



Brussels, 7.6.2017
SWD(2017) 228 final

COMMISSION STAFF WORKING DOCUMENT

Ex-ante Evaluation

Accompanying the document

**Proposal for a
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**

establishing the European Defence Industrial Development Programme aiming at supporting the competitiveness and innovative capacity of the EU defence industry

{COM(2017) 294 final}

Table of Contents

1.	CONTEXT	5
2.	PROBLEM ANALYSIS AND NEEDS ASSESSMENT	6
2.1.	Problem drivers	9
2.1.1.	Increasing costs of defence equipment and high development costs	9
2.1.2.	Limited cooperation between Member States in defence equipment investments	10
2.1.3.	Few programmes linked to EU priorities and difficulty to agree on common technical specifications	12
2.2.	Problems	13
2.2.1.	Low investments in innovative defence programmes	13
2.2.2.	Fragmentation of the defence industry and limited cooperation of undertakings	15
2.3.	Consequences	17
3.	WHY SHOULD THE EU ACT?	17
4.	OBJECTIVES	18
4.1.	General objective.....	18
4.2.	Specific objectives.....	18
4.3.	Operational objectives	18
5.	THE NEED FOR A NEW POLICY	19
5.1.	<i>Status quo</i> - baseline “do nothing” scenario.....	19
5.2.	Moving forward with the European Defence Industrial Development Program (EDIDP).....	20
5.2.1.	Description of the proposed instrument	21
6.	THE IMPACTS OF THE EUROPEAN DEFENCE INDUSTRIAL DEVELOPMENT PROGRAMME.....	22
6.1.	Impact on the competitiveness of the industry	23
6.2.	Wider economic impacts	24
6.3.	Impacts on the SMEs.....	25
6.4.	Social impacts.....	26
6.5.	Wider security impacts	26
6.6.	Environmental impacts.....	27
6.7.	Other impacts.....	27

6.8. Cost-effectiveness.....	27
7. FUTURE MONITORING AND EVALUATION	28
ANNEX 1: PROCEDURAL INFORMATION	30
ANNEX 2: REFERENCES	31

Glossary

ASD	Aerospace and Defence Industry Association
CEPS	Centre for European Policy Studies
DG GROW	the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
EDIDP	European Defence Industrial Development Programme
EDA	European Defence Agency
EDAP	European Defence Action Plan
EDF	European Defence Fund
EDTIB	European Defence Technological and Industrial Base
EFSI	European Fund for Strategic Investments
ESIF	European Structural and Investment Funds
EU	European Union
GDP	Gross Domestic Product
ISG	Inter-Service Steering Group
NATO	North Atlantic Treaty Organization
PA	Preparatory Action
R&D	Research and Development
R&T	Research and Technology
SMEs	Small and Medium-sized Enterprises
SWD	Staff Working Document
TFEU	Treaty on the Functioning of the European Union
US	United States

1. CONTEXT

On 30 November 2016, the Commission adopted the European Defence Action Plan (hereinafter: EDAP)¹ as part of a wider defence package including the implementation of the defence and security aspects of the Global Strategy on Foreign and Security Policy and the Joint EU / North Atlantic Treaty Organization (hereinafter: NATO) Declaration of July 2016. The EDAP included the proposal to establish a European Defence Fund (hereinafter: EDF) and other actions to support Member States' more efficient spending in joint defence capabilities, strengthen European citizens' security and foster a competitive and innovative defence (traditional and cyber) industry in Europe.

The EDF was first mentioned by President Juncker in his 2016 State of the Union speech. It was presented as an initiative that will support investment in the joint research and the joint development of defence equipment and technologies and will rely on two complementary "windows":

- **a research window**, to fund collaborative defence research projects at the EU level. The research window, was launched in 2017 by the Preparatory Action (hereinafter: PA) on Defence Research and will pave the way for a dedicated European Defence Research Programme under the next multiannual financial framework.
- **a capability window** to support the development of defence capabilities commonly agreed by Member States. This would be financed through the pooling of national contributions and, where possible, supported by the EU budget.

As regards the research window, the Commission has already launched the PA in support of defence research.

On 15 December 2016, the European Council invited the Commission "*to make proposals in the first semester of 2017 for the establishment of a European Defence Fund, including a window on the joint development of capabilities commonly agreed by the Member States*"².

This Staff Working Document (hereinafter: SWD) accompanies the Commission proposal for a European Defence Industrial Development Programme (hereinafter: EDIDP) to support competitiveness and innovation of the EU defence industry in the development phase of collaborative defence projects over the period 2019-2020 and contains ex-ante evaluation of its impact. The EDIDP represents a first step towards the establishment of the capability window of the EDF. The SWD analyses the impacts of a proposal for a Union budget contribution to support the competitiveness of the EU defence industry by covering a part of the development costs and providing an incentive to launch and execute European collaborative defence development projects. The current ex-ante evaluation addresses the requirements of Article 30(4) of Regulation No 966/2012 (Financial Regulation) on the implementation of the budget.

¹ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions "European Defence Action Plan", COM(2016) 950 final.. The present document draws on the EDAP, without providing references to all quotations used.

² European Council, 2016, point 12.

2. PROBLEM ANALYSIS AND NEEDS ASSESSMENT

The European defence industry is both of strategic importance for Europe's security and a major contributor to the European economy. According to Aerospace and Defence Industry Association of Europe (hereinafter: ASD) data, the total turnover of the defence industry in 2015 was estimated to be around EUR 102 billion (Table 1), while the direct workforce level was 430,000 employees³.

Table 1: Turnover of the European defence industry, by year [EUR billion]

Year	Turnover
2010	94
2011	92
2012	95
2013	98
2014	97
2015	102

Source: Aerospace and Defence Industries Association of Europe, 2016.

The defence industry is also characterised by a high intensity in Research and Development (hereinafter: R&D) and competition based on technology development. This is another reason for the strategic importance of the sector as it is frequently perceived as a driver of innovation whose benefits may also extend to other sectors of the economy.

Another specificity of the defence industry derives from the fact that the demand addressed to the industry comes almost exclusively from States and in particular from their defence national budgets.

The defence industry is in practice dependent on the launch of capability development programmes by governments and more generally on the level of public spending and investment in defence. Investment in defence research and development is of particular importance as it determines the quality of the products generated by the industry, its innovative power and ultimately its global competitiveness.

The comparatively low defence spending in Europe combined with uncoordinated national policies has a direct impact on the competitiveness of the EU defence industry. While collectively Europe is still the world's second largest defence spender, the dynamics over the past decade shows that its comparative position is quickly receding. According to data collected by the European Defence Agency (hereinafter: EDA), European defence spending has been systematically declining, falling by almost 11% between 2005 and 2014⁴. Today, only 4 Member States reach the NATO spending target of 2% of Gross Domestic Product (hereinafter: GDP): Estonia, Greece, Poland and the United Kingdom⁵. Over the same period, the defence spending of the United States (hereinafter: the US) marked a significant increase before returning back to levels comparable to those of 2005. Many global competitors have however upgraded their defence sectors on an unprecedented scale: Russian defence spending almost doubled over the same period, while China achieved an increase of 150%⁶.

³ Aerospace and Defence Industries Association of Europe, 2016.

⁴ European Defence Agency, 2016.

⁵ North Atlantic Treaty Organization, 2017. Austria, Finland, Ireland, Sweden and Malta are not members of NATO and are therefore not concerned by the NATO spending target.

⁶ Stockholm International Peace Research Institute, 2017.

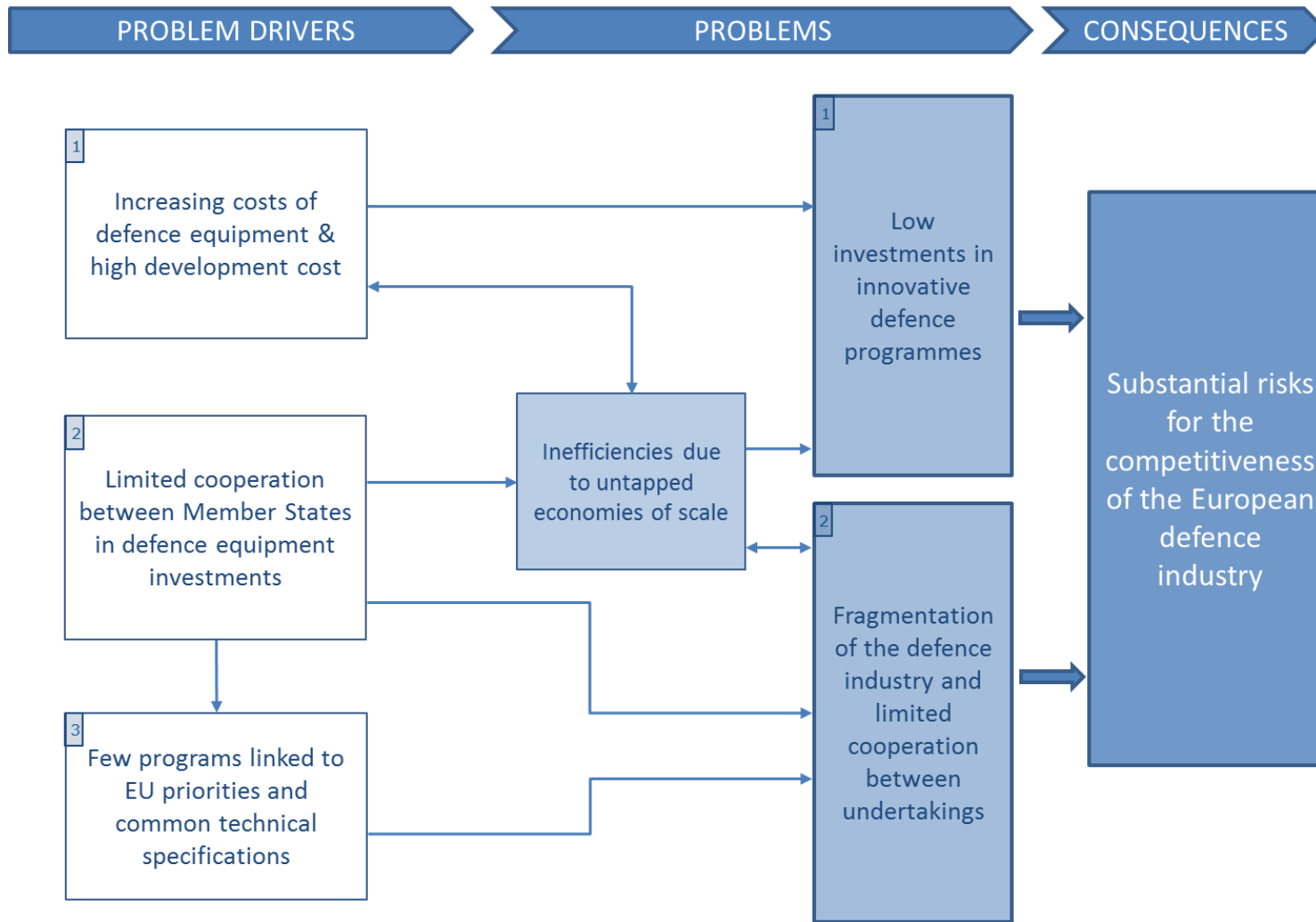
In addition, personnel expenses, by opposition to investment expenses, are by far the dominant category with a share that systematically exceeds 50%⁷. By comparison, investment expenses, including R&D, account for approximately 20% in the EU against 30% in the US⁸.

The key problems and their drivers identified in the context of the current evaluation are presented on the graph overleaf (Figure 1) and described in more detail in the following sections.

⁷ Personnel expenses account for approximately one third of total defence expenditures in the US (European Defence Agency, 2013).

⁸ European Defence Agency, 2013.

Figure 1: Problem tree



2.1. Problem drivers

In line with Figure 1, the three identified problem drivers are discussed below in more detail.

2.1.1. Increasing costs of defence equipment and high development costs

The defence sector is characterised by increasing costs of defence equipment and by high development costs that limit the launch of new defence programmes and directly impact on the competitiveness and innovation capacity of the EU industry.

The costs of defence goods increase at a rate that exceeds by far the average inflation rates for civil products. While estimations of unit costs increases may vary for different categories of defence equipment, figures as high as 5% or even 10%⁹ per year in real terms have been frequently put forward¹⁰. Cost increases are the consequence of technological competition in a field where relative performance is paramount and competition frequently takes place at the technology frontier. Innovating at the technology frontier is immensely expensive and increasing development costs lead to less frequent projects making the necessary leap forward even greater and costs even higher¹¹.

A consequence of this phenomenon, combined with flat or declining defence spending, is the falling number of units that the defence equipment budget can buy, a reduction in the length of the series produced and a lower frequency of new development projects.

Another key element to consider is the importance of R&D expenses in relation to the recurring costs. The share of development costs in acquisition costs may significantly vary from one project to another, depending on the type of equipment developed, ranging from 5% and up to 90%. 25% is considered as a good average indicator¹². A study published by the European Parliament also notes that the ratio of R&D costs to recurring costs of defence programmes is several times higher than the corresponding ratio for civil programmes¹³.

In order to demonstrate the order of magnitude it may be useful to compare the development costs of a large defence project to the R&D expenses of EU Member States. For instance, the development costs of the Eurofighter Typhoon to the four partner nations are estimated at more than EUR 20 billion (prices of 2012)¹⁴. Total defence R&D expenses of the 27 Member States participating in the EDA were slightly below EUR 9 billion in 2014. If the UK, France and Germany are however taken out, the remaining 24 Member States only spent a total of approximately EUR 600 million. The development costs of the Eurofighter Typhoon are thus 33 times higher than the combined yearly defence R&D budgets of 24 EDA participating Member States and more than 333 times higher than the defence R&D expenses of a medium size Member State such as the

⁹ It is worth noting that a 10% annual increase implies the doubling of weapons costs every 7.25 years.

¹⁰ Kirkpatrick, 1995 and 2004; Pugh 1986, 1993 and 2009; Hove & Lillekvelland, 2016; and Nordlund, 2016.

¹¹ See Hove & Lillekvelland, 2016.

¹² Mauro, 2017. Pugh (2009) also provides estimations of the ratio of development costs to unit production costs and shows a variation across different class of land and air systems with values that can range between 40 for large fixed-wing aircraft and 25,000 for anti-tank weapons.

¹³ European Parliament, 2016.

¹⁴ Europe Economics, 2013. Official information on the development costs, approximately GBP 6.7 billion, of the Eurofighter Typhoon to the UK budget is provided by the UK National Audit Office (National Audit Office, 2001).

Netherlands (which spent approximately EUR 60 million in 2014). Keeping in mind the costs increases, the difference in magnitude will further increase for future programs.

In view of the escalation of costs, of the magnitude of non-recurring R&D expenses and of the small series that can be procured nationally, the development of a new generation of many major defence systems is today beyond the reach of a single EU Member State.

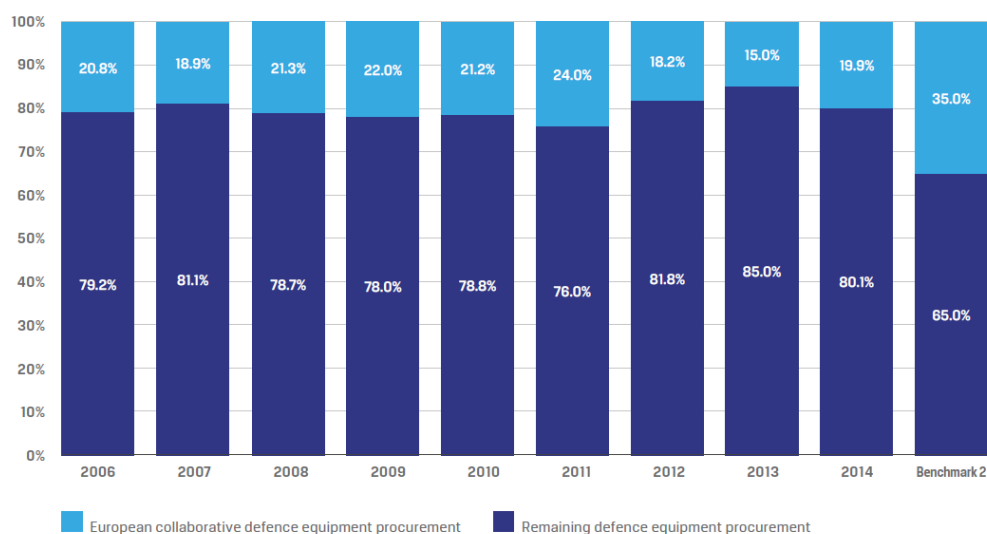
2.1.2. Limited cooperation between Member States in defence equipment investments

Despite the fact that single EU Member States may not be in a position to develop new major defence systems, cross-border collaboration in the development of defence equipment remains limited thus further depriving the EU defence industry of the opportunities that the launch of such programmes would constitute.

The level of cooperation in the development of defence products and technologies is not up to the collective benchmarks for investments set up in the framework of the EDA. In November 2007, the EDA’s Ministerial Steering Board approved collective benchmarks for investments, including a benchmark for European collaborative defence equipment procurement, specified as a percentage of defence equipment procurement and set at 35%.

According to EDA data (Figure 2), between 2006 and 2014 the European collaborative defence equipment procurement oscillated between 15% and 24% of the total defence equipment procurement. In view of the observed fluctuations it is difficult to distinguish a trend. It can however be easily noted that the reported figures are far from the agreed benchmark and the best performance attained (2011) is still more than 10 percentage points short of it. It is also worth noting that it is only a small fraction of the EU Member State that actually accounts for the total collaborative procurement, the large majority declaring no such procurement. The data on collaborative procurement is also indicative of an important deficit of collaborative development in the EU¹⁵.

Figure 2: European collaborative defence equipment procurement as a percentage of defence equipment procurement [%]



¹⁵ For more details see also section 5.2.1.

No significant increase in collaboration at the EU level can be distinguished even during years characterised by a very difficult economic context and stringent budgetary constraints. Insufficient levels of collaboration are extremely worrying from a longer term perspective. Already ten years ago a report published by the European Union Institute for Security Studies concluded that "*static defence budgets and low equipment spending means that a competitive defence industry is not sustainable on a national basis anymore*"¹⁷.

Past experience however also points to issues that can increase the costs and reduce the net benefits of collaborative projects in comparison with an equivalent one-nation project. This also is a factor in the current hesitation of Member States to initiate such projects. Amongst such problems one can mention issues linked to a lack of common defence planning and of synchronisation of capability procurement policies and calendars between Member States. When the timing on the demand side significantly diverges, collaboration is indeed rendered impossible; in the 1980s for instance France and Germany considered the joint development of a new tank, but German plans required the tank to be made available quickly while France was planning for a decade later¹⁸.

Problems with the synchronisation of budgetary procedures also have a negative impact on the smooth work on collaborative projects and sometimes participating countries have even been obliged to pay temporarily on behalf of other participating States facing issues with their budgetary approval procedures¹⁹. The allocation of work shares in collaborative projects is also generally defined on the basis of the financial contributions by each participating country rather than on the basis of economic efficiency and competitiveness. It is thus often considered that collaborative projects are more difficult to manage, that they do not overcome completely industrial duplications and are costlier and affected by larger delays than equivalent national projects.

It is however worth mentioning that it is difficult to empirically establish that collaborative projects are costlier and take more time than real national projects²⁰. And even if such was the case, in many fields collaboration is today the only feasible way forward considering the development costs of new generations of major defence systems. It is important to note that, even if collaborative projects would be costlier than equivalent theoretical national projects, the development costs are shared amongst the participants and the financial burden that falls on the individual participating Member States is still lower than if they had to undertake the development in isolation. This enables the realisation of large projects that would not be affordable for a single State.

Limited collaboration on the demand side, i.e. between Member States, also has consequences on the industrial side of the defence sector as it is an important condition

¹⁶ 2012-2014 figures on collaboration are partial, as several Member States were not in a position to provide the data to the EDA.

¹⁷ European Union Institute for Security Studies, 2007.

¹⁸ European Union Institute for Security Studies, 2007.

¹⁹ European Union Institute for Security Studies, 2007.

²⁰ Hartley 2008 shows that the Eurofighter Typhoon's cost and time escalation is not abnormal in comparison with other contemporary national defence projects. Hartley also notes that industrial duplications in the project were limited to the final assembly line which represented only 5% of production costs. Heuninckx 2008 also confirms that once a collaborative defence procurement has been launched, the cost overruns and delays of collaborative projects and similar national projects appear comparable.

for enabling reinforced collaboration on the supply side, i.e. between defence undertakings located in different Member States.

2.1.3. Few programmes linked to EU priorities and difficulty to agree on common technical specifications

The difficulty in defining common technical specifications is also amongst the major issues affecting international collaboration in defence development projects. The latter are initiated by Member States, which establish the technical specifications, to which the system developed should respond. In case of collaborative projects, participating Member States often have diverging technical specifications. Failure to harmonise increases the system's complexity and obliges the industry to find a way to satisfy diverging, and sometimes even contradictory, needs expressed by the different participating countries. In the Tiger helicopter project two substantially different versions were developed to respond to respectively French and German specifications²¹. Another helicopter, the NH-90, had to be developed in 23 versions²².

Such a situation inflates costs and causes delays. It also reduces the benefits of collaboration from the industrial point of view, as low commonality has also negative effects on economies of scale. In some cases, the impossibility to agree on common specifications has reduced significantly the scope of collaboration, or even made it impractical. For example, the decision of France to pursue a national combat aircraft project was to a large degree due to the impossibility to agree to common specifications that would have allowed the country to continue collaboration under the Eurofighter project²³. Standardization and interoperability are thus reduced.

Difficulty in agreeing on common technical specifications often results from the desire to defend and promote the interest of the national defence industries. It can however be also the result of more fundamental differences stemming from diverging doctrines, assessments of needs and operational requirements. When capability priorities are commonly developed and agreed within the EU, notably through the Capability Development Plan, a higher degree of convergence regarding the above-mentioned elements should be realised. This should make the definition of common technical specifications easier and should thus improve the efficiency of collaborative projects from an industrial point of view. However, the impact of such joint definition of capability priorities has not yet been sufficiently prioritised by Member States.

In the same time, past experience, in particular from common operations like Libya in 2011 and Chad in 2008, clearly indicates the presence of shortages that hamper the ability of Member States to act effectively together. Critical shortages of key enablers, such as air-to-air refuelling and strategic lift have become apparent²⁴. Readiness levels for fighter jets, attack and transport helicopters are reported to stand at below 50% for several large Member States²⁵.

²¹ European Union Institute for Security Studies, 2007.

²² Mauro, 2017.

²³ For this and other examples, see European Union Institute for Security Studies, 2007.

²⁴ European Political Strategy Centre, 2015.

²⁵ De France, 2015; European Union Institute for Security Studies, 2007.

2.2. Problems

The observed increase in costs of defence equipment and high development costs result in low investments in innovative development projects which constitutes a problem discussed in more depth in section 2.2.1 below. Additionally, the abovementioned problem drivers result in duplications and sub-optimal cost-efficiency of investments in defence equipment, as potential economies of scale are foregone in an industry where scale is a major determinant of competitiveness. The inefficiencies due to untapped economies of scale further exacerbate the above-mentioned problem of low investments.

Limited cooperation among governments as well as the fact that implemented programs are rarely linked to common technical specifications also directly affects suppliers - from the industry's point of view, there is little incentive to cooperate across borders, as clients are still served predominantly on a country-by-country basis and on the basis of national technical requirements. This results in a lack of coherence in defence investments across the EU and a dispersed or fragmented European Defence Technological and Industrial Base (hereinafter: EDTIB). The two above-mentioned problems are discussed in more detail in the subsequent sections.

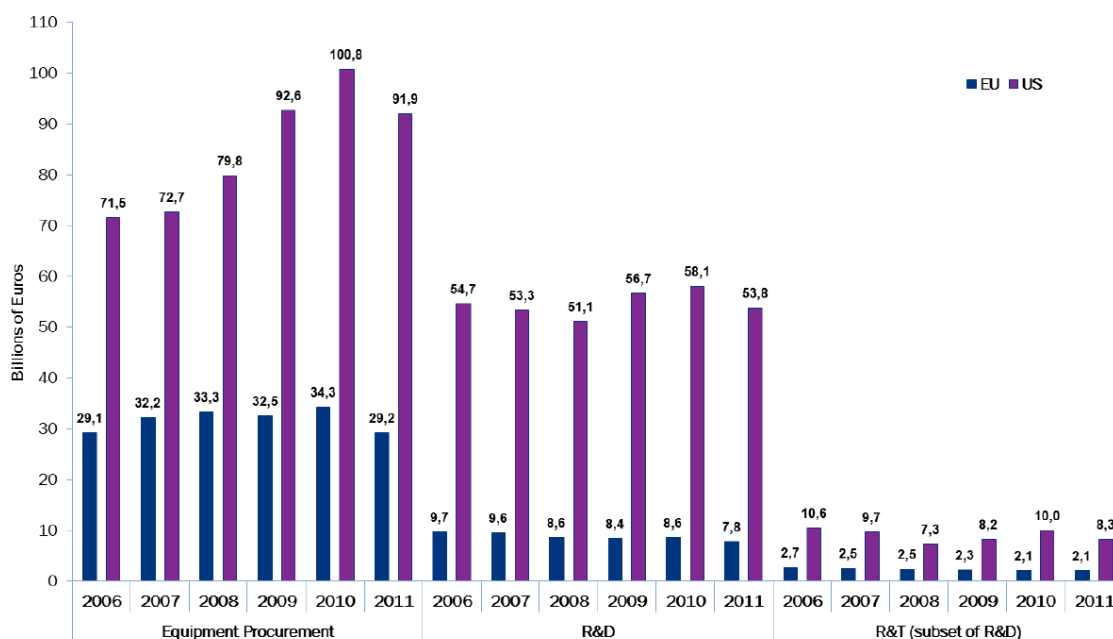
2.2.1. Low investments in innovative defence programmes

Increasing costs of defence equipment, high development costs and insufficient levels of collaboration - while some projects are beyond the means of individual Member States - lead to investments in innovative defence programmes in the EU that are comparatively low and insufficient to sustain the competitiveness of the European industry.

The low level of investment is evidenced by Figure 3 which demonstrates the difference in magnitude of equipment and R&D spending between the EU and the US. Defence equipment expenses in the US exceed three times those of the EU Member States. Defence R&D spending in the EU in 2011 was about 15% that of the US. Not only is the European defence R&D spending comparatively low, but it has also been declining over the past decade with a level in 2014 that is approximately 81% of the amounts spent in 2006²⁶.

²⁶ European Defence Agency, 2016.

Figure 3: Defence investment breakdown in absolute values [EUR billion]



Source: European Defence Agency, 2013, p.10.

In addition to the comparatively low levels of investment in Europe evidenced in Figure 3, while the EU is spending almost three times less on equipment procurement and seven times less than the US on defence R&D, the money is split between a much larger number of defence programmes. Research performed by the Centre for European Policy Studies (hereinafter: CEPS)²⁷ in 2013 shows that the number of defence platforms and systems in production in Europe is 36 against only 11 in the US. As regards the land segment, the ratio is 17 to 2. As the CEPS note mentions, such unnecessary fragmentation implies a failure to capture economies of scale and learning, important opportunity costs through reduced money available to develop capabilities in other sectors and as a probable final result "European countries become less technologically advanced; more expensive platforms and systems obtain a narrower range of military capabilities in a less productive and innovative industry"²⁸.

Despite indications of a reversing trend regarding European defence R&D expenditures over the last few years, the persisting lack of investment has had an impact on the European defence industry, from prime contractors to suppliers. There has been a general lack of opportunities in terms of new major defence industrial projects, including a lack of European collaborative programmes²⁹.

Such a lack of opportunities for companies is a major impediment for maintaining the innovativeness of the EU industry. In view of the fact that demand and therefore investment is entirely driven by Member States, the industry would normally not embark on substantial spontaneous self-funded defence Research and Technology (hereinafter: R&T) or development projects. It is very unlikely that investments operated by the industry would compensate for insufficient investments by the Member States.

²⁷ Briani, 2013.

²⁸ Briani, 2013, p.2.

²⁹ European Union Institute for Security Studies and Communication (2016)950 from the Commission.

In the same time, as noted in the Report of the Group of Personalities on the Preparatory Action for CSDP-related research, "*R&T activities are the first necessary step to prepare for future capability developments allowing for the maturing of technologies and the reduction of risks. The defence R&T investment made today will underpin the freedom of action available tomorrow, the preservation of operational and technological advantage, the reinforcement of industrial competitiveness and employment opportunities*"³⁰.

And while EU support for defence R&T is already available through the PA on Defence Research, defence development projects through which technology needs to transition towards final products and capabilities also encounter important barriers. Such projects, crucial for the competitiveness of the EU defence industry, may not proceed forward, even if the initial stages of R&T have already been funded: bridging the "valley of death" between R&T and development and innovation is a lengthy process that entails important technical and financial risks that individual Member States may not be willing or capable of assuming on their own. The development and testing of prototypes is a phase in the development process that is particularly difficult because of the high costs involved and the important risks of failure still present. In a context characterised by important budgetary constraints it cannot be excluded that promising technologies may not proceed into the development stage thus reducing the quality of the capabilities available and the competitiveness of the European defence industry.

2.2.2. Fragmentation of the defence industry and limited cooperation of undertakings

Limited collaboration of Member States in defence implies important duplications and results in a defence industry that remains highly fragmented along national borders. The lack of integration on the demand side of the market indeed fails to generate incentives for trans-border collaboration between undertakings and for further integration of the industry.

The dependence on national markets still remains important in particular for those companies that exhibit a high proportion of defence-related activities. Looking at 32 major European companies active in the defence industry Masson (2015) notes that 5 firms show a share of domestic sales in their turnover that is above 50% and for a majority of 20 firms the proportion varies in the interval 20%-50%.

As mentioned earlier there are 36 production lines for defence systems or platforms open in Europe against 11 in the US. Resulting duplications prevent the industry from achieving optimal size of production as comparatively small national markets are served in isolation. Another illustration of the fragmentation and the resulting impact on the competitiveness of the industry can be found in relation to combat aircraft. Three types of combat aircraft are currently in production in Europe: the Eurofighter Typhoon, the Rafale and the Gripen. A 2013 study on the Costs of non-Europe in the defence field³¹ provides a comparison between the R&D costs and the expected sales of the three European aircrafts and the US JSF programme (Table 2).

³⁰ European Union Institute for Security Studies and Communication (2016)950 from the Commission, p.43.

³¹ Briani, 2013.

Table 2: Comparison between the European aircraft projects and the US JSF

Aircraft	R&D costs (EUR billion)	Units envisaged/produced
Eurofighter	19.48	707
Gripen	1.48	204
Rafale	8.61	294
JSF	19.34	3003

Source: Briani, 2013, p.16.

The study concludes that the total R&D costs of the three European projects together largely exceed those of the JSF while the total expected output is almost 1800 units lower and divided between 3 different aircrafts which significantly reduces the economies of scale and learning that can be captured.

It can be noted that even large trans-border consolidations have not necessarily led to a genuine and deep consolidation of industrial assets at the European level but have often led to the creation of “multi-domestic” companies³². The concluding remarks of the European Parliament’s study on the overall condition of the European defence industry are that “*all sectors show excess capacities in production. This is expressed in many but small producers which are specialized in similar areas but do not compete against each other for the first production lot due to markets with high barrier for non-domestic suppliers.*”³³

The fragmentation of the European defence industry is not only limited to the weakness of horizontal collaboration at the level of system integrators. It also affects trans-border access to the supply chains having in particular negative effects on small and medium-sized enterprises' (hereinafter: SMEs) capacity to take full benefits of their participation in the defence market. As noted in a Resolution of the European Parliament: “*the fragmentation of the European defence market is an obstacle to the ability of SMEs to market their products*”³⁴. The supply chains of the large system integrators have been predominantly set up on a national basis and the access of new entrants located in other Member States may remain limited³⁵.

SMEs play an important role in the defence industry and it is estimated that they account for between 11 and 17 per cent share of the estimated defence equipment sales in the EU³⁶. They also assume an increasing responsibility through the extension of the use of risk-sharing partnerships by the large system integrators where the costs of development are distributed between system integrator and partners in its supply chain.

Defence-related SME also face important challenges related to information problems (e.g. difficulties in obtaining information on future capability requirements and business

³² Bellais & Droff, 2013.

³³ European Parliament, 2013, p.47.

³⁴ European Parliament Resolution 2013/2125(INI), point 31.

³⁵ See for instance Ianakiev & Mladenov, 2008.

³⁶ Europe Economics, 2009.

opportunities but also a lack of visibility to large companies, in particular in a cross-border context, which results in a preference for existing suppliers or suppliers closely located to the contractor), access to finance or administrative burden and costs (e.g. related to IPR protection)³⁷.

2.3. Consequences

To conclude, the EU defence industry suffers from a **low level of investments** in the development of innovative defence products and technologies and is characterised by a limited cooperation of undertakings in a **largely fragmented industry** still organised predominantly on a national basis. Such a situation is not sustainable for the future. It is thus crucial to incentivise enhanced collaboration and specialisation, that will also allow to better capture scale effects by reducing duplications.

A specific stage at which action could be particularly useful is the launch of important collaborative defence development projects that can play the role of a focal point for trans-border collaboration of firms. As mentioned before, because of the important technology risks remaining even after the R&T phase and the substantial costs involved in the development phase, in particular as regards prototyping, many projects would not be able to bridge the “valley of death”.

All of this creates **substantial risks for the competitiveness of the European defence industry** and its standing vis-a-vis its global competitors³⁸. Less innovative technical solutions and a possible competitiveness gap will also mean a challenge to the strategic autonomy of the EU and ultimately a weaker political stance of the EU in the field of defence.

3. WHY SHOULD THE EU ACT?

The EU competence to take action on industrial development matters comes from Article 173 of the Treaty on the Functioning of the European Union (hereinafter: TFEU).

As discussed in the section on problem definition above, lack of coherent EU support for defence development and the prevalence of non-coordinated national policies of Member States in this area have proven to be insufficient in addressing the sector’s needs. The lack of coordination and coherence between Member States has been not only the source of competitive disadvantage of the EDTIB vis-a-vis its international counterparts, but also remains a major source of costs for the public purse and constitutes a significant impediment for the implementation of the Common Security and Defence Policy.

Finally, it has been widely recognised that given the technological advancements in defence observed in the recent decades, which result in a significant cost increase, the

³⁷ Commission Staff Working Document SWD(2013)279. The important difficulties that SMEs face in developing their activities in the defence sector are also recognised by the EDA: "SMEs have identified a number of difficulties in participating in the defence market including access to information, defence procurement, supply chain and finance. They claim to face barriers in promoting their innovative solutions to Government authorities and large companies. As defence supply chains have a substantial national focus, there are additional challenges for SMEs that wish to enter defence supply chains in other European countries." (European Defence Agency, 2015, p. 3).

³⁸ The 2016 edition of the World Military Expenditures and Arms Transfers (WMEAT) Report published by the US Department of State and covering the period 2004-2014 notes that " *The U.S. share of the world arms market appears to have grown, while the E.U. share appears to have diminished, with no clear trend in the Russian and Chinese shares.*"

effective implementation of defence R&D activities frequently remains beyond the means of a single country: “*No single country is able to stand up to these challenges alone. ‘More Europe’ in defence and security is clearly needed*”³⁹.

A proposal for an instrument at the EU level seems to be the most viable solution that could potentially address the inefficiencies of the current “state-driven” approach. Such an instrument should incentivise but not replace the efforts of Member States, whose importance remains crucial for the launch of defence development projects.

4. OBJECTIVES

Working towards a strong, competitive and innovative EU defence industry requires measures that will address problems and challenges that the latter faces. In order to achieve it, a set of objectives, as specified below, could be defined.

4.1. General objective

The general objective of the EDIDP would be to **foster an innovative and competitive European defence industry** able to meet Europe's current and future security needs and improve its standing vis-a-vis its international competitors.

The Treaty basis for this general objective is Article 173 TFEU, which takes into account the policies of innovation, research and technological development.

4.2. Specific objectives

With a view to addressing the identified problems and achieving the above general objective, the following specific objectives have been defined:

- Objective 1 – to foster better exploitation of the results of defence research and contribute to closing the gaps between research and development.
- Objective 2 – to support and leverage the cooperation between undertakings, including SMEs, in the development of technologies or products in line with defence capability priorities commonly agreed by Member States within the EU.

4.3. Operational objectives

The above specific objectives can be further split into the following operational policy actions: (i) participate in the development costs of defence products and technologies to unlock the implementation of innovative collaborative projects beyond the research and technology phase, and (ii) facilitate collaboration between several Member States and between undertakings to avoid duplications, while (iii) contributing to the EU security interest taking into account capability priorities commonly agreed by Member States within the EU and inducing the implementation of common technical specifications.

Altogether, the three tiers of objectives have been summarised in Figure 4 (below).

³⁹ European Political Strategy Centre, 2015, p.2.

Figure 4: Three-tier structure of objectives for the intervention

GENERAL	Foster an innovative and competitive European defence industry		
SPECIFIC	Foster better exploitation of the results of defence research	Encourage collaboration between undertakings in the defence industry	
OPERATIONAL	Participate in the development costs	Facilitate collaboration in defence development projects	Contribute to EU security interests taking into account EU capability priorities; promote the implementation of common technical specifications

5. THE NEED FOR A NEW POLICY

In order to achieve the objective and expected results presented in Section 4, a proposal to establish the EDIDP has been examined and compared to the maintenance of the current situation (*status quo*) which constitutes the baseline scenario.

5.1. *Status quo* - baseline “do nothing” scenario

Under the *status quo* (baseline scenario) no specific funding measures at the Union level would be established to support collaborative defence development projects under the current programming period, despite the existence of specific difficulties encountered by the defence industry in the development phase. As explained in section 2, such difficulties are notably due to the high costs and technological risks linked to the development of prototypes, which is amongst the most risky phases of defence development projects. In the absence of a specific EU-level action, collaborative projects would most probably not proceed beyond the initial research phase or be at least significantly delayed.

Under the *status quo*, the support for collaborative projects from the EU’s own resources would be limited to the R&T phase of the projects. It will be provided through the PA on Defence Research launched in April 2017. The PA is based on an estimated total budget of EUR 90 million for the period 2017-2019 and will focus on a limited number of key research projects. It will prepare the introduction of a European defence research programme within the next multiannual financial framework.

In view of the introduction of the PA, not targeting the post research and technology phase risks to hamper the further development of the results of defence research thus putting a halt to the development of the defence products and technologies needed. This may also send a negative signal to stakeholders demonstrating a lower engagement of the Union in supporting later stages of development of defence projects compared to the initial research phase. An opportunity to implement a pilot approach and prepare the way for the introduction of a more ambitious EDIDP as part of the capability window of the EDF under the next programming period would also be forsaken. Possible learning opportunities would be lost.

In addition to the PA, actions funded under the Horizon 2020 and COSME programmes may also lead to results which can have dual use, and the EU guarantee under the European Fund for Strategic Investments (hereinafter: EFSI) can also be used for certain operations where dual-use technologies are concerned. In addition, European Structural and Investment Funds (hereinafter: ESIF) can also be used to reinforce certain aspects of the EU defence sector.

It is also foreseen that additional initiatives would be developed at the EU level aimed at better incentivising collaborative development and procurement. Notably, a financial toolbox would be developed, providing Member States with ready to use financial tools that can be voluntarily applied to address the most common challenges impeding joint development and procurement of defence capabilities.

The Commission would also propose measures that will specifically target the difficulties encountered by SMEs in the defence industry by adopting recommendations to Member States aimed at implementing measures to improve SMEs' participation to procurement contracts and access to finance for SMEs active in the defence sector.

In view of the above, it can be concluded that under the *status quo* the Union budget would not incur additional direct costs but the policy objectives would not be achieved either. In the absence of a targeted Union action the main problems identified would persist, collaboration and investments in defence development projects would remain comparatively limited and the competitiveness and innovativeness of the European defence industry would not be significantly improved in this regard. The economic and social impacts that can be expected from a reinforced level of cooperation in defence development projects will also be foregone.

5.2. Moving forward with the European Defence Industrial Development Program (EDIDP)

On the basis of Article 173 TFEU, the EDIDP for Union action in the field of competitiveness and innovation of the EU defence industry would be set up as from 1 January 2019 and would run until 31 December 2020.

The EDIDP would complement research and technological development carried out in accordance with Article 182 of the Treaty. It would be expected to promote all forms of innovation and contribute in enabling the realisation of collaborative defence capability development projects that may face difficulties at the crucial moment where technology needs to transit from the research and technology to the development phase. To achieve its objective and ensure complementarity with the PA on Defence Research the EDIDP will target its support to actions that come after the R&T phase but will not support production. It will leverage support and provide complementary funding in order to incentivise cooperation and innovation.

More precisely, the EDIDP would support the design, prototyping, testing and qualification of defence products, tangible or intangible components and technologies. Funding could also be provided for the certification of a defence product or technology, as well as for the development of the technical specifications on which the design is based, for studies, feasibility assessments and other accompanying measures. Support can be provided for actions in the development phase covering both new and the upgrade of existing products and technologies.

5.2.1. Description of the proposed instrument

The EDIDP would provide financial support to undertakings⁴⁰ established in EU Member States owned in majority and effectively controlled by Member States or nationals of Member States and which take part in collaborative defence development projects. The activities linked to actions funded under the Programme should not be located on the territory of non-Member States during the entire duration of the action. The project should involve cooperation between at least 3 undertakings established in at least 2 different Member States. It must be based on common technical specifications defined by the participating Member States.

As the PA on Defence Research, the EDIDP is a first step and should thus pave the way for the implementation of a reinforced development programme under the next multiannual financial framework.

The proposed intervention strategies would be through financial assistance. In view of the nature of the identified problems other soft measures such as information sharing and/or networking activities would not be sufficient. The financial assistance provided under the EDIDP can take the form of grants, financial instruments and public procurement. The proposed overall budget of the EDIDP would be EUR 500 million.

A scoping study⁴¹ commissioned by the Commission recommended that the budget of the EDIDP should be of EUR 150 million in 2019 and EUR 250 million in 2020. On the basis of the latest EDA data available, and with reference to the EDA benchmark of a 35% European collaborative procurement as percentage of total defence equipment procurement, the study estimates that a “collaboration deficit” of EUR 3.3 billion is currently present. Taking into account that the average ratio of R&D to equipment expenses in the EDA participating states was 22% and relying on assumptions on the possible additional costs that collaborative projects may imply, the study concludes that the Commission should spend more than EUR 700 million per year to incentivise the necessary level of collaboration⁴². Considering however that a limited number of projects would be ready for funding in the first years, the lower budget figures quoted above are recommended for the 2019-2020 period. For the future (post-2020), the study foresees that increasing amounts of engagement by the Commission may be necessary if Member States work towards respecting also the benchmark of investment and R&T expenses reaching 20% of total defence expenditure as well as the NATO spending target of 2% of GDP.

The proposed funding rate would not exceed 20% of the total cost of the relevant action when it relates to prototyping. In the case of technical specifications, design, testing, qualification or certification and supporting measures, the assistance may cover up to the total cost of the action.

Member States would need to contribute to the remaining costs, in particular through pooling of national contributions. The EU budget would thus be used to leverage the right amount of Member States’ contributions to initiate the cooperation and would act as

⁴⁰ Support under the EDIDP will be provided directly to the undertakings participating in the project. Funding provided under the EDIDP thus represents Union resources that are awarded directly by the Union without discretion on the part of the national authorities. As such, they do not qualify as State resources in the meaning of Article 107(1) TFEU and therefore do not constitute State aid.

⁴¹ Mauro, 2017.

⁴² The United Kingdom is excluded from the calculations performed so as to provide a post-Brexit analytical framework.

enabler for cooperation, unblocking potential collaborative development programmes in one of the riskiest phases, i.e. the development phase. Beneficiaries developing actions in the context of Permanent Structured Cooperation would be eligible for an increased funding rate in view of the reinforced collaboration in the framework of the EU that such actions entail.

The Commission will be responsible for the execution and the management structure of the EDIDP. It may however entrust part of the implementation to another entity. In view of its expertise, the Commission may entrust the EDA with such a role.

The proposals submitted in view of obtaining support under the EDIDP would be evaluated on the basis of the following cumulative award criteria:

- Excellence
- The contribution to the innovation and technological development of defence industries and thus to fostering the industrial autonomy of the EU in the field of defence technologies;
- The contribution to the security and defence interests of the EU by enhancing defence technologies which contribute to implement defence capability priorities commonly agreed by Member States within the EU;
- viability notably via a demonstration by the beneficiaries that the remaining costs of the eligible action are covered by other means of financing such as Member States' contributions.
- for prototyping, testing, qualification and certification actions, the contribution to the competitiveness of the European defence industry through the demonstration by the beneficiaries, that Member States have committed to jointly produce and procure the final product or technology in a coordinated way, including joint procurement where applicable⁴³.

6. THE IMPACTS OF THE EUROPEAN DEFENCE INDUSTRIAL DEVELOPMENT PROGRAMME

The proposed EDIDP would support a collaborative approach to defence development projects and foster the exploitation and transition of defence research towards the development of products and technologies consistent with defence capability priorities commonly agreed by Member States within the EU. This is expected to foster the competitiveness and innovativeness of the European defence industry.

It is however important to note that all below mentioned expected impacts of the EDIDP should be interpreted in the light of its pilot nature and of its limited scale and duration.

The EDIDP, by supporting common technical requirements, would contribute in ensuring standardisation and interoperability, would reduce duplications and hence enhance the competitiveness of the defence industry.

⁴³ Should Member States make such commitments to further develop and to procure a product or technology, they must ensure compliance with EU public procurement legislation, in particular with the rules of Directive 2009/81/EC. In this context, Member States may rely on the exclusion under Article 13(c) of this Directive, provided that the conditions for its application are fulfilled.

The EDIDP would fund the initial phases of development in order to encourage innovation generated by the EU defence industry at a stage that is difficult to overcome by the industry without additional incentives.

6.1. Impact on the competitiveness of the industry

The EDIDP is implemented under Article 173 TFEU and its main objective is to foster an innovative and competitive European defence industry. The programme will contribute in achieving this objective, in particular through the following channels:

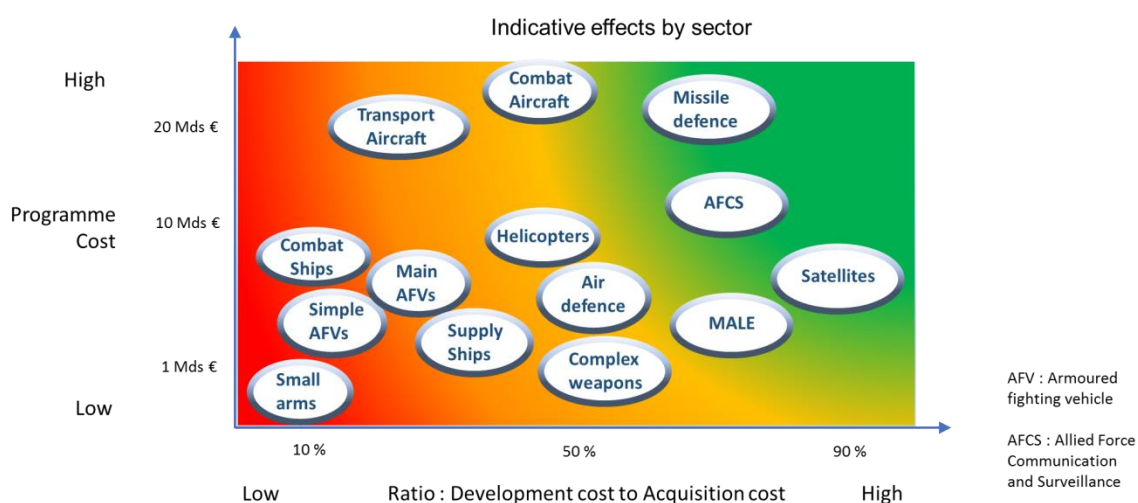
- *Enhanced collaboration in defence development projects in Europe*

The EDIDP should contribute to reinforcing collaborative projects in the EU by allowing additional projects to be implemented, and by establishing a framework that incentivises more efficient collaboration architectures.

Regarding the first element, the EDIDP's financial contribution is expected to unlock development projects which may not be able to proceed forward in view of their financing needs and of the technological risks involved.

As illustrated in Figure 5, the effectiveness of financial incentives for collaboration would be expected to increase with the cost of the project and with the ratio of development costs to acquisition costs⁴⁴. On one hand, the higher the costs, the more difficult it is for a single Member State to undertake the project. On the other hand, the benefits of collaboration depend on the ratio of development costs to acquisition costs because the part of costs that is shared between participants corresponds to the development costs, while each client has to support the acquisition costs of its own purchase. As previously mentioned, a collaborative project would be financially interesting for the participating Member States even when its total costs would exceed those of an equivalent national project because the fixed costs are divided between all the participants thus alleviating the financial burden falling on each one of them.

Figure 5: Economic drivers for Collaboration



Source: Mauro, 2017.

⁴⁴ Mauro, 2017.

As regards achieving better collaboration, the EDIDP takes stock of lessons learned from past experience and incentivises the elaboration of common technical requirements in order to maximise the efficiency of the development projects.

- *Improving defence industry efficiency and capturing size effects*

As mentioned earlier, the defence industry is characterised by important economies of scale and learning that the current dispersion of programmes in Europe does not allow to capture to a sufficient degree. Enhanced cooperation, by reducing wasteful duplications, will enable increasing the scale of production thus improving the competitiveness of the EU defence industry. This should have a positive effect on export performance. It is also expected to benefit the Member States in their role of buyers, as higher scale implies comparatively lower unit costs of equipment. The expected positive impact on the cost-effectiveness of the industry could be significant – according to different studies, costs reductions of 10-20% can be achieved when production is doubled or increased from minimum efficient scale to the ideal level⁴⁵. Better capture of scale and learning effects can thus provide a major contribution in improving the competitiveness of the EU defence industry.

Investment in defence can also re-direct resources within the manufacturing sector from activities with average productivity to activities where productivity is substantially above average⁴⁶.

- *Improved defence technology development*

The implementation of EDIDP is also expected to enhance the quality and the variety of technologies being developed in Europe by reducing the current duplications where Member States are funding comparable projects in parallel instead of exploiting complementarities and opportunities for specialisation. A better use of scarce budgetary resources should allow the EDTIB to also develop technologies and experience in fields that currently suffer from insufficient investment. This would improve the standing of the EU defence industry by allowing it to effectively compete with international competitors through enhanced product quality and by increasing the scope of the products and technologies that it can offer.

Important spin-offs, which will also benefit civil activities, can be expected as explained below.

6.2. Wider economic impacts

The EDIDP is expected to bring wider positive economic effects for the European economy. Investments in the defence sector have significant positive multiplier effects on GDP, tax and employment, comparable to those of other key categories of public spending (transport, education, health)⁴⁷. However, defence has an impact on R&D that is, according to some studies, 12 to 20 times greater than the impact of other categories

⁴⁵ McKinsey, 2013, estimates that each doubling of volume results in an efficiency increase of approx. 20% that would lead to total potential saving of 17% of the total weapon system procurement costs under the assumption of a 40% labour costs share. National Audit Office, 2001, considers that equipment unit production costs could fall by up to 10% as output doubles. Hartley, 2006, estimates the median unit cost saving by increasing scale from the minimum to the ideal level at 10-20%.

⁴⁶ Europe Economics, 2013.

⁴⁷ Europe Economics, 2013.

of public spending mentioned before and can thus contribute significantly to future economic growth in the EU and to the competitiveness of the EU industry in general⁴⁸.

Beyond the macroeconomic effects on R&D, defence R&D is at the origin of important spin-offs that benefit both the defence and the civil sector. A study on the economic benefits of the Eurofighter Typhoon programme values its technological externalities at USD 7.2 billion (minimum)⁴⁹. The study also shows that important benefits were also derived in terms of organisational and process innovation through the introduction of a range of modern business practices throughout the supply chain. As previously mentioned, investments in defence development may also improve the productivity of the economy by transferring resources to highly productive activities.

6.3. Impacts on the SMEs

SMEs play a crucial role in the European economy as well as in the defence industry. They provide important employment opportunities and are a factor of innovation and thus competitiveness. It is therefore important to carefully examine the effects of the proposed introduction of the EDIDP on SMEs.

First, from a general perspective, the EDIDP will have positive effects on SMEs which are involved in defence development programmes through the supply chains of the main system integrators. Most of the beneficial effects mentioned above will also be transmitted to suppliers down the supply chain, including to SMEs. It is worth noting that the number of companies involved in the development and production of an important defence system can be quite high: the Leopard II tank for instance combines the efforts of some 1,500 companies, many of which SMEs⁵⁰. Benefits to suppliers also take the form of technology transfers⁵¹.

Second, the introduction of the EDIDP is expected to have positive effects as regards cross-border access to the supply chains. Barriers to cross border access to the supply chains affect particularly SMEs, but are also an important impediment for larger firms that want to establish relations with companies and system integrators located in another Member State.

European collaborative defence development projects have the potential of favouring the establishment of cross-border industrial relations including at the level of the lower tiers in the supply chains. Learning to work together and building confidence are major factors favouring internationalisation of the supply chains and the EDIDP will be conducive to the establishment of such relations. It is foreseen that the Work programme of the EDIDP would specifically ensure that a proportion of the overall budget will benefit actions enabling cross-border participation of SMEs.

It is worth noting that the establishment of first cross-border relations between a supplier and higher tier industrial clients face the highest difficulties in terms of informational barriers and supplier switching costs, including elements pertaining to trust, risk-

⁴⁸ Europe Economics, 2013.

⁴⁹ Hartley, 2008. Technological benefits included carbon fibre technology; super plastic forming and fusion bonding; modular avionics; the flight control system; and aero-engine technology. Technology spin-offs were also identified from the Typhoon Programme to civil aircraft, to motor car industries (including Formula 1 racing cars in Italy and the UK) and to supply chains.

⁵⁰ Duran et al., 2012.

⁵¹ Hartley, 2008.

management or security of supply⁵². Once such relations are established and have led to the discovery of new efficient and reliable suppliers, collaboration would be expected to extend beyond the scope of the projects supported under the EDIDP. Skills and technology acquired by Spanish firms in the framework of the development of the EJ200 engine for the Eurofighter, have for instance allowed the Spanish industry to successfully enter some segments of the aerospace industry⁵³.

Finally, the progressive blurring of the border between the defence and the civil sectors also allows SMEs that are not traditionally active in the defence sector to participate. The share of electronics and software in defence projects is increasing and this offers opportunities for innovative SMEs to participate and draw significant benefits from defence development programmes. Innovative cyber security technologies necessary for defence purposes (e.g. protection of defence networks, operations, cyberspace) will also be increasingly exploited and will play an increasing role in defence development programs.

6.4. Social impacts

Enhanced investment in defence development projects is also expected to bring benefits as regards, jobs, skills and remuneration.

It is estimated that the Eurofighter project supported some 100,000 personnel directly or indirectly in over 400 companies throughout Europe⁵⁴. More generally, a study on the impact of investments in the UK defence industry notes that for each job created within the defence industry, 1.6 jobs are created elsewhere in the economy⁵⁵. Another study estimates that each EUR 1 million invested in the defence sector of the EU can generate 28.7 jobs⁵⁶. In view of such estimates and of the budget of the EDIDP and the co-funding that would be provided by participating Member States the expected positive employment effects can be expected to be substantial.

Defence development projects traditionally require highly skilled personnel. On the Eurofighter Typhoon R&D work, the employment of EADS (Germany) comprised 60% engineers, 25% blue collar, 5% commercial and legal workers and the rest as support⁵⁷. The labour skills on the development and production of the Typhoon also proved to be highly transferable towards a wide range of both defence and civil activities (e.g. automobile, electronics, civil aviation including the Airbus A-380)⁵⁸.

In addition, salaries on the projects' development work were 60% higher than the average gross earnings in all EU industries⁵⁹.

6.5. Wider security impacts

A first effect regards the quality of the defence products and technologies that will be made available to the Member States. A correlation indeed exists between past levels of defence R&D spending and the quality of the defence equipment in the inventories of the

⁵² Ianakiev & Mladenov, 2008; Ianakiev, 2014.

⁵³ Hartley, 2008.

⁵⁴ Hartley, 2008, p. 9.

⁵⁵ Oxford economics, 2011.

⁵⁶ Europe Economics, 2013.

⁵⁷ Hartley, 2008.

⁵⁸ Hartley, 2008.

⁵⁹ Hartley, 2008.

corresponding country⁶⁰. The European defence industry will also preserve and enhance its technological ability to develop new generations of critical defence technologies and products and to compete on global markets.

The expected security benefits are however not restricted to improvement of quality in the medium-long term: standardisation and interoperability of equipment are amongst the main benefits that can be expected from collaborative capability development. They will in turn open opportunities for collaboration in support and maintenance, repair and overhaul activities, enabling further significant savings⁶¹, and in joint operations, ultimately contributing to the reinforcement of the security of the EU and of its Member States.

In view of the increasing role of cyber defence technologies and their penetration in the defence sector, the implementation of the EDIDP is also expected to contribute in enhancing cyber defence.

6.6. Environmental impacts

No significant environmental effects of the present initiative have been identified.

6.7. Other impacts

As far as practical implementation risks are concerned, they may stem from the short duration of the EDIDP which may lead to difficulties in utilising the entire budget available in case no sufficient quality applications are received. In a current context characterised by low investments in defence development projects the probability of such a risk materialising appears limited. In the preparation of the EDIDP the Commission has also run consultations with both industry and Member States which should contribute positively to an early awareness of stakeholders about the EDIDP that should allow them to be prepared at the moment when the project selection procedure would be open.

Risks of duplication and overlap with support provided through other programmes of the Union also remain low in view of the limited intervention of such programmes directed specifically towards the defence industry⁶². The PA on Defence Research is however targeting the defence sector and it is important that duplications are avoided. The proposed EDIDP Regulation provides that only actions in the development phase of collaborative defence projects would be eligible thus avoiding possible overlaps with the PA. The two initiatives would be therefore complementary.

6.8. Cost-effectiveness

The setting up of the EDIDP would imply direct costs to the Union budget of EUR 500 million over the 2019-2020 period, but the Union would not fund the entire projects - it would provide a limited contribution with the aim of enabling the projects to proceed by also leveraging spending originating from the Member States.

⁶⁰ Middleton et al., 2006.

⁶¹ McKinsey (2013) estimates the potential savings of sharing maintenance depots and personal for the top12 platforms in Europe to roughly EUR 500-600 million per year.

⁶² As mentioned earlier, actions funded under Union programs such as Horizon 2020 or COSME can lead to results that have dual use. These programs do not support actions specifically targeted at the defence sector. In addition, when drafting the multiannual Work Programme the Commission will also ensure that no overlaps with other Union instruments occur.

The direct costs to the Union budget would be also comparatively limited with regard to the total costs of the supported defence development projects. If the EDIDP funds 20% of the eligible costs of a project (taking into account the maximum funding rate for prototyping), the remaining 80% would be provided by the Member States. In view of the budget of EUR 500 million the total corresponding contribution that would be provided by the Member States could reach up to EUR 2.5 billion. This represents a significant figure when taking into account that the total defence R&D expenditures in the EU were slightly below EUR 9 billion in 2014⁶³.

The proposal would require the use of appropriations of an administrative nature under the multiannual financial framework, in particular human resources expenditures and other administrative expenditure. In this respect, the resource implications can slightly differ depending on the choice of direct or indirect management mode. The two modes of management imply differences in both the number of full-time equivalents (FTEs) at the Commission level (and their related costs) and the other administrative costs.

The direct management mode requires a significant number of officials (AD and AST) to fully manage the program at technical, programmatic, financial and legal level. The indirect management foresees some of these tasks to be performed by the implementing body and therefore allows the Commission to focus on the follow-up and monitoring of the project. The reporting mechanisms set-up with the implementing body allow for a lower number of officials at the Commission level compared to the direct management.

Administrative costs are also slightly higher with the direct management mode. In particular, ad hoc Information systems need be established and more missions are necessary (on the spot audit, follow-up meetings etc).

However the administrative costs and human resources costs will remain limited in comparison to the total funding amounts that would be invested in collaborative defence development projects. The EDIDP would therefore achieve a positive cost-efficiency, as the expected benefits for the industry and broader policy impacts should outweigh the costs incurred.

7. FUTURE MONITORING AND EVALUATION

The proposed monitoring and evaluation activities should above all be based on the data which are already collected and published by various organisations active in the European defence sector. Generally, the key data used in this SWD should continue to be collected and serve as a benchmark for the future ex-post evaluation. In particular, this would concern the following data sources:

- EDA data submitted by affiliated Member States on an annual basis (e.g. the volume and share of EU and non-EU collaborative procurement, the volume and share of EU and non-EU collaborative defence R&T, the volume of defence equipment procurement, the volume of defence R&D expenses);
- Data on the size of the defence industry.

Once the proposed funding scheme is implemented, data on the financed projects should be collected by the managing authority of EDIDP. The proposed scope of such data collection could be notably the following:

⁶³ Data for the 27 Member States participating in the EDA. Data from European Defence Agency, 2014.

- the number of cooperative projects implemented,
- the total value of cooperative projects implemented and co-financing level,
- the number of companies involved as consortium members and their size,
- the number of Member States involved,
- the number of SMEs involved in projects under the programme

The collection of some of the above information could involve an additional burden on firms or Member States, therefore the detailed requirements may need to be investigated in more detail to ensure that the costs are not excessive.

Additionally, sources and methods such as targeted surveys and interviews with stakeholders could be used in the future to analyse the extent to which the proposed legislation has met its objectives. These would also provide more detailed feedback on the efficiency of projects implemented under the EDIDP.

It should be also recognised that the quality and consistency of the available statistical data has been constantly improving over time, therefore there are reasons to believe that the above-mentioned sources can provide information that would be sufficient to monitor the performance of the proposed funding mechanism and its impacts on the EU defence market.

The Commission should regularly monitor the implementation of the programme and annually report on the progress made in accordance with Article 38(3)(e) of Regulation 966/2012.

To support greater efficiency and effectiveness of future Union policy actions, the Commission should draw up a retrospective evaluation report and send it to the European Parliament and to the Council. The report - building on relevant consultations of Member States and key stakeholders - should notably assess the progress made towards the achievement of the objectives of the EDIDP. It should also analyse cross border participation of SMEs in projects implemented under the programme as well as the participation of SMEs to the global value chain.

ANNEX 1: PROCEDURAL INFORMATION

The lead department for this SWD was the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) of the European Commission. The evaluation has been carried out by Unit I4 (Defence, Aeronautic and Maritime Industries).

As part of the evaluation process, an inter-service steering group (ISG) was set up to follow and steer the development of the proposal and its accompanying SWD. The ISG involved the following Commission's departments: Unit I3 (Space Data for Societal Challenges and Growth), Unit I4 (Defence, Aeronautic and Maritime Industries), Unit G3 (Procurement Legislation and Enforcement) and Unit O1 (Economic Analysis) of DG GROW; Unit A3 (Horizon 2020 policy) of Directorate-General for Research and Innovation; Unit L6 (Stability mechanisms and legal affairs) of Directorate-General for Economic and Financial Affairs; Unit A3 (Internal policies) of Directorate-General for Budget; Unit B2 (Investment) of Directorate-General for Trade; Unit A3 (State aid strategy) of Directorate-General for Competition; Unit H1 (Cybersecurity & Digital privacy) of Directorate-General for Digital Single Market; Unit G1 (Smart and Sustainable Growth) of Directorate-General for EU Regional Policy; Unit B5 (Stability, Security, Development and Nuclear Safety) of Directorate-General for International Cooperation and Development; Unit C1 (Innovation and EIT) of Directorate-General for Education and culture; Unit D1 (Policy Coordination, International & Multilateral Relations and Legal Affairs) of Directorate-General for Humanitarian Aid and Civil Protection; Unit E2 (Skills & Qualifications) of Directorate-General for Employment, Social Affairs & Inclusion; Unit A1 (Energy policy coordination) of Directorate-General for Energy; Unit B4 (Innovation and Industry for Security) of Directorate-General for Migration and Home Affairs; Unit A3 (Sea basin strategies, Maritime Regional Cooperation and Maritime Security) of Directorate-General for Maritime Affairs and Fisheries; Unit B4 (Sustainable & Intelligent Transport) of Directorate-General for Mobility and Transport; Unit C1 (Value added tax) of Directorate-General for Taxation and Customs Union; Unit A2 (Work Programme) of the Joint Research Centre; Team H (Internal market for goods, energy including Euratom; enterprise; customs union; environment) and Team I (CFSP and External relations) of the Commission Legal Service; Unit D2 (Internal Market and Competitiveness) of the Secretariat-General; and European Political Strategy Centre.

The ISG was established in March 2017 and met three times: on 17/03, 7/05 and 17/05.

This evaluation has been carried out internally by the Commission departments, based on existing external expertise and research. It referred to multiple external studies carried out by academia, public institutions, industry associations or consultancies specialised in the defence industry.

ANNEX 2: REFERENCES

Aerospace and Defence Industries Association of Europe, *Key facts & figures 2015*, Brussels, 2016.

Bellais, R. & Droff, J., 'La nécessaire réorganisation de l'industrie de défense en Europe', *Revue Défense Nationale*, Comité d'études de défense nationale, Paris, 2013, pp. 47-52.

Briani, V., 'Armaments duplication in Europe: A quantitative assessment', *CEPS Policy brief*, No. 297, Brussels, 16 July 2013.

Briani, V., 'The costs of non-Europe in the defence field', Centre for Studies on Federalism and Instituto Affari Internazionali, April 2013.

Commission Staff Working Document SWD(2013)279 of the European Commission of 24 July 2013 accompanying the document Towards a more competitive and efficient defence and security sector.

Communication (2016)950 from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions of 30 November 2016 on the European Defence Action Plan.

De France, O., 'Defence budgets in Europe: Downturn or U-turn?', *European Union Institute for Security Studies brief*, No. 12, Brussels, 2015.

Duran, J., et al., *Study on the Perspectives of the European Land Armament Sector*, Final Report for industriAll and ikei, Donostia-San Sebastián, 2012.

Europe Economics, *Study on the Competitiveness of European Small and Medium sized Enterprises (SMEs) in the Defence Sector*, London, 2009.

Europe Economics, *The economic case for investing in Europe's defence industry*, London, 2013.

European Council, *European Council meeting (15 December 2016) – Conclusions*, Brussels, 15 December 2016.

European Defence Agency, *EU-US Defence Data 2011 Factsheet*, Brussels, 2013.

European Defence Agency, *Guidelines for facilitating SMEs' access to the defence market*, Brussels, 2015.

European Defence Agency, *Defence Data 2014*, Brussels, 2016.

European Parliament, Directorate-General for External Policies, *The Development of a European Defence Technological and Industrial Base (EDTIB)*, Brussels, 2013.

European Parliament, Directorate-General for External Policies, *Study: The future of EU defence research*, Brussels, 2016.

European Political Strategy Centre, 'In defence of Europe: Defence integration as a response to Europe's strategic moment', *EPSC Strategic Notes*, Issue 4, Brussels, 15 June 2015.

- European Union Institute for Security Studies, 'Lessons learned from European defence equipment programmes', *Occasional paper*, No. 69, Brussels, 2007.
- European Union Institute for Security Studies and European Commission, *Report of the Group of Personalities on the Preparatory Action for CSDP-related research. European defence research. The case for an EU-funded defence R&T programme*, Brussels, 2016.
- Hartley, K., 'Defence industrial policy in a military alliance', *Journal of Peace Research*, Vol. 43, No. 4, Sage Publications, London, 2006, pp. 473-489.
- Hartley, K., *The industrial and economic benefits of Eurofighter Typhoon*, University of York, York, 2008.
- Heuninckx, B., 'A Primer to Collaborative Defence Procurement in Europe: troubles, Achievements and Prospects', *Public Procurement Law review*, Vol. 17, Issue 3, Sweet & Maxwell, Nottingham, 2008, pp. 123-145.
- Hove, K. & Lillekvelland, T., 'Investment cost escalation – An overview of the literature and revised estimates', *Defence and Peace Economics*, Vol. 27, No. 2, Taylor & Francis, London, 2016, pp. 208-230.
- Ianakiev, G. & Mladenov, N., 'Offset Policies in Defence Procurement: Lessons for the European Defence market', *Défense nationale et sécurité collective – Les marchés publics de défense*, Comité d'études de défense nationale, Paris, 2008, pp. 185-194.
- Ianakiev, G., 'Defence Offsets: Regulation and Impact on the Integration of the European Defence Equipment Market', *The Evolving Boundaries of Defence: An Assessment of Recent Shifts in Defence Activities*, ed. Renaud Bellais, Emerald, Bingley, 2014, pp. 251-270.
- Juncker, J. C., *State of the Union 2016: Towards a better Europe – A Europe that protects, empowers and depends*, Speech at the European Parliament, Brussels, 14 September 2016.
- Kirkpatrick, D., 'The rising cost of defence equipment – The reasons and the results', *Defence and Peace Economics*, Vol. 6, No. 4, Taylor & Francis, London, 1995, pp. 263-288.
- Kirkpatrick, D., 'Trends in the cost of weapon systems and the consequences', *Defence and Peace Economics*, Vol. 15, No. 3, Taylor & Francis, London, 2004, pp. 259-273.
- Masson, H., 'Comprendre le profil des principaux fournisseurs européens d'équipements de défense', *Défense & Industries*, No. 4, Fondation pour la recherche stratégique, Paris, June 2015.
- Mauro, F., *Etude préparatoire pour la Commission Européenne sur le budget du 'Programme de développement pour l'industrie de défense'*, Brussels, 2017.
- McKinsey, *The future of European defence: Tackling the productivity challenge*, McKinsey & Company, Brussels, 2013.
- Middleton, A., et al., 'The effect of defence R&D on military equipment quality', *Defence and Peace Economics*, Vol. 17, No. 2, Taylor & Francis, London, 2006, pp. 117-139.

National Audit Office, *Maximising the benefits of defence equipment co-operation*, London, 2001.

Nordlund, P., 'Defence-specific inflation – The Swedish perspective', *Defence and Peace Economics*, Vol. 27, No. 2, Taylor & Francis, London, 2016, pp. 258-279.

North Atlantic Treaty Organization, *Defence Expenditure of NATO Countries (2009-2016)*, Communique PR/CP(2017)045, Brussels, 13 March 2017.

Oxford Economics, *Economic case for investing in the UK defence industry: A report for ASD and the Defence Industries Council*, Oxford, 2011.

Pugh, P., *The cost of seapower*, Conway Maritime Press, London, 1986.

Pugh, P., 'The procurement nexus', *Defence Economics*, Vol. 4, No. 2, Taylor & Francis, London, 1993, pp. 179-194.

Pugh, P., *Source book of defence equipment costs*, P. G. Pugh, Bedford, 2009.

Resolution 2013/2125(INI) of the European Parliament of 21 November 2013 on the European Defence Technological and Industrial Base.

Stockholm International Peace Research Institute, *SIPRI Military Expenditure Database*, available at: <https://www.sipri.org/databases/milex> (27 April 2017).

US Department of State, *World Military Expenditures and Arms Transfers (WMEAT) 2016 Edition*, Washington, 2016.