baltic states. In any case, the Baltic countries should maintain, together with their Allies, a high degree of focus and attention on Russia and its movements in the international arena. This is essential not only for the security of Estonia, Latvia, and Lithuania, but also for the stability of Europe, and – consequently- of the entire world.

Meet the team

Research Unit

There is a coffee mug in the research unit that says, “My job is Top Secret: I don’t even know what I’m doing myself!” Fortunately, and with the right amount of caffeine and sunlight, we get straight to business. To say that there is no regular day at FINABEL would be one of those outdated clichés. Here at FINABEL, we improvise, adapt, and overcome. On a more serious note, every day in a researcher’s life is more or less the same, albeit with varying intensity depending on the projects we are entrusted with. However, we embrace this life because of the endless opportunities to consistently work at becoming subject matter experts in one of the integral domains of the European Union: defence and security. FINABEL researchers work on a variety of topics that are central to EU military interoperability from the perspective of land warfare, including but not limited to preparing weekly InfoFlash items on current developments in the member states’ defence policies, emerging technologies, and doctrines. We are also responsible for producing more detailed analytical briefs known as Food for Thought Papers that home in on current and emerging trends in EU defence such as the Euro Drone, Multi-Domain Operations, and acoustic threat detection systems. Depending on their availability, our researchers also attend conferences and public talks that are being held in Brussels and elsewhere for the opportunity to deepen our knowledge and inform the larger audience about FINABEL’s contributions to the defence debate. If a review board did a wrap up of a researcher’s time at FINABEL, it would look something like this: “You once had 56 search tabs opened on Google Chrome,” “You frequently skipped the gym on Thursdays after work and went for happy hours at Place de Luxembourg instead,” and “Your top hits in Google Search were PESCO, European Defence, and European Military.”

By Chonlawit Sirikupt

Communication Unit

At Finabel, we value communication as a great tool for the organisation to grow and to increase its visibility online and offline. As Communication Unit, we are responsible for promoting Finabel's brand, publications and activities with security and defence stakeholders in Brussels and beyond from the following sectors: government, academia, private sector and non-profit sector. We do this by working closely with the Director of the Permanent Secretariat and other teams. We also oversee Finabel's internal and external communications, by making sure that our members and partners are kept informed about the latest news and opportunities that are of interest to them. We are constantly producing communication materials such as newsletters and brochures. Of course, we can also include here this very magazine which you are reading right now. Additionally, we are in charge of managing Finabel's website and social media accounts where we regularly post updates about our hallmark initiatives: Info Flashes, Food for Thought research papers and #MemeMonday posts. Thanks to these digital platforms, we are able to engage with people online, so don't forget to follow us on all our social media accounts!

by Radu-Ion Gheorghe

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(Not in accordance with the picture)

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