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Munich Security
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More European, More Connected and More Capable

Building the European Armed Forces of the Future



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Preface

Dear Reader,

“Europeans must take greater responsibility for their security,” the European Council conclusions from December 2016 emphasize. This is true, and it is also an understatement. We have a significantly more threatening security environment than a few short years ago. European military capabilities are depleted. Our most powerful ally is looking to reduce its involvement in European security, and European citizens expect more robust security and defense. It is obvious: now is the moment to develop Europe as a much more credible security actor.

Some steps in the right direction have been taken. A couple of weeks ago, for instance, 23 member states signed the notification on “PESCO,” the Permanent Structured Cooperation in the area of defense policy. This is a very encouraging sign. But the lion’s share of the work still lies ahead. We are almost 500 million Europeans and still largely depend on 330 million Americans for protection and for diplomatic initiatives that are essential for European security. This is unsustainable. We need and want the United States as a close ally. But we need to do better ourselves.

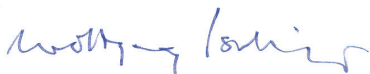
The report you have in front of you is a contribution to this vital debate. Almost five years ago, the Munich Security Conference began to cooperate with McKinsey & Company to work on European defense. Our goal was to add fact-based, extensively researched, and accessible analysis to this area. I was thrilled to see that past analyses that originated from our cooperation made their way into the core of the European debate on defense. Our findings – for instance, about the fragmentation of European capabilities and about the annual savings potential if European countries organized defense procurement jointly – have been widely used in public appearances and official documents by defense ministers and other European leaders.

By looking at and behind the numbers, this new report aims to illustrate and inform the choices European leaders could make at this time. As the report argues, spending more, and spending it smartly and jointly, may represent Europe’s last best chance for several decades to reshape the nature of Europe’s defense forces, military cooperation, and industrial base. It would lead to forces that are more connected, more European, and more capable – and that would be able to protect Europeans better.

This report’s analysis is based on several key assumptions and calculations. One of them looks at what it would mean if all European NATO members were to fulfil the 2-percent goal by 2024. We are well aware that, while countries will likely move in that direction, not all of them will in fact reach it. The imperatives and choices outlined in this report do still apply if some member states fall short.

Finally, I would like to stress one thing: as the report shows, European defense capabilities have greatly diminished over the last 25 years. So this report should not be misread or misconstrued as advocating massive remilitarization. Instead, this report seeks to provide answers to how some of the capabilities lost could be regained, and how Europe could sensibly and jointly improve its defense effort.

I wish you a thought-provoking read!



Ambassador Wolfgang Ischinger

Chairman, Munich Security Conference

Senior Professor for Security Policy and Diplomatic Practice, Hertie School of Governance

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Executive Summary

A less capable Europe in a more threatening world

- Europe's security environment has deteriorated in the last few years. New threats include a more aggressive Russia, instability in Eastern Europe, the Middle East, and Africa, and cyberthreats from hostile governments and nonstate actors.
- The United States is sending mixed signals about continuing the high level of military support it has provided for Europe in the past decades.
- Adding to the challenge, Europe's defense capabilities have declined. Equipment inventories have been reduced to critical levels across most weapons categories, and many systems are outdated. Austerity and an increase in missions abroad have reduced the readiness of Europe's forces; in many countries, up to half of military equipment, from infantry vehicles to helicopters, is not available at any one time.
- Europe's fragmented approach to defense exacerbates the situation: Europe has six times more types of major weapon systems than the US. In many European defense projects, countries put the interests of their national industries ahead of European capability building, military cooperation, and interoperability.

Translating increasing budgets into capabilities

- Europe now has a unique opportunity to build forces to meet 21st-century challenges. Defense budgets are rising again. Consensus is growing, among leaders and citizens alike, that European countries should cooperate more closely and pool and share resources to maximize the value of their investments rather than building purely national armies.
- In a YouGov survey conducted exclusively for this report, 75 percent of Europeans in six large states said they favor close cooperation between Europe's national armies in the future; 41 percent of respondents even favor such substantial cooperation that national armies can only be deployed independently by individual states to a very limited extent. Only 6 percent say European armies should not cooperate in the future.
- Spending more is not the answer to every challenge. *How* European countries spend their defense budgets is vitally important. This report does not promote specific numerical targets or other indicators of effective burden-sharing, but suggests imperatives and choices for effective defense spending regardless of the size of future European defense budgets.
- We take the 2-percent goal – the share of GDP that NATO members agreed to spend on defense at the Wales Summit in 2014 – as a starting point for discussing the potential effects of defense budget increases. If EU-28 + Norway reached the 2-percent goal by 2024, about USD 114 billion of additional funds would be available for defense each year, which is the equivalent of two times the UK's 2017 defense budget. At this level of spending, Europe would contribute roughly a third of the overall NATO member states' defense expenditure.

A unique opportunity to build more European, more connected, and more capable forces

Simply buying “more of everything” would not dramatically improve Europe's military effectiveness. Leaders will need to make five key choices to build Europe's forces of the future:

1. **Prioritize equipment. Europe needs to close its USD 120 to 140 billion interconnectedness and digitization gap and upgrade its armed forces.**
 - To modernize its forces, Europe will need to upgrade its equipment, with a special focus on closing today's “interconnectedness and digitization” gap of an estimated USD 120 to 140 billion. This will enable existing platforms to communicate with each other, allow forces to process and analyze data jointly, and build effective cyberforces to defend the interconnected forces.
 - The substantial investments in upgrading platforms and closing additional capability gaps, such

as air-to-air refueling, will require raising the share of spending on equipment from today's NATO recommendation of 20% to 30% of the defense budget from 2024 onwards.

- A major increase in troop size is not needed, but investments in training to upgrade (technological) skills will be essential.

2. Invest in availability. One additional percentage point of availability across Europe's platforms equals procurement spending in the range of USD 10 billion.

- Making more equipment available is the fastest and most cost-effective way to increase military capabilities in the short term.
- Our analyses suggest that an increase in availability by 20 to 30 percentage points is possible for many platforms without major cost increases. Such an effort will require more industry involvement in maintenance, performance-based incentives, investment in spare parts, and improved logistics.
- Prioritizing availability pays off quickly. An availability increase of one percentage point across Europe's platforms equals procurement spending of USD 10 billion. Given that maintenance costs are 30 to 70 percent of the lifecycle costs of any platform, joint maintenance needs to be at the heart of any future European defense collaboration – it will keep costs down and availability up.

3. Move towards joint planning and procurement. Harmonizing requirements and procuring identical products are the keys to more "pooling and sharing."

- Our research shows that joint European procurement can provide 30 percent savings on equipment investment. In addition, joint procurement would facilitate interoperability, joint maintenance, and joint training.
- In light of increasing defense budgets, Europe now has a unique opportunity to showcase joint planning and procurement. To start with, the additional funds available could be used for joint procurement pilot projects, especially in areas where new threats arise, such as cyberwarfare.
- Regardless of the areas for joint planning and procurement, harmonizing requirements – and thus ensuring the procurement of identical products – is paramount to increasing the share of equipment that can be pooled and shared.

4. Take a top-down approach to industry planning. Consolidating the European defense industry will foster cooperation.

- Consolidating suppliers is a precondition to fostering European cooperation and improving training, maintenance, and procurement – and increasing the competitiveness of Europe's defense industry.
- This will only be possible if governments make consistent, systematic efforts. They will need to agree on the capabilities they require and create a framework or forum to set consolidation targets for each segment. Favoring national manufacturers over European solutions – often driven by different technical requirements – will have to be challenged.
- Without such a top-down approach, each country will tend to continue favoring its own defense contractors at the expense of interoperability and Europe's common security.

5. Push R&D and innovation. Europe needs to invest more in defense innovation.

- Europe needs to invest in more defense R&D to push innovation and should roughly triple its defense R&D spending.
- Europe needs to build new interaction models with start-ups and nondefense players to pursue disruptive, "outside-in" innovation. Europe might draw inspiration from the US Defense Advanced Research Projects Agency (DARPA) and build an ecosystem where the military can lay out a problem that researchers from universities and companies can tackle with disruptive approaches.

Europe stands at a crossroads. Its military capabilities are declining while its security challenges rise and multiply. With smart choices, European leaders can build the basis for more European, more connected, and more capable armed forces. They can lay the foundation for a much-improved security policy that is able to better represent Europe's interests at home and abroad. Repeating the mistakes of the past, on the other hand, or simply doing "more of the same," would mean missing a unique opportunity that could leave Europe's defense capabilities lagging for decades.

Chapter 1: The New Strategic Context – Finding Answers to New Threats

The first European Security Strategy, written in 2003, painted a portrait of progress, peace, and stability. “Europe,” the authors declared, “has never been so prosperous, so secure nor so free.” They welcomed the “progressive spread of the rule of law and democracy” and claimed that “successive enlargements are making a reality of the vision of a united and peaceful continent.”

“Our task,” they said, “is to promote a ring of well governed countries to the east of the European Union and on the borders of the Mediterranean.”¹ Seven years later, when NATO heads of state and government agreed on the Alliance’s strategic concept, they described the security environment in a similarly optimistic way: “today, the Euro-Atlantic area is at peace and the threat of a conventional attack against NATO territory is low.” They saw Russia as a partner, if a difficult one.²

The picture has changed dramatically. In just the last five years, threats have multiplied and shifted, and Europe as a whole is now arguably being called upon to do more for its own security than at any point since World War II. Though recent developments, such as NATO’s Operation Atlantic Resolve, have brought back more US troops to Europe, there is reason to doubt that the United States will continue to maintain the level of commitment to European security at a time when many of Europe’s security and defense capabilities are depleted.

The new threat environment: an overview

Among Europe’s wide range of security challenges, a few stand out, including antagonists old and new, instability in the Middle East, and unprecedented cyberthreats.

The relationship with Russia has become more confrontational. The annexation of Crimea by the Russian Federation in 2014 and the ongoing conflict in Ukraine show that European armed forces still have to reckon with military threats on the continent. While NATO has responded with its biggest reinforcement of territorial defense since the end of the Cold War, many analysts fear that these measures are not yet sufficient to defend the Alliance.³ Moreover, key arms control regimes, including the Intermediate-Range Nuclear Forces Treaty, are at risk of unraveling, which could trigger a new arms race.

Fragile states and economic instability around the Mediterranean and throughout Africa provide fertile ground for radical fundamentalists and transnational organized crime. Fighting in Syria, Libya, Iraq, and other countries has killed hundreds of thousands of civilians and forced millions from their homes. While ISIS has been driven from most of its territory in the Middle East, the threat it poses to European citizens will likely continue to grow.

In other words, instead of “a ring of well-governed countries,” Europe is facing an arc of economic and political turmoil – or, as the former Swedish Prime Minister and MSC Advisory Council member Carl Bildt put it, a “ring of fire.”⁴

On top of these threats, a new battlefield has emerged in cyberspace. Electronic attacks and information warfare on European companies, state institutions, and society itself are on the rise. About 80 percent of European companies experienced at least one cybersecurity incident in 2016.⁵ Governmental networks, including the German Bundestag, have been attacked, as have democratic processes themselves. The pillars of Europe’s peace and prosperity, from the power grid to banking, and from transportation to voting, may face potent new threats in the years ahead.

Will America remain a European power?

“The era in which we could fully rely on others is over to some extent. [...] We Europeans truly have to take our fate into our own hands.”⁷

**GERMAN CHANCELLOR
ANGELA MERKEL**

Since the end of World War II, many Europeans have relied on American power as the ultimate guarantee of their security. The United States (and thus NATO) are still essential to Europe’s security. American leaders also saw the arrangement as beneficial, but, in recent years, expressed growing frustration with a lack of European defense spending, calling for a more equitable sharing of the burden. Today, new questions have arisen about the breadth and depth of the US commitment.

Six years ago, Robert Gates, as US secretary of defense under President Obama, warned in his farewell speech to NATO Allies in Brussels: “the blunt reality is that there will be dwindling appetite and patience in the US Congress – and in the American body politic writ large – to expend increasingly precious funds on behalf of nations that are apparently unwilling to devote the necessary resources or make the necessary changes to be serious and capable partners in their own defense.”⁶ But, until 2016, few Europeans seriously doubted the US commitment to Article 5, NATO’s collective defense clause.

President Donald J. Trump raised those doubts with sharp and repeated criticisms of NATO and the contributions of European Allies. Most importantly, to the dismay of his Allies and even many of his own advisers, President Trump initially declined to publically endorse Article 5,⁸ NATO’s collective defense commitment, after having previously implied that countries that did not spend 2 percent on defense would not be covered.⁹ Even though Secretary of Defense James Mattis assured that “America [would] meet its responsibilities,” he also demanded greater “support for our common defense” from the United States’ European Allies, lest America moderated its commitment to the transatlantic Alliance.¹⁰

To be sure, this discussion did not begin with President Trump, and it will not end with the final day of his presidency. In some ways, as Robert Kagan has argued, “Europe, with its own solipsism, has often taken for granted just how abnormally unselfish American behavior has been since the Second World War.”¹¹

In short, then, as the European security environment has become much more challenging, the United States appears to be less willing to continue providing its current high share of the burden for defending the continent. Whether Europeans like it or not, this debate is not going to go away.

Stretched, outdated, unavailable: European capabilities today

“NATO members must finally contribute their fair share and meet their financial obligations, for 23 of the 28 member nations are still not paying what they should be paying and what they’re supposed to be paying for their defense. [...] This is not fair to the people and taxpayers of the United States.”¹²
**US PRESIDENT
 DONALD J. TRUMP**

What makes this uncertain situation worse is the decline in European defense capabilities. This deterioration has many causes, but significant – and largely uncoordinated – cuts in national defense budgets have clearly accelerated the decline. Europe’s armed forces are faced with reduced and outdated equipment (including materiel stock shortages) as well as a general availability crisis. These challenges are exacerbated by undertrained military personnel.

Since 1995, equipment inventories have been reduced across almost every major category of military equipment. Europe used to have 141 submarines, for example; it now has 78. More than 11,000 armored infantry fighting vehicles have been reduced to around 7,500, as shown in Exhibit 1. Some of these reductions were “peace dividends” in the wake of the Cold War settlement, and some certainly made sense, but inventories of conventional weapons are far below the limits agreed to in the 1990 Treaty on Conventional Armed Forces in Europe. The current numbers therefore seem driven more by budget realities than overarching political or military objectives.

In addition, many weapon systems have had their use extended well beyond their originally estimated life. For example, the lifespans of Tornado combat aircraft and the CH-53G transport helicopters have both been extended to more than 40 years, going far beyond the planned operating life of about 25 to 30 years. Efforts to procure new equipment, such as the A400M transport aircraft, have suffered from substantial delays and operational malfunctions.

Finally, a post-Cold-War focus on expeditionary operations and the constraints of austerity came at the expense of equipment availability across many weapon systems. For example, in some states, up to half of helicopters or infantry fighting vehicles are not deployable.¹⁴

Meanwhile, other actors are making major military investments and technological advances, changing the operational environment for European militaries. For example, the proliferation of anti-access and area-denial (A2/AD) capabilities, such as missile air defense, could greatly complicate European military operations.¹⁵ Additionally, Europe’s militaries and national armament industries have been challenged by the technological complexity of today’s weapon systems.

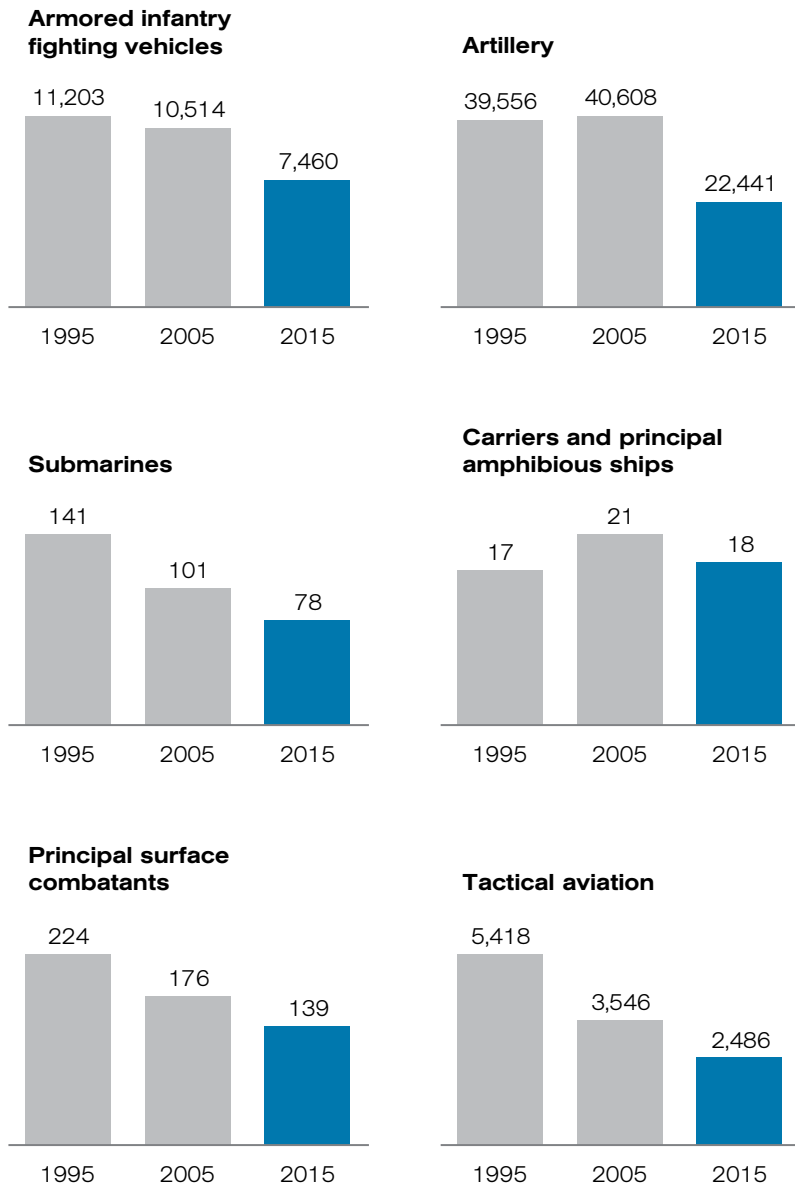
As our previous reports have shown, Europe’s industrial landscape for weapon systems remains fragmented. For example, while the United States uses a total of 30 types of major weapon systems, European Defence Agency members use 178,¹⁶ presenting major logistical challenges from training to spare parts and interoperability (see Exhibit 2).

Given these shortfalls, European nations are regularly overwhelmed by the demands of new missions, raising difficult questions about the years ahead. Suppose, for example, that the UN Security Council asked European nations to contribute the lion’s share to a peacekeeping mission in Ukraine’s contested Donbass region, which has a larger population and a more challenging environment than Kosovo. What if a significant number of troops were needed to stabilize Libya? Could European forces meet additional commitments, such

Exhibit 1

KEY MILITARY EQUIPMENT IN EUROPE HAS BEEN REDUCED FROM 1995 TO 2015

Developments in key military equipment in Europe, 1995 - 2015, number of units



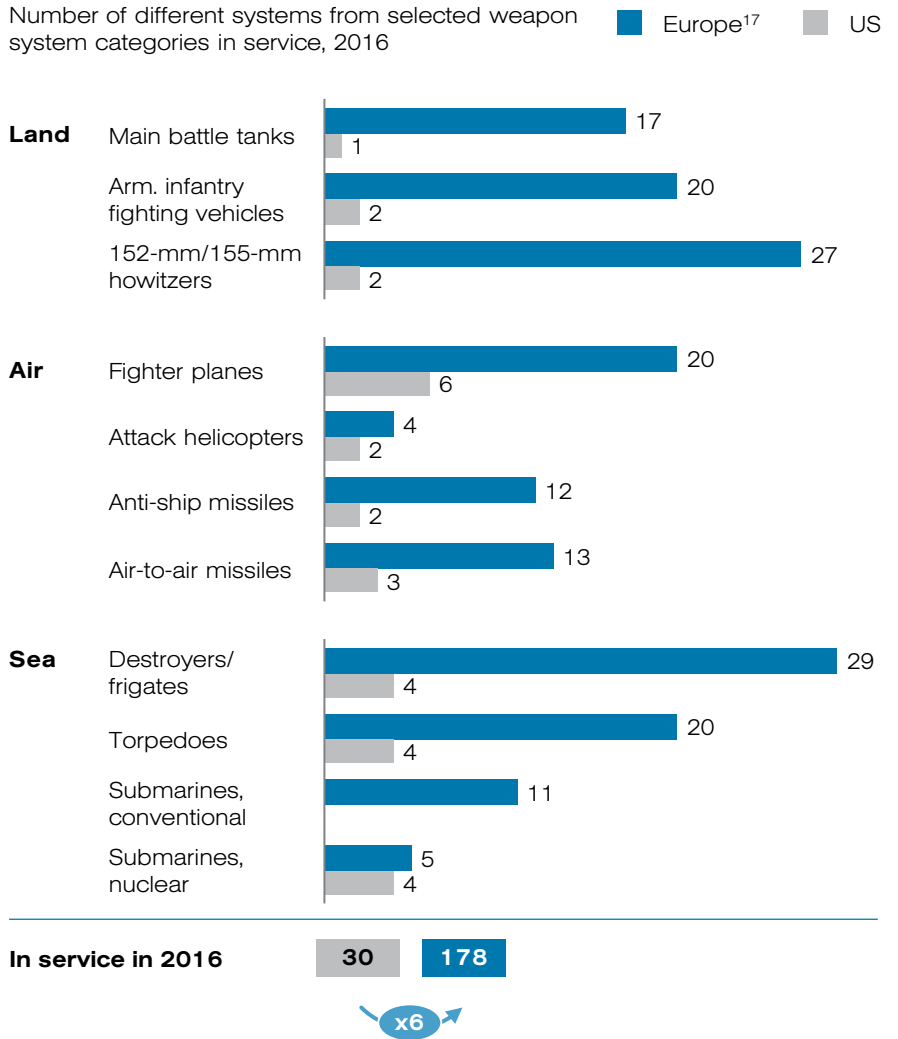
Source: Munich Security Report 2015; IISS, *The Military Balance* (2015)¹³

as NATO's Enhanced Forward Presence in the Baltic States and Poland, and extend these to other Allies? To consider an even more dire scenario, would Europe be able to mount an effort similar to Operation Unified Protector, which required about 670 air systems to sustain, if the United States decided to not even "lead from behind"?

Exhibit 2

EUROPE STILL HAS A SIX TIMES HIGHER DIVERSITY OF WEAPON SYSTEMS COMPARED TO THE US

Number of different systems from selected weapon system categories in service, 2016



Source: McKinsey analysis, based on IISS, *The Military Balance* (2016) and expert interviews, as published in Munich Security Report 2017¹⁸

A Europe that protects: one goal that people agree on

European leaders must demonstrate to citizens and potential opponents alike that they can design and maintain security and defense policies that make Europeans more secure.

In the aftermath of the financial and Euro crises, with Brexit unfolding and right-wing populism on the rise, many have argued that Europeans want “less Europe,” and “less Brussels,” and instead more control at the national level. However, according to opinion polls this attitude does not extend to foreign or security policy. A Eurobarometer poll in April 2017, for example, found that 75 percent of Europeans favor a common defense and security policy among EU member states, with only 20 percent opposed.¹⁹

Thus, even as opposition against the EU becomes more vocal, most Europeans see that member states are too small and weak to manage massive security and defense issues on their own. The EU as a whole, they seem to think, is better equipped to meet the security challenges of the 21st century.

The way forward

“[...] our deference to NATO can no longer be used as a convenient alibi to argue against greater European efforts.”²⁰

**PRESIDENT OF THE
EUROPEAN COMMISSION
JEAN-CLAUDE JUNCKER**

This, then, is the new landscape for Europe: in a significantly more threatening environment with depleted military capabilities and the most powerful ally looking to reduce its involvement, European citizens expect more robust security and defense.

As of today, Europe is struggling to rise to this difficult challenge. Recognizing the new landscape, many countries have begun to increase their defense budgets, several have deepened their mutual cooperation, and a few have even integrated smaller parts of their armed forces across national boundaries. While this bottom-up approach has yielded important advances, Europe will need to do more. With a few exceptions, European leaders have stayed clear of a more top-down approach to defense cooperation, but recent summit declarations and other documents have pointed to the benefits of a joint European approach to defense (e.g., the Franco-German declaration of July 2017, or the European Commission’s reflection paper on the future of European defense).

In 2012, a French-German ministerial declaration stressed that “in times of strategic uncertainty and limited resources, strengthened defense requires common procurement.”²¹ At the Munich Security Conference in 2014, German defense minister Ursula von der Leyen said, “we already lost time by looking too much at our national courtyards instead of focusing on the whole set of European forces. If we Europeans want to remain a credible actor in security policy, we must plan and act together.”²² Emmanuel Macron, in his Sorbonne speech in September 2017, even argued that, “at the beginning of the next decade, Europe must have a joint intervention force, a common defense budget, and a joint doctrine for action.”²³

The ambition is evident, at least in parts of Europe – as are the benefits. Joint defense procurement alone, McKinsey found in a study earlier this year, could cut costs on equipment by 30 percent, or ~ USD 15 billion per year.²⁴ Steps already taken include the establishment of the European Defence Fund, which was launched by the European Commission this year to support joint

“We are making defence cooperation the norm, not the exception. This is the smart and the efficient way to invest in our defence. It is the only way to make the most out of the resources we spend, and also to strengthen our defence industry, all across Europe [...]”³⁰

HIGH REPRESENTATIVE OF THE UNION FOR FOREIGN AFFAIRS AND SECURITY POLICY FEDERICA MOGHERINI

“The ability of our Alliance to fulfil all its tasks depends on all Allies contributing their fair share. Europeans cannot ask the United States to commit to Europe’s defence if they are not willing to commit more themselves. In 2014, Allies sat around the same table, looked each other in the eye and agreed to invest more in defence. [...] That is good for Europe and it’s good for NATO.”³²

NATO SECRETARY GENERAL JENS STOLTENBERG

procurement and defense research; the Coordinated Annual Review on Defence (CARD); and efforts by most member states to move forward on Permanent Structured Cooperation (PESCO) in defense and security policy, as foreseen in the Lisbon Treaty. Referring to PESCO, Jean-Claude Juncker stressed at the 2017 Defence and Security Conference in Prague that the EU “already has the legal means at its disposal to move away from the current patchwork of bilateral and multilateral military cooperation to more efficient forms of defence integration.”²⁵ NATO has underscored the importance of multinational cooperation in procurement and operations through the Framework Nations Concept (FNC) and other initiatives.²⁶ Most importantly, the positive steps taken on the path towards stronger cooperation between the EU and NATO have opened new ways of combining the strengths of the two organizations, which had long been “interblocking” rather than interlocking institutions.²⁷ As NATO leaders concluded at the Wales Summit: “NATO and EU efforts to strengthen defence capabilities are complementary.”²⁸ Both institutions can profit from the strengths of the other: while the Framework Nations Concept can benefit the European pillar in NATO, EU funds for infrastructure are essential for collective defense efforts in NATO.²⁹ However, despite these institutional efforts, courageous steps by individual states or groups of states will still be essential in order to create successful joint procurement in Europe.

Spending more will not answer all of Europe’s challenges, of course. *How* Europe spends its defense budgets is vitally important. The current situation represents a unique opportunity to build the best European forces for the future: first, defense budgets are rising again, and they are rising significantly. It is unclear whether the 2-percent commitment will be met by 2024, but it is clear that additional investment is needed. Second, it is now well understood that European countries must cooperate more closely and pool and share their resources to raise returns on their investments rather than building purely national armies to support national industries.

Spending more, and spending it smartly and jointly, may represent Europe’s last best chance for several decades to reshape the nature of Europe’s defense forces, military cooperation, and industrial base.

This report aims to illustrate the choices European leaders could make and the implications for Europe’s armed forces, industrial base, and overall economy.

The 2-percent debate: what’s in a number?

Contrary to common wisdom, the 2-percent guideline – the minimum share of GDP that NATO members should spend on defense – is not a new idea. Conceived in the enlargement debate of the early 2000s as a lower threshold for the applicant states, it became an informal benchmark for all Allies. At the Wales Summit in 2014, NATO leaders officially committed to the guideline.³¹ Even if not legally binding, this official endorsement, combined with a clear timeline until 2024, has significant political importance. More recently, President Trump’s repeated references to the 2-percent goal thrust what had been an arcane topic into the public spotlight and electoral campaigns.

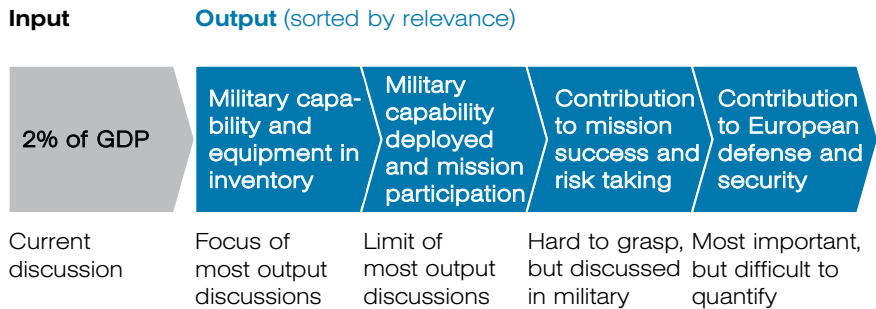
Critics of the 2-percent goal have argued that it is not a good measure for an Ally’s contribution to collective defense and security.³³ Indeed, a narrow focus on inputs can obscure more than it reveals (see Exhibit 3). Countries that spend

most on defense are not necessarily those that make the biggest contributions to European or Allied security. Some may spend more than 2 percent of their GDP on defense but make only minor contributions to the Alliance as a whole – and seldom show up for NATO or EU missions. Other countries fall short of the 2-percent goal while providing crucial capabilities to joint missions or by regularly committing troops to common operations. NATO uses (nonpublic) criteria to evaluate the military output of member states, but these criteria also struggle to give a full picture.

Exhibit 3

NEXT TO THE INPUT-FOCUSED 2% INDICATOR THERE ARE A VARIETY OF RELEVANT OUTPUT DIMENSIONS TO MEASURE THE CONTRIBUTION OF A NATION

Relevance of input and output indicators



Source: Own representation

The 2-percent criterion also obscures the fact that transatlantic burden-sharing cannot be reduced to military contributions alone. Quite simply, a comprehensive understanding of security requires comprehensive instruments ranging from classical military tools to diplomatic initiatives, crisis prevention, and development assistance. As Secretary of Defense James Mattis put it when serving as commander of CENTCOM: “if you don’t fund the State Department fully, then I need to buy more ammunition.”³⁴ Wolfgang Ischinger has proposed to broaden the 2-percent goal, advancing a 3-percent goal for contributions to international security. This 3-percent goal, which would include spending not only on defense but also on diplomacy and development, was embraced by various political leaders in Germany and beyond, including former German President Joachim Gauck.³⁵

It is also evident that defense spending can be raised only incrementally over time. Pointing to the increase of the German defense budget by 8 percent and her general commitment to the 2-percent goal, Chancellor Angela Merkel made clear at the Munich Security Conference 2017 that a steeper increase would not make sense: “We cannot do more if we want to absorb that amount, ... if we want to turn this into capabilities.”³⁶ Indeed, spending more requires new procurement systems as well as human and operational capabilities.³⁷

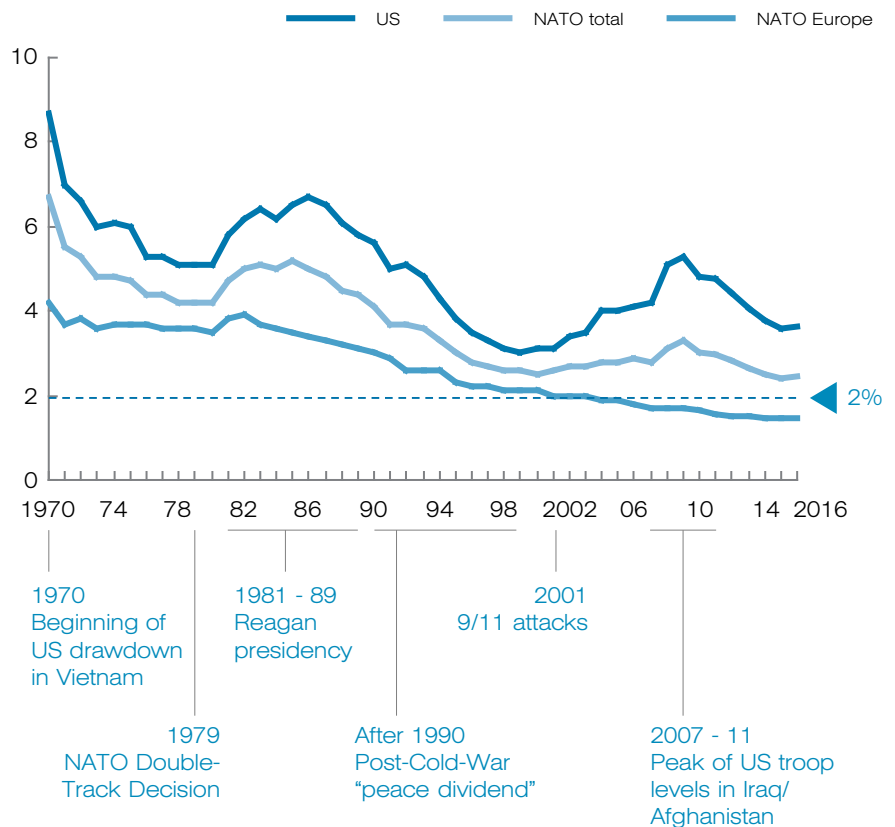
Spending does matter, of course: major investments will be required to close fundamental gaps in European military capabilities. Merely pooling and sharing will not be enough. Increasing Europe’s spending on defense towards the 2-percent goal would not mean entering an arms race but simply filling gaps that have widened over the past years.

On average, throughout the history of the Alliance, European NATO members have spent much more than 2 percent of their GDP on defense, as shown in Exhibit 4. Only since the beginning of the 2000s did many of them begin to spend less.

Exhibit 4

SINCE 2001 THE SPENDING GAP BETWEEN THE US AND NATO EUROPE HAS WIDENED AND HAS REMAINED CONTINUOUSLY HIGH

Defense expenditure share of GDP for US, NATO total, and NATO Europe, percent of GDP; calculation based on current prices³⁸



Source: McKinsey analysis, based on NATO statistical data releases³⁹

This report does not promote specific numerical targets for defense spending. Nor does it discuss the cooperation formats that NATO-EU might use to advance Europe's contributions to transatlantic burden-sharing. Instead, taking note of the positive developments in NATO-EU cooperation, it aims to contribute to the debate by providing different perspectives on the effects of increased defense spending.

Taking the 2-percent commitment by European leaders as a starting point, this report explores what it would actually mean for European defense if European countries met the 2-percent goal. We understand that it is unlikely that all Allies will actually meet that target. The fundamental results of our analysis also apply if Allies increase their defense spending considerably while individually falling short of the 2-percent goal.

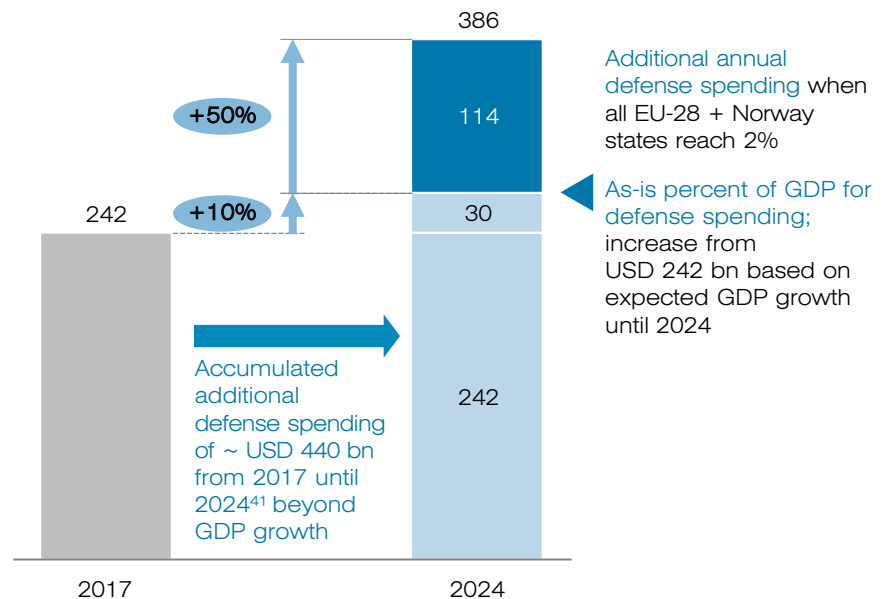
What would 2 percent actually mean?⁴⁰

Few debates on defense include specifics about what reaching the 2-percent goal would mean in practice. In order to be able to get an idea of the potential effects of the upcoming rise in defense budgets, we estimated the additional spending available based on NATO's 2-percent goal. The result: from 2024 onwards, spending 2 percent of GDP on defense would imply additional annual spending of USD 114 billion for EU-28 + Norway, resulting in annual spending of around USD 386 billion (see Exhibit 5). This equals a 50 percent increase over today's overall spending of NATO-EU countries or the equivalent of double the United Kingdom's 2017 defense budget. In other words, it would mean adding "two UKs" a year.

Exhibit 5

REACHING 2% IMPLIES AN ADDITIONAL DEFENSE SPENDING OF USD 114 BILLION IN 2024

EU-28 + Norway total defense expenditure, USD billions (2017 constant)



Source: McKinsey analysis, based on IHS Markit Forecast (July 2017) [forecasted GDP]; NATO [defense expenditure]; IISS, *The Military Balance 2017* [defense expenditure non-NATO countries]

USD 114 billion a year additional spending on defense from 2024 onwards – if EU-28 + Norway countries reach 2%.

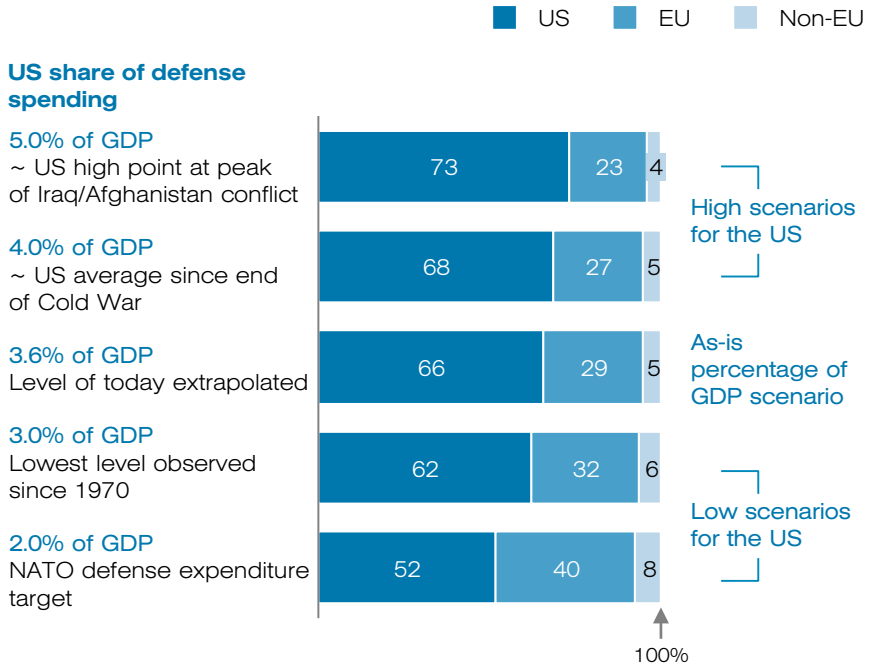
These are huge investments, but even if NATO-EU members all reached 2 percent by 2024, their share of NATO member states' total defense spending would remain about 30 percent, as shown in Exhibit 6 – assuming the United States continues to commit the same share of its GDP to defense.

Of course, not every country may be able or fully committed to substantially increasing its defense budget. Several European governments are struggling with low growth prospects, high debt-to-GDP ratios, and fiscal deficits – and therefore increased pressure to comply with EU fiscal rules. Political leaders face significant domestic pressure and trade-offs in allocating funds, and are

Exhibit 6

IRRESPECTIVE OF SPENDING SCENARIOS, THE US WILL CONTINUE TO PROVIDE THE LARGEST SHARE OF NATO MEMBER STATES' TOTAL DEFENSE EXPENDITURE

Share of NATO member states' defense expenditure, 2024 view, non-US Allies kept constant at 2% of GDP on defense⁴², percent



Source: McKinsey analysis, based on IHS Markit Forecast (July 2017) [GDP]; NATO [defense expenditure]; IISS, *The Military Balance 2017* [defense expenditure non-NATO countries]

If all NATO-EU members reach the 2% goal, they would account for around **30%** of the entire NATO member states' defense expenditure

wary of being accused of focusing unduly on rearmament. Others see reforms of the defense procurement system as a necessary prerequisite to investing.

Moreover, moving towards 2 percent presents significant challenges to the European defense industry, which may not be able to ramp up capacity quickly enough if a large share of the additional funds are spent on new equipment.

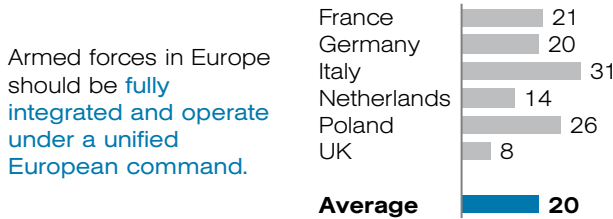
All European countries will have to do more. However, looking at current defense spending and the difference in countries' GDP size, it also becomes clear that the bulk of additional spending will fall on a small number of countries. According to our research, half of the additional spending (EU-28 + Norway) of USD 114 billion in 2024 would have to come from Germany, Italy, and Spain – as those countries have high GDPs and a relatively low defense budget in terms of percent of GDP.

Moving towards the 2-percent goal will be a difficult climb. And European citizens expect it to be a European one, as shown in Exhibit 7. In a YouGov survey conducted exclusively for this report, 75 percent of Europeans favour close cooperation between Europe's national armies in the future; 41 percent of the respondents do not even see the need for national armies to be able to be deployed independently.

Exhibit 7

IN YOUR OPINION, WHAT SHOULD COOPERATION BETWEEN ARMED FORCES IN EUROPE LOOK LIKE IN 2040?

Opinion poll, November 2017, by country and non-weighted average, percent



~ 75% of respondents favor significant cooperation between national armies in Europe

Source: YouGov opinion poll, conducted exclusively for the Munich Security Conference and McKinsey⁴³

Chapter 2: More of the Same? Defining Imperatives for European Defense Spending

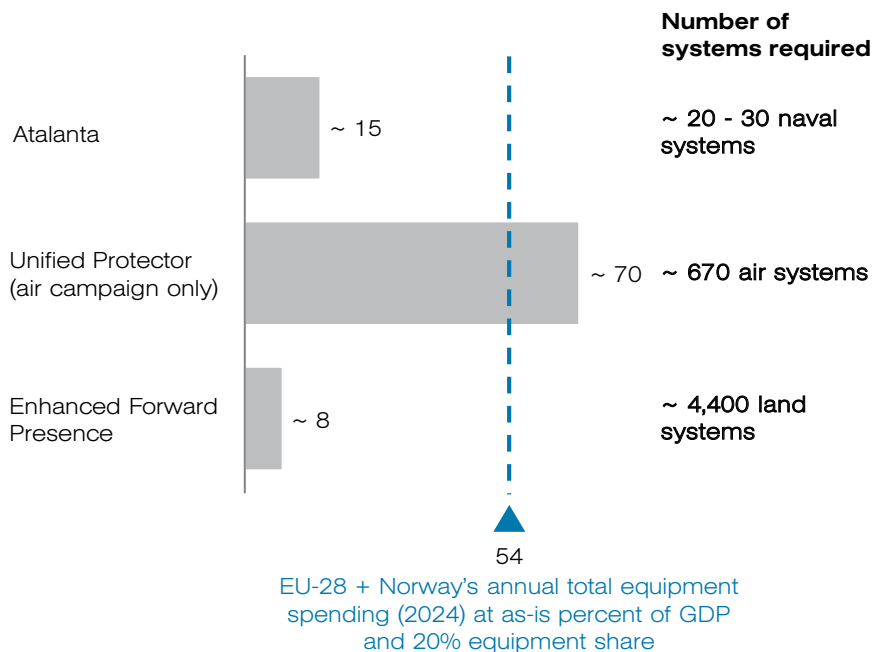
Much of the debate has focused on how much additional taxpayer money Europe should commit to defense. Regardless of the answer, leaders will have to make careful, well-informed decisions about how to allocate any new funds and what kind of forces to build.

While the discussed additional budget of USD 114 billion in 2024 might lead some to believe that Europe can afford “more of everything,” that is not the case. Building effective armed forces requires complex, long-term efforts. To illustrate this point, we chose a hypothetical example: how long would it take to purchase, from scratch, all the necessary equipment for an Operation Unified Protector-like mission (the air campaign over Libya in 2011)? Europe would actually need to invest 1.3 years of its 2024 total equipment spending (percent of GDP as is) to purchase the 670 weapon systems required (see Exhibit 8). This shows that buying the entire equipment for just one large mission by itself is a rather tall order in terms of the investment required.

Exhibit 8

IF EUROPE WERE TO PURCHASE ALL THE EQUIPMENT NECESSARY FOR A MAJOR AIR CAMPAIGN INDEPENDENTLY, IT WOULD NEED TO SPEND ITS COMPLETE EQUIPMENT INVESTMENT OF ~ 1.3 YEARS ON IT

Total required equipment investment to procure equipment for one mission, USD billions (2017 constant)



Source: McKinsey analysis⁴⁴

This illustrates two key points: successful defense requires stocks, not just flows, of people and equipment; and fully replenishing stocks takes decades. Even at a high investment rate European countries would not reach pre-2005 inventory levels for more than ten years. For example, the United States has more than 2,800 main battle tanks, while the armies of the United Kingdom, France, Germany, Spain, and Italy have around 200 to 350 each.⁴⁵

The need to make informed, smart choices

Our calculations suggest that from 2024 onwards USD 114 billion in additional annual funds could be available for defense spending for EU-28 + Norway at 2 percent of GDP. Rising defense budgets could open a unique window of opportunity to shape the European armed forces of the future.

The United States launched an analogous increase in spending in response to the 9/11 attacks. Its transformation of its defense and security forces included an integration of intelligence efforts supported by new cyber, digital, and analytics capabilities.

European leaders have a range of smart options on the table that can substantially enhance capabilities for each euro invested. They include more pooling, sharing, digitizing, capability gap filling, stock replenishing, and interoperability of forces. In other words, this is a unique moment of opportunity. New investments in defense could shape the direction of European forces and the industrial base alike for generations to come.

Making the right choices about how to spend the additional funds – which are not yet committed – requires a review of the options and their implications for Europe's armed forces, industrial base, and overall economy.

A balanced approach to replenishing stocks

All of these objectives have to compete with the strong impulse to simply replenish stocks after an unprecedented period of reducing them. Clearly, after almost two decades of declining budgets, Europe has incurred a wide range of significant capability gaps. NATO's minimum capability requirements provide the foundation for member states' capability development. The gaps span all seven pillars: munitions, strategic lift, special operations forces, in-theatre lift, cyberdefense, air and missile defense, and command, control, communications, computers, intelligence, surveillance, and reconnaissance (known as C4ISR).

Today, faced with new threats and potential missions, Europe must close some of those most pressing capability gaps both in terms of training and traditional equipment, such as that required for air-to-air refueling and air defense.

Increasing spending towards the 2-percent target would help military forces close these gaps. For example, if countries invested 20 percent (the current NATO benchmark for defense spending on equipment) of the annual USD 114 billion additional spending (EU-28 + Norway) into equipment, allocating the funds as they do today across air, land, sea, and other domains, European countries could afford 400 additional weapon systems every year from 2024 onwards (based on current weapon systems mix).⁴⁶ This would already close some gaps.

Imperatives and a scenario on how to spend the additional funds

But investing wisely into going beyond “more of the same,” Europe can build more capable, readier, more digital armed forces that can handle additional large-scale missions relatively independently. We see a few overarching imperatives for how to spend the additional funds to build effective forces for the future. These imperatives hold true regardless of the size of the increase in defense budgets; they will help Europe to enhance the capabilities gained per euro invested.

These imperatives include digitization and interoperability, enhanced readiness, integration, industrial base consolidation, and innovation. Some may appear to complicate the job of defense decision makers aiming to close capability gaps, but only by addressing all of these imperatives can Europe build the forces it needs for the challenges ahead. Before turning to the decisions required for implementation in the next chapter, here is an outline of the imperatives.

Create interoperable and interconnected European forces

European forces will not just have to be interoperable but also highly interconnected. The next generation of electronics for air, land, and sea systems will allow sensing, networking, and communications to create a truly fused and joint battlefield picture, reducing the infamous “fog of war.” Interconnected forces using real-time data will rely on command, communication, and control systems from a combined operations center down to the individual soldier. This will require increased spending on command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) and provision of smart services along with a more efficient and resilient digital backbone. The modernization of US forces illustrates the relevance of C4ISR: in the 1970s, the US C4ISR spend was 6.6 percent of total defense expenditure; today it is almost 15 percent.⁴⁷

Such (inter-)connected forces will require three core areas of investment that will substantially transform today’s capabilities, leveraging digital and electronic technologies much more broadly – and are necessary to close today’s digitization and interconnectedness gap of ~ USD 30 to 50 billion annually:

Firstly, great effort will have to go into enabling platforms to connect with each other, that is, “adding more software to the hardware” and creating smart platforms with rich data. In some cases this will require an upgrade of existing hardware, adding more sensors, data links, and electronics to increase data density and allow more “blue force tracking”, i.e., identifying friend and foe as part of an integrated picture across all domains. Substantially increased background bandwidth is also required. Based on the current number of platforms and their relative level of digitization or connectedness, we estimate this cost to range between USD 120 billion and USD 140 billion. This translates to an annual budget of ~ USD 20 to 30 billion, assuming a 5 to 7 year upgrade cycle. A second area of investment will be to connect the dots through the joint processing and analysis of operational and intelligence data. This will require the creation of more combined operations centers, where information-rich data

is aggregated and evaluated. Next to further investment into modern signals intelligence technology and C4ISR, existing analysis capabilities in intelligence organizations need to be complemented by stronger data analytics capabilities. In most forces, the headcount and capabilities within their intelligence unit do not yet adequately reflect the richness of data that their organizations produce. In total, investment into the required space, C4ISR, and processing and analytics capabilities will require some USD 10 to 15 billion annually.

Closing the inter-connectedness and digitization gap of Europe's forces:
USD 120 - 140 billion

A third area of investment for interconnected forces relates to defending the increasingly large digital perimeter through effective cyberforces. A few European countries have already built significant cyberforces, while others have yet to organize their cyberoffense and -defense. While accurate numbers are hard to come by and the delineation of "cyberwarriors" is not clear-cut relative to signals intelligence and other IT systems, we estimate that there are currently some 2,500 to 3,500 soldiers in the European cybermission forces. This is only half the size of the US Cyber Command, despite Europe and the US facing a similar cyberthreat environment. To increase this number in Europe, investment into cyberranges and -technology will be one component of a total USD 2 to 3 billion annual investment requirement. However, the majority of this spending, some USD 1 to 2 billion, will have to go into the hiring and training of cybermission forces in order to reach a desirable level of 6,000 to 7,000 personnel trained in this area.

Through these investments (see Exhibit 9), Europe will be able to close its "interconnectedness and digitization gap".

Address the readiness problem

Most major platforms are suffering from readiness or availability issues due to – *inter alia* – the lack of focus on the weapon system's lifecycle as a whole. In larger European countries, for example, some key platforms exhibit a technical availability of less than 50 percent. Putting it another way, some current weapon systems are only ready for deployment or training for less than five years out of every ten years in inventory.

An increase in availability for many platforms by
20 to 30 percentage points is possible without any significant cost increase

Based on our work and assessment of platform logistics, we estimate an increase in availability by 20 to 30 percentage points for many platforms will be possible without any significant increase in costs, merely through introducing best practices in maintenance contracting and execution.

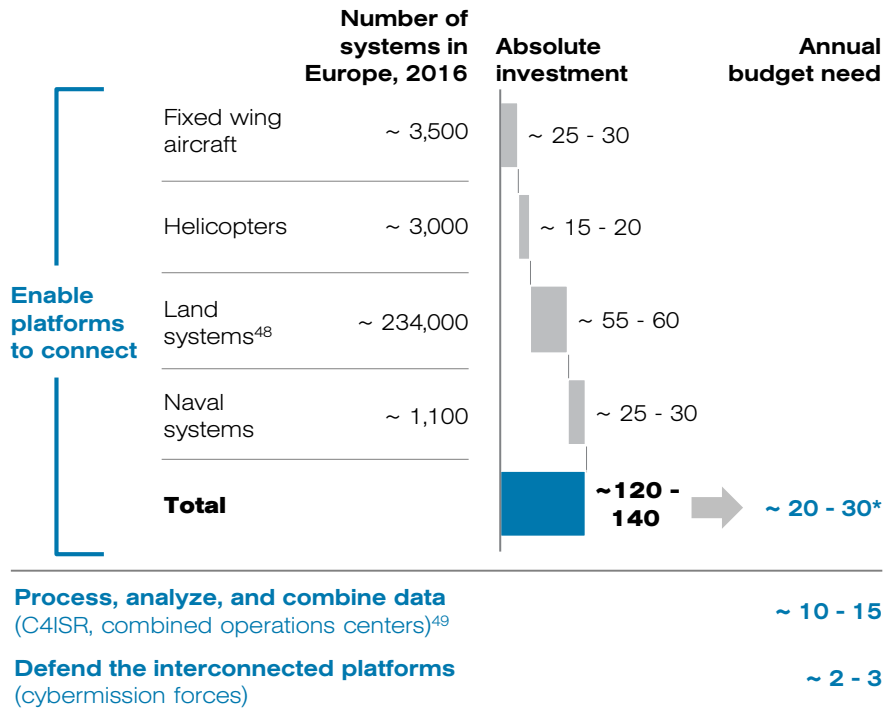
In some cases, the technological complexity of the platform is a driving factor and additional budget will need to be allocated. But most problems result from the way logistical systems are set up. Complexity in the value chain, multiple handovers between industry and customers, substandard spare parts management, complex certification practices, a lack of predictive maintenance, and poorly structured incentive structures add up to today's suboptimal practices and outcomes. A major shift towards performance-based logistics is required, with the industry taking on more responsibility.

Governments will have to invest in spare parts and new contracts, but much of the hard work will be in preparing the logistics system for a real shift.

Exhibit 9

TO CLOSE THE INTER-CONNECTEDNESS AND DIGITIZATION GAP OF EUROPEAN FORCES, A TOTAL OF USD ~ 120 - 140 BILLION IS REQUIRED

Estimate of costs required to modernize Europe's forces (EU-28 + Norway), USD billions (2017 constant)



* To achieve a 5 - 7 year upgrade cycle
 Source: McKinsey analysis, based on IISS, *The Military Balance* (2017) [number of systems in Europe], company reports; MoD reports; expert interviews⁵⁰

Drive European harmonization and integration

Despite much lower stock levels than the United States, Europe's defense sector is still highly fragmented, with six times more types of major weapon platforms. Different weapon system standards across the continent prevent truly joint procurement processes. The protection of national armament industries as well as the employment benefits they produce is oftentimes still prioritized over cost efficiency and weapon system effectiveness. This fragmentation is still a major reason for today's capability gaps in Europe, as the limited funds that are available are spent inefficiently and ineffectively.

Thus, a major lever in closing today's capability gaps is the harmonization and standardization of requirements in order to enable joint "pooling and sharing" of defense equipment. This would enable lower procurement, maintenance, and follow-up costs as well as better interoperability of equipment.

Joint defense procurement alone, a prior McKinsey study has found, could save 30 percent or ~ USD 15 billion per year in European procurement⁵¹ – not including increases in interoperability and effectiveness and reductions in training expenses, which would all represent additional value.

Consolidate the European industrial base

In order for joint procurement and defense processes to work properly, a consolidated industrial base is a prerequisite. Greater scale and efficiency will lower costs, and pan-European industry will help unify fragmented acquisition programs.

Over the past years, some consolidation has already taken place in Europe's defense sector. As a previous McKinsey report shows, the number of main battle tank manufacturers in Europe has gone down from 13 in 1986 to 6 in 2016. There are only 6 combat aircraft manufacturers in Europe today versus 16 in 1986.⁵²

However, megamergers between European defense players are still largely absent. The largest envisaged merger in the European defense industry – that of Franco-German EADS and UK-based BAE Systems – failed in 2012, as concerns over an imbalance of national influence made the deal impossible.

Recent successes in joint procurement, such as the German-Norwegian submarine program of 2016 that managed to procure identical submarines for the first time ever, leveraged the newly set up program to further consolidate national industries, particularly in the respective German and Norwegian electronics naval segments involved.

Harness defense to drive disruptive innovation

While the defense sector has traditionally been a core driver of disruptive innovation, this trend has reversed in recent years, when most innovation has been driven by digital tech players. Digital giants Google, Amazon, Microsoft, and Intel spend more than USD 50 billion a year on digital innovation – a sum European governments will find hard to match.⁵³ While in the past the defense sector brought about innovation, such as the Internet (formerly ARPAnet), GPS, and even laid the basis for private sector innovation, such as SIRI or Google Maps, innovation now increasingly takes place in the private sector. While in 1987 the US DoD accounted for ~ 40 percent of all R&D spending in the US, in 2013 this share had dropped to below 20 percent.⁵⁴

However, with the right approach (proven over decades in the United States' Defense Advanced Research Projects Agency), the incremental innovation approach prevalent today in most European armies could be transformed into a more disruptive approach. This would then lead to much larger innovation spillover, not just into the armed forces, but also into adjacent economic sectors.

Smarter ways of spending also lead to a higher economic multiplier

Implementing the imperatives outlined would not only contribute to readier, more European, and more connected forces, but would also increase the economic spillover effects in and beyond Europe's defense industrial base. As such, a study commissioned by the European Defence Agency⁵⁵ for the economic multiplier in defense – that is, the effect of the additional defense spending on the economy and GDP – indicates that for every euro spent on

defense, EUR 1.6 can be added to GDP. This presumes that intra-EU trade will increase and add positive economic activity, something that can only work if a truly European defense market is created. Moreover, additional studies show that the fiscal multiplier for research and development (R&D) is even higher: a study initiated by the European Commission indicated a multiplier value of 6.3 on every euro spent⁶⁶. This supports the argument that additional expenditure that goes into real, disruptive innovation will have an even higher and more positive effect on the economy.

Acting upon these imperatives within a budget is the subject of the next chapter.

Chapter 3: Five Choices for Europe – Creating the Armed Forces of the Future

Now is the optimal time for Europe to reshape the nature of its defense forces, military cooperation, and industrial base.

Deciding exactly how and how much to spend is complex, and the decision-making process should include crafting structures and incentives so that additional spending translates into better capabilities and closer cooperation.

First of all, leaders will need to create structures and incentives for joint planning and procurement processes. This is particularly important on the level of large, joint procurement programs. But also beyond these programs, these structures and incentives should help bring industry, ministries of defense, and academia together in the pursuit of common research goals. They should build on existing frameworks.

Making poor choices could mean cementing today's status quo for decades, including any shortcomings in Europe's military capabilities, cooperation, and industrial structure.

Based on our research, five key choices will help Europe gain the most value from additional spending by building more European, more connected, and more available forces.

1. Prioritize investment in equipment in order to upgrade Europe's armed forces

European leaders must decide how to allocate additional spending among people and materiel. Modernizing forces will require inventories to be upgraded and the most important capability gaps to be closed (e.g., air-to-air refueling capabilities), in alignment with NATO's minimum capability requirements and the European Defence Agency's capability development plan.

This investment in equipment will need to have a particular focus on closing the interconnectedness and digitization gap of USD 120 to 140 billion by enabling platforms to connect. This includes investment into relevant equipment such as sensors, data links, and electronics. Further, more building capacities to process and analyze data jointly and defending these systems with increased cyberforces is required.

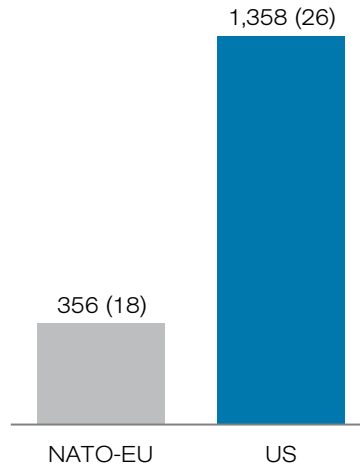
An upgrade of Europe's armed forces will not need a major quantitative shift in troop size, but it does need investment into the troops' skills. The forces of NATO-EU member states already include 1.38 million soldiers⁵⁷; slightly more than the United States. The challenge will be to upgrade their skill level (e.g., technological skills), which might lead to rising overall personnel costs.

In the US, over the last 10 years equipment defense expenditure averaged 26 percent of the defense budget, while NATO-EU member states averaged only 18 percent (see Exhibit 10).

Exhibit 10

IT IS A STOCK GAME – COMPARED TO NATO-EU, THE US HAS CONTINUOUSLY INVESTED A LARGER SHARE AND ABSOLUTE VALUE OF ITS DEFENSE BUDGET IN EQUIPMENT

Cumulated equipment defense expenditure from 2010 - 2017, USD billions 2010 constant (percent of total defense expenditure)⁵⁸



Source: McKinsey analysis, based on NATO defense expenditure data

Annual investment in equipment at 30 percent defense spending on equipment:
USD 116 billion
 in 2024 (2% scenario)

We suggest increasing the average share of investment in equipment towards 30 percent of defense budgets, up from NATO’s general recommendation of 20 percent. This would be close to the US’s share of defense spending in 2017 (29 percent) – a first step towards upgrading inventories and filling capability gaps.

Increasing the investment share from 20 to 30 percent, assuming all European countries (EU-28 + Norway) would increase their defense spending to 2 percent GDP in 2024, would imply that annual spending on equipment would increase by a factor of 2.1 – from about USD 54 billion to USD 116 billion in 2024 (see Exhibit 11).

These investments would help to close major capability gaps and digitize forces without cutting into already committed budgets – the necessary funds for these investments will come out of the additional budgets available in a 2-percent scenario (see Exhibit 12 for overview).

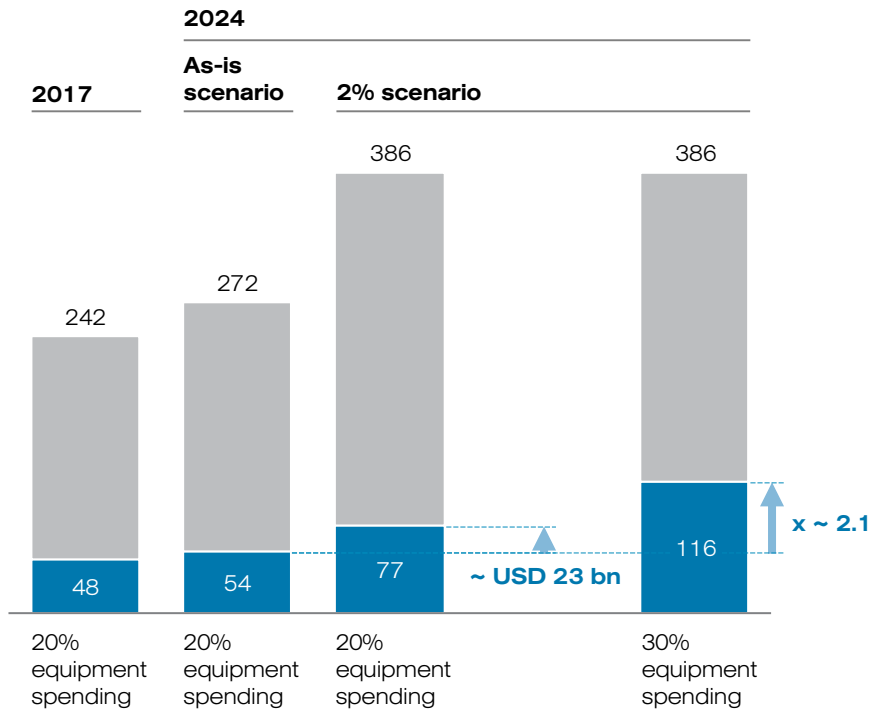
2. Invest as much in making and keeping existing equipment available as in procuring new equipment

As noted, the last decade’s focus on austerity coupled with the increase in missions abroad came at the expense of maintenance, which negatively impacted equipment availability. Today, most European armies are facing serious challenges in making and keeping existing equipment available. At

Exhibit 11

MOVING TOWARDS SPENDING 30% OF THE DEFENSE BUDGET ON EQUIPMENT WOULD DOUBLE THE AVAILABLE FUNDS FOR MODERNIZATION

Increase of EU-28 + Norway equipment spending, USD billions (2017 constant) ■ Equipment investment



Source: McKinsey analysis, based on IHS Markit Forecast (July 2017) [forecasted GDP]; NATO [defense expenditure]; IISS, *The Military Balance* (2017) [defense expenditure non-NATO countries]

the same time, making existing equipment available is the fastest and most cost-effective way to increase military capabilities. We estimate that for most platforms an increase in availability by 20 to 30 percentage points should be possible without any significant increase in costs.

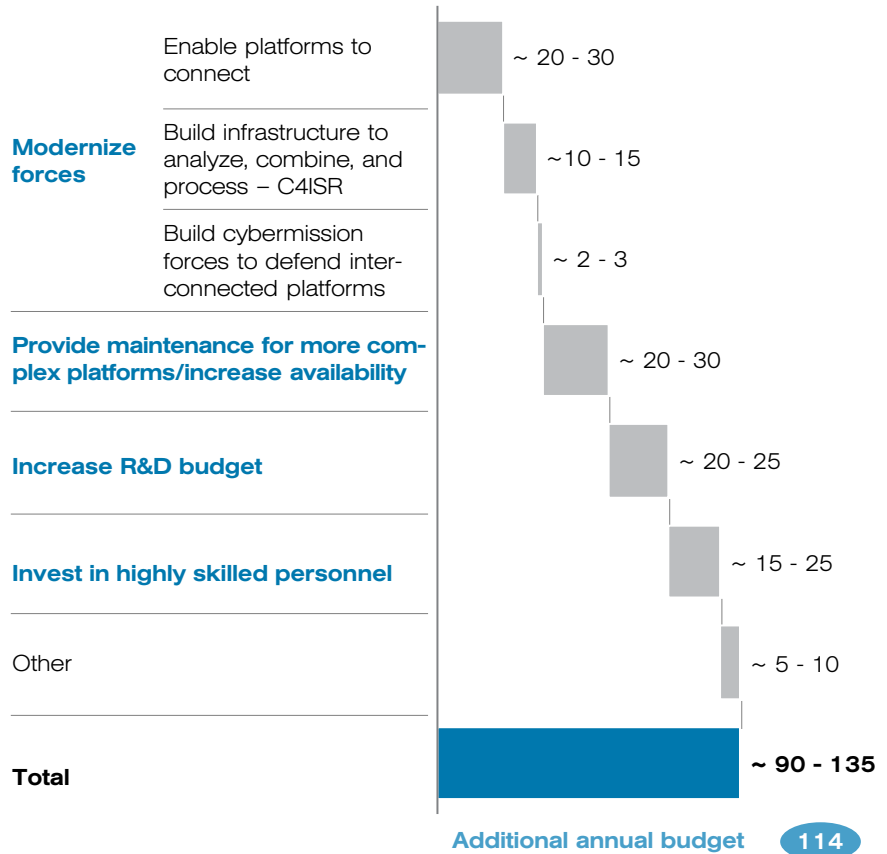
Converting availability into USD, we estimate that an availability increase by 1 percentage point across Europe’s platforms equals procuring new equipment with a value in the range of USD 10 billion.

Prioritizing the availability of equipment will require a variety of changes, such as: standardizing maintenance schedules across countries; including availability measures in budget processes, for instance investments in spare parts; increasing industrial support and investing in suppliers to expand industrial capacity across Europe; and introducing performance-based contracts to hold suppliers accountable for the entire lifecycle of their products. It also includes challenging the share and type of maintenance performed by soldiers, i.e., limiting this to the core competencies required in deployed settings or missions.

Exhibit 12

FOUR BUILDING BLOCKS TO UPGRADE EUROPEAN FORCES IN LINE WITH THE IMPERATIVES OF THIS REPORT

One scenario for spending the additional annual defense budget in 2024 at 2% of GDP, EU-28 + Norway with a focus on modernizing forces, annual spend, USD billions (2017 constant)



Source: McKinsey analysis⁵⁹

Since maintenance accounts for 30 to 70 percent of weapon system lifecycle costs (depending on weapon system type) and since collaboration between European states is a major lever for more cost-effective lifecycle management, maintenance must be at the core of Europe’s common defense efforts. Today, European countries share maintenance personnel and equipment only to a very limited extent – despite the operating similar weapon systems.

An important reason why European collaboration in logistics and maintenance is limited today, and the most important requirement for joint maintenance, is having identical products and weapon systems. The first step to achieving this is to define joint requirements across European armed forces for each weapon system and keep them harmonized over their entire lifecycle. Without identical products, broad maintenance cooperation, including pooled spare parts, is impossible.

Joint maintenance and logistics support, including sharing personnel and equipment, are not only key measures for improving availability and cutting costs, but also for European interoperability. Recognizing this requires making equipment availability a central consideration in procurement decisions, with cross-European cooperation wherever possible.

3. Create a more robust joint planning and procurement process – and use the additional budget as a pilot for truly European procurement

As the European Commission put it in a 2016 report, inefficiency in defense spending arises from “duplications, a lack of interoperability, technological gaps, and insufficient economies of scale for industry and production.”⁶⁰ Using more sophisticated and forward-looking joint planning and procurement processes for major weapon systems could cut procurement costs by 30 percent – a worthy goal in itself – while deepening the integration of European forces. In addition, robust joint planning and procurement will help build a common culture and dramatically improve interoperability, including training, maintenance, and R&D.

First, Europe will need to jointly assess the capabilities of its military forces, agree on a planning process, and harmonize technical requirements. While this is a difficult undertaking, Europe now has a unique opportunity for joint planning and procurement. No allocation struggles should arise if the joint process is applied, at least at first, only to the extra funds available, as these are not yet bound to individual states’ procurement and replacement cycles.

For example, Europe could dedicate some of the additional funds to pilot the new joint approach in projects that address relatively new threats, such as cyberwarfare. These could be used as showcase examples for joint planning and procurement.

More generally, our research suggests that maximizing the value of additional defense investments may require broader, more institutionalized joint procurement. Today, some member states are reluctant to make joint decisions or standardize procurement schedules or approaches. We see the European Defence Fund as a welcome step in the right direction, but a broader mandate, more financial resources, and further industry consolidation will be required to build truly a European joint procurement.

Moving to an effective joint planning and procurement process may begin with a high-level political debate and corresponding decisions, but it will then require detailed technical discussions leading to harmonized requirements. In the long-term, the process could be extended to jointly assess capability gaps and choose weapon systems to fill those gaps.

Europe can build an efficient planning and procurement processes on four main pillars:

- **Political and military cooperation clusters.** Countries will need to reach a broad understanding about where they want to cooperate, beginning with two or three countries before attempting to coordinate all of the NATO-EU countries. Political clusters (e.g., France and Germany) as well as military clusters, as formed under NATO’s Framework Nation Concept, are a good starting point.

- **Identical military requirements.** Systems and standards should span Europe, with no national tailoring, and account for threats relevant to every country. While this sounds technical, complicated, and cumbersome, it is key to efficiency, flexibility, and interoperability. It is also one of the biggest challenges Europe will face, since it will upend the long tradition of each country favoring its own manufacturers under the guise of different technical requirements.
- **Industry perspective.** Once two to four countries have coordinated their procurement of common weapon systems, they will need to analyze the capabilities of each supplier and provide the best with new incentives to cooperate in the development, production, and maintenance of weapon systems – or discuss potential consolidation scenarios (for example the new German-Norwegian joint venture for submarine combat systems). Joint procurement can only work if industrial and military incentives are aligned.
- **Joint operations, maintenance, and training.** Sharing resources, including materiel and expertise, will boost efficiency and make for more cohesive forces. As noted, this is possible only if systems are identical.

4. Take a top-down approach to industry planning

Consolidating suppliers will be important to increasing the share of available and deployable equipment and to fostering European consolidation and procurement – and thus higher efficiency. However, this will only happen if governments make consistent, systematic efforts. We expect that formal discussion forums and frameworks will be required, along with clear consolidation targets in each industry segment.

European governments and institutions will need to create a forum to reach agreed-upon consolidation targets in the defense industry without stifling competition. Models could include German-Norwegian naval cooperation and the “US approach”, which generally relies on two large players per segment to balance the objectives of competition and efficiency.

A framework that could serve as a model for creating such a top-down approach is the Letter of Intent (LoI) Framework Agreement (FA) Treaty. It was signed in 2000 by the defense ministers of France, Germany, Italy, Spain, Sweden and the United Kingdom with the goal of creating a more competitive European defense industry. Subcommittees were established for different priority areas (e.g., transfer and export procedures) in order to reach agreement and suggest concrete policies. An executive committee served to give strategic direction.

A similar framework or forum might be needed to serve as a platform for industry consolidation in Europe today. Without such a top-down approach, each country will tend to continue favoring its own defense contractors at the expense of common security. Building a more effective military force will require serious and ongoing dialogue on Europe’s industrial landscape, based on the capabilities required for the years ahead. Additionally, this approach will also contribute to making Europe’s defense industry more competitive on a global level.

Leaders will need to provide a clear vision and set realistic expectations; reducing the variety weapon systems takes time, as replacement cycles are long. In fact, the full transformation may not be visible for decades – longer than most

political, military, or industry careers. That said, Europe has already made significant advances in consolidation. For instance, as mentioned above, the number of aircraft manufacturers has reduced from 16 in 1986 to 6 today, greatly reducing fragmentation.⁶¹

5. Push R&D and innovation

Europe needs to invest into more defense R&D to push innovation. As an European Parliament report on defense R&D states, “an average, the technological gap between the US and the EU is around EUR 6.5 billion per year in R&T and a EUR 45 billion per year in R&D”⁶². To develop connected forces, we believe the defense R&D and R&T share in Europe should be much closer to the level of the US, i.e., roughly triple Europe’s current amount, which in 2015 stood at ~ USD 9 billion on defense R&D and only 3.9 percent of the defense budget⁶³.

European defense should be invested in two ways: First, defense forces should harness high R&D spending and the groundbreaking digital innovation occurring in start-ups and nondefense companies – and pursue disruptive innovation from the outside-in. In particular, this requires new interaction models between traditional and nontraditional defense players. With government and defense accounting for only a small fraction of the market spend in digital products and services, they are not natural target customers for innovative startups and emerging software companies. Moreover, the complexity of long procurement cycles and high bureaucratic barriers to entry do not make engagements with the defense customers easy. New interaction models (such as the US Defense Innovation Unit Experimental or the German Cyber Innovation Hub) reverse this model by having the armed forces reach out to start-ups, trying to ease the exchange around relevant problems for start-ups to crack as well as how to get to a contract.

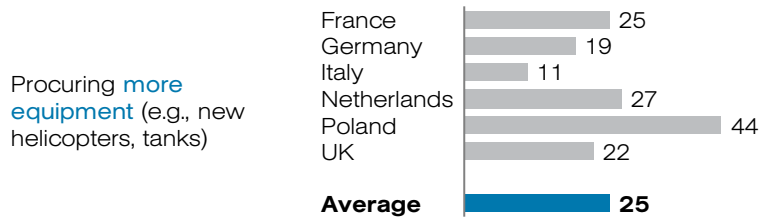
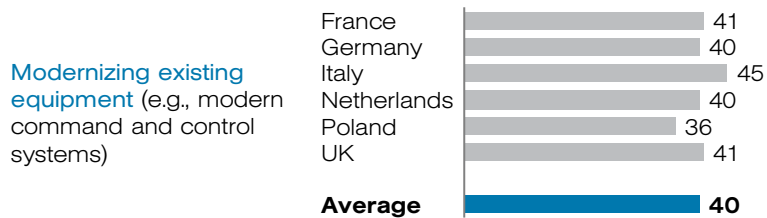
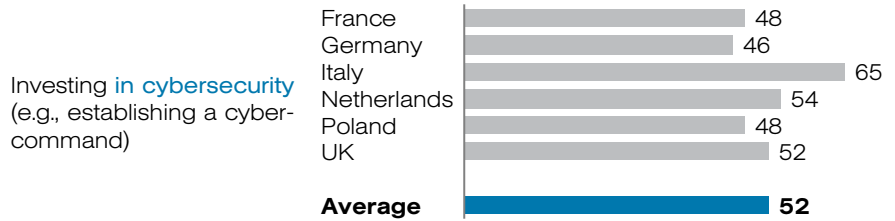
Second, European countries should draw inspiration from the US Defense Advanced Research Projects Agency (DARPA) – an effective inside-out method of driving disruptive innovation from government and defense to the rest of the economy. A European equivalent, focused entirely on disruptive innovation and technological breakthroughs, can stimulate breakthroughs in European defense and encourage disruptive research, especially in digital capabilities. The DARPA approach is lean on administrative oversight in order to reduce red tape, limits the project time to no more than five years, has a big budget (around USD 3 billion for 2018), and then turns initiatives into prototypes every year. For the military, this requires a shift from detailing out specifications to rather laying out a problem that researchers from universities and companies can then set out to tackle with disruptive approaches. On the government side, in the short term this means “letting go,” handing control to technological experts, accepting a larger failure rate, and in some cases even relinquishing intellectual property rights to a commercial company, which then innovates on the basis of a disruptive project. In the long run, however, this provides strong and targeted stimulation for the creation of a vibrant ecosystem – with defense taking center stage.

Spending the financial resources on the right initiatives to create more European, more capable, and more connected forces will be key in the years to come. The findings reported here are also supported by a YouGov poll conducted exclusively for this report – Europeans clearly expect more investment into closing the digitization gap as well as into modernizing existing equipment (see Exhibit 13).

Exhibit 13

IF YOUR COUNTRY WERE TO SPEND MORE FINANCIAL RESOURCES ON DEFENSE, WHAT SHOULD THE GOVERNMENT FOCUS ON?

Opinion poll, November 2017, by country and non-weighted average, a maximum of two choices allowed, percent



Source: YouGov opinion poll, conducted exclusively for the Munich Security Conference and McKinsey⁶⁴

Conclusion

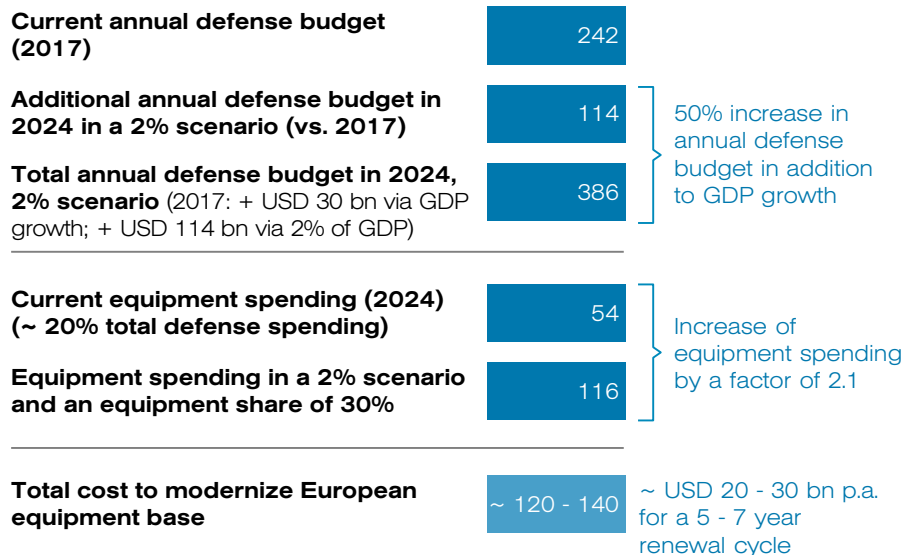
Europe stands at a crossroads. European military capabilities are declining while the pressure for Europe to be a capable security actor is rising. With smart choices, European leaders can build the basis for more European, more connected, and more capable armed forces. They can lay the foundation for a much-improved, respected security policy that is able to better represent Europe’s interests at home and abroad. Repeating the mistakes of the past, on the other hand, and missing this unique opportunity to go beyond “more of the same” might cement the current state of European defense for decades.

This report outlined some of the choices that lie ahead for European leaders. The authors are aware that reaching the 2-percent goal by 2024, as agreed to in NATO’s Wales Summit, is not a given fact. Most European countries have already outlined their defense budget for the coming years – and not all of them will be able to reach the 2-percent benchmark in the desired timeframe, or perhaps even at all. However, the recommendations of this report largely hold true regardless of the size of the future European defense budget (summarized in Exhibit 14). Rising defense budgets will facilitate some of the transformative processes needed, as they allow battles over existing resources to be avoided. A 2 percent of GDP, however, is not a necessary prerequisite for the recommendations outlined in this report.

Exhibit 14

KEY FIGURES OF EUROPEAN DEFENSE SPENDING

EU-28 + Norway, USD billions (2017 constant)



Source: McKinsey analysis

Calculation Approach for the (Additional) Defense Budgets

All calculations for the 2017 to 2024 budgets, as well as additional spending, were conducted in 2010 constant USD prices and exchange rates to match NATO's share of GDP calculations. The results were then converted to 2017 constant USD to allow comparability with current public budgets as well as equipment prices. A country-specific conversion factor⁶⁵ was used to convert 2010 constant USD to 2017 constant USD. For NATO members, official NATO defense expenditures and GDP statistics were used as the basis for the calculation. For non-NATO but EU countries, IISS *The Military Balance* (2017) defense data⁶⁶, and IHS Markit Forecast (July 2017) GDP data were used.

The calculation approach for the future defense expenditure in a "2 percent of GDP by 2024" scenario accounts for country specifics in the ramp-up towards 2 percent (see Exhibit 15). Countries which currently spend above 2 percent of GDP on defense are assumed to maintain the same level of spending. For countries with a defense budget below 2 percent of GDP, a linear ramp-up of defense expenditure to 2 percent in 2024 was assumed. Countries that have announced a plan to reach the 2-percent goal before 2024 are accounted for by a linear increase, reaching 2 percent on the announced date. The GDP defense spending share was applied to a country-specific GDP forecasted by IHS Markit Forecast (July 2017) data for 2018 to 2024.

Additional spending is measured by comparing the future defense spending in a "2 percent of GDP by 2024" scenario with a baseline generated by applying the 2017 share of GDP to the forecasted GDP for 2018 to 2024 in an "as-is" scenario. I.e., the additional defense spending is not the spending above the current 2017 absolute defense spending, but the spending above a value that already accounts for the forecasted GDP growth while keeping the current share of GDP constant for 2018 to 2024.

The calculation yields total and additional defense expenditure in 2017 constant USD for all years from 2017 to 2024 as well as cumulated additional defense spending in the timeframe 2018 to 2024.

The discussion on increased defense spending is focused on the European members of NATO. However, given the overlap with the EU-28 it immediately becomes a discussion of increased defense spending of the EU-28 as well. Hence, we are taking EU-28 + Norway as scope, to cover the majority of defense spending in Europe in our discussion.

Note: as exchange rates fluctuate, e.g., between USD and EUR (2010 to 2017 by ~20 percent), the figures from calculations using different base years or currencies can vary significantly. This has to be kept in mind when comparing different sources and analyses.

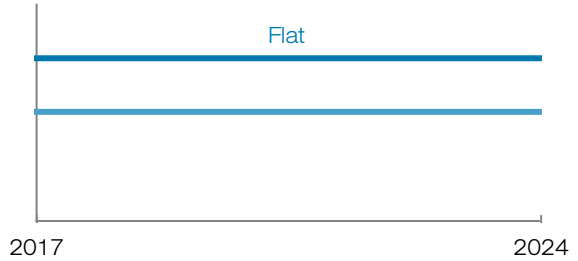
Exhibit 15

OUR CALCULATION METHOD ACCOUNTS FOR COUNTRY SPECIFIC DEFENSE EXPENDITURE SHARES IN THE RAMP-UP TOWARDS 2% OF GDP

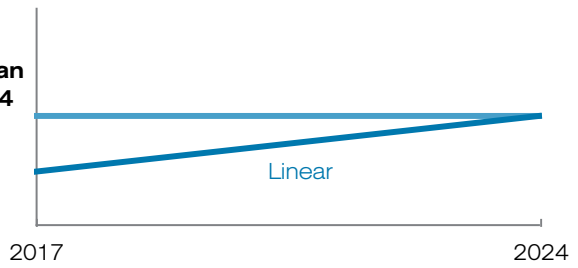
Defense expenditure, percent of GDP

— 2% threshold
— Defense spending

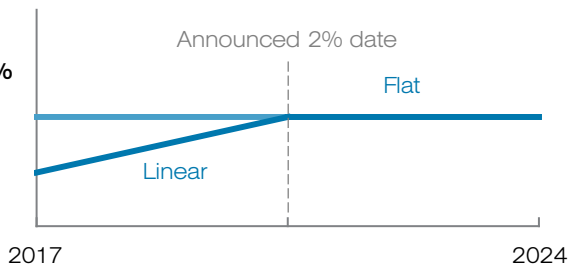
Defense expenditure \geq 2% of GDP



Defense expenditure < 2% of GDP and no officially announced plan to reach 2% before 2024



Defense expenditure < 2% of GDP and plan announced to reach 2% before 2024



Source: Own representation

Extract from the NATO Wales Summit Declaration

As issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Wales, NATO press release (2014) 120, on September 5th, 2014

“[...]

14. We agree to reverse the trend of declining defence budgets, to make the most effective use of our funds and to further a more balanced sharing of costs and responsibilities. Our overall security and defence depend both on how much we spend and how we spend it. Increased investments should be directed towards meeting our capability priorities, and Allies also need to display the political will to provide required capabilities and deploy forces when they are needed. A strong defence industry across the Alliance, including a stronger defence industry in Europe and greater defence industrial cooperation within Europe and across the Atlantic, remains essential for delivering the required capabilities. NATO and EU efforts to strengthen defence capabilities are complementary. Taking current commitments into account, we are guided by the following considerations:

- Allies currently meeting the NATO guideline to spend a minimum of 2% of their Gross Domestic Product (GDP) on defence will aim to continue to do so. Likewise, Allies spending more than 20% of their defence budgets on major equipment, including related Research & Development, will continue to do so.
- Allies whose current proportion of GDP spent on defence is below this level will:
 - halt any decline in defence expenditure;
 - aim to increase defence expenditure in real terms as GDP grows;
 - aim to move towards the 2% guideline within a decade with a view to meeting their NATO Capability Targets and filling NATO's capability shortfalls.
- Allies who currently spend less than 20% of their annual defence spending on major new equipment, including related Research & Development, will aim, within a decade, to increase their annual investments to 20% or more of total defence expenditures.
- All Allies will:
 - ensure that their land, air and maritime forces meet NATO agreed guidelines for deployability and sustainability and other agreed output metrics;
 - ensure that their armed forces can operate together effectively, including through the implementation of agreed NATO standards and doctrines.

[...]”

Source: NATO⁶⁷

Endnotes

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40. Note: Europe refers to EU-28 + Norway, unless otherwise stated. The main exception is the share within the NATO member states' defense expenditure, where we refer to NATO-EU.
41. Assuming a linear scale-up of defense budgets from 2017 - 2024; see calculation approach for more details.
42. For countries exceeding 2% in 2017, kept 2017 ratio; for countries below 2% in 2017, 2% in 2024.
43. The online based survey was conducted in the respective local language in the time frame November 7th-10th, 2017. Total N = 8,154. Country split: France $N_F = 1,014$; Germany $N_G = 2,046$; Italy $N_I = 1,016$; Netherlands $N_{NL} = 1,005$; Poland $N_P = 1,014$; UK $N_{UK} = 2,059$. Average calculated as non-weighted average due to differing sample size per country.
44. Excludes cost for maintenance as the total cost per mission is compared to the defense surplus for equipment procurement (separate share of budget for operations and maintenance). The analysis is build on the equipment deployed to the respective missions (EEAS <http://eunavfor.eu/mission/>, NATO "NATO's Enhanced Forward Presence" https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2017_05/1705-factsheet-efp.pdf, "Operation UNIFIED PROTECTOR Final Mission Stats" https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2011_11/20111108_111107-factsheet_up_factsfigures_en.pdf, Rand "Precision and Purpose – Airpower in the Libyan Civil War" https://www.rand.org/content/dam/rand/pubs/research_reports/RR600/RR676/RAND_RR676.pdf, expert interviews). Per equipment category, availability figures for technical availability and deployability (e.g., considering training) were applied, and also transit times considered. This provided the number of weapon systems required to sustain a mission. On each weapon system category procurement prices were estimated based on OEM and ministry of defense publications, together with the number of weapon systems resulting in the estimated equipment invest to sustain one additional mission.
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- passenger transport aircraft, customs vessels, or inclusion of logistical land vehicles. For each of the four categories three subcategories were defined and for each of the total 12 subcategories representative upgrade programs with a focus on improving interconnectedness/digitization researched and prized based on company and ministry of defence statements with respect to the upgrade programs. The upgrade program price was applied to the share of weapon systems estimated to be in need of an upgrade. For the spend required to “Process, analyze, and combine data” see endnote above. The Spend on cyber forces was derived by calculating the training need (e.g., training cost per cyber soldier and retention rate), infrastructure need (e.g., cyber ranges), and personnel costs.
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