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Working paper

BEPIDS[1]

Belgium within the European competitive cooperative defence ecosystem: Analysing the EDF vs key characteristics of Belgium.

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Last Release Date

31 December 2024

[1] *The **B**elgian **E**conomic **P**otential in the **I**ndustry of **D**efence and **S**ecurity project is being researched jointly by the Department of Applied Economics of the 'Vrije Universiteit Brussel' (VUB) and the Department of Economics Management and Leadership of the Belgian 'Royal Military Academy' (RMA). The project receives financial support from the 'Belgian Federal Public Planning Service Science Policy' (BELSPO) and the Belgian 'Royal Higher Institute for Defence' (RHID). The project timeframe spans from Oct 2022 – December 2024.*

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Belgium within the European competitive cooperative defence ecosystem: Analysing the EDF vs key characteristics of Belgium.

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Abstract

This study examines the Belgian Defence Technological and Industrial Base (BE-DTIB) within the cooperative EU defence ecosystem. We employ the European Defence Fund (EDF) and its precursor programs as a proxy for the ecosystem to assess the presence of Belgian entities and their comparative success. The study addresses a gap in the literature by focusing on the actual EU contribution per entity, rather than the average contribution per entity employed in existing literature. Additionally, we include both the EDF and its precursors, which provide insights over time. The data is sourced from the EU funding and tenders portal (SEDIA), the EU financial transparency system, project factsheets and supplemental material. Since no single source exists from which all data can be obtained, we discuss the challenges encountered during data collection so others may replicate our approach. By comparing the data to the characteristics of the Belgian Defence Technological and Industrial Base (BE-DTIB), defence-product exports, to the Belgian Defence Industry and Research Strategy (BE-DIRS), and using several dimensions and indicators for success, we find that the EDF and its precursors are an overall success for Belgium to engage in the cooperative EU defence ecosystem. Nevertheless, we also identify limitations in regard to the alignment of Belgian characteristics and suggest ways to address them.

Note: This paper was presented at the June 2024 Bordeaux Workshop on Defence Economics within the workshop themes 'measures to accelerate innovation in defence' and 'industrial capabilities and international collaborative efforts'.

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Introduction

The Belgian Defence Industry and Research Strategy (BE-DIRS) initiated in 2022 has among its key goals to successfully support Belgian legal entities enter value chains, especially within the EDTIB.[6] Hence, to understand the Belgian position one has to understand *to what extent the BE-DTIB is successful within the competitive cooperative EU defence ecosystem developing new value chains*.

The best available proxy to assess the presence of Belgian entities in this ecosystem and whether Belgium entities are successfully positioning itself on the EU-level is the European Defence Fund (EDF) and its precursor programs. Several defence documents also outline the EDF as one of the most important pillars to boost and operationalize Belgium's defence-related technological, industrial and scientific potential.[7]

There is, however, a current lack of insight on the Belgian position within emerging EU competitive yet cooperative value chains. A first step in any analysis is to assess to what extent insights can be derived from relevant existing (grey) literature. We find a research gap in the academic literature, think-tanks and (publicly) available EU reporting on the actual received contribution of the EDF and its precursors, as well as for an analysis of the *comparative* and *alignment* success for Belgium across these programs. By *comparative*, we refer to the received EU contribution relative to contributed burden sharing for Belgium compared to other participating countries (i.e. EU member states and 'associated countries').[8] With *alignment*, we refer to the received EU contribution compared to the characteristics of the BE-DIRS, defence exports and the main characteristics of the Belgian defence industry.

Given this gap, our aim in this paper is to understand to what extent the EDF and its precursors have been a *comparative success,* Belgian-specific (*alignment) success* and *network success* for Belgium.

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[6] See: (DIRS 2022) [LINK]
[7] See: (DIRS 2022) ; (*STAR Plan* 2022, p.134) [LINK]
[8] Note: We refer to 'participating countries' as opposed to 'member states', as non-member states (e.g. Norway) can participate when they are *"members of the European Free Trade Association which are members of the European Economic Area"*. These are referred to as 'associated countries'. See: Article 5 of the EDF Regulation [LINK].

As noted from the above research question, we interchangeably employ the country names and legal entities for the analysis in this research paper (e.g. Belgium and Belgian legal entities). There are several reasons for this.

Firstly, despite the collaborative efforts within the European Union, defence remains a national competency. Each member state retains sovereignty over its defence policies and priorities, which means that national governments are primarily responsible for their defence capabilities.[9] This national control influences how funds are allocated and managed, often prioritizing domestic entities to ensure autonomy in military actions, security of supply and the technological edge to ensure continued advantage and development.[10]

Secondly, the potential economic, societal, and scientific returns of defence funding are significant. Investments in the domestic DTIB can drive technological innovation, create high-skilled jobs, and stimulate economic growth. These benefits are not confined to the defence industry and the wider defence technological and industrial base alone but can spill over into other sectors, enhancing overall national competitiveness. Therefore, countries have a vested interest in ensuring that their domestic industries receive a substantial share of defence funding or procurement, as well as integrate its DTIB with that of larger countries, to maximize these returns.

Thirdly, fiscal considerations influence the reliance on EU funds versus national (and regional) funds. Member states must balance their budgets and manage public finances prudently. By leveraging EU funds to support their DTIB, countries can alleviate some of the financial burdens on their national budgets. This is particularly important for smaller or economically constrained member states that struggle to finance large defence projects independently. The ability to tap into EU funds provides some relief in developing defence capabilities without overburdening their national finances.

This national importance described above is reflected in the way the fund is accepted, as bargaining is involved to ensure interest of the member states are not excessively misaligned before accepting both the working program and the final allocation of calls to

[9] See: (Wilkinson 2020, pp. 4-5) [LINK]
[10] See: (Wilkinson 2020, pp. 4-5)

consortia.[11] For all these reasons, we therefore refer to the country and the legal entities located in the country interchangeably.[12]

The following section delves into relevant literature to discuss available insights and remaining gaps. Thereafter, the methodology section outlines the approach, data collection, limitations, and thresholds for *comparative, alignment and network* success. Next, the results section describes and analyses the outcomes of the outlined framework. Lastly, we conclude with a brief discussion on the insights derived from the analysis, what the implications of the analysis are for Belgium and the BE-DIRS, and suggestions for further research.

Relevant Literature

Below, we briefly discuss key recent sources relevant for our outlined research question, to indicate to what extent insights can be derived from existing academic and grey literature, and indicate where gaps persist.

Giumelli and Marx (2023) examine the precursor programs to the EDF – namely the Preparatory Action on Defence Research (PADR), the European Defence Industrial Development Programme (EDIDP) and the Pilot Projects (PP) – to asses changes in the EU defence market for the analysed period.[13] While the study and its supplemental materials provide useful aggregate insights, its scope does not focus on providing detailed insight per country. Furthermore, the insight are skewed due to the analysis using the total funding per project and dividing this by the participating legal entities active in the project to allocate funding per legal entity. This averaging method misrepresent the reality of the actual received contributions, as each legal entity within a project will receive a specific contribution according to the indicated need as outlined in their proposal. We discuss this in more detail in the methodology section below. More recently, a report by Masson (2024) provides statistical insights based on the actual

[11] See: (Heuninckx et al. 2023, p. 79) [LINK]; (Karakas 2021, p. 8) [LINK]; Also see: 'EU Comitology procedure' [LINK]

[12] For a truly competitive EDF, the nationality of the legal entity, and subsequently the potential disproportionate reception of EU contribution by legal entities located in a particular country, ought to not play a role in the decision-making for the assignment of which consortium wins the EDF calls. The reality described above, however, is unlikely to allow moving towards a fully competitive allocation of EDF funds.

[13] (Giumelli and Marx 2023) [LINK]

received contributions in the EDF21 and EDF22.[14] The analysis sheds light on the distribution of EDF funds and the extent to which different countries and legal entities have benefited from the program funding. While extensive, it does not include the precursors in the analysis.

While EU-driven analysis is available, this remains sparse, especially concerning country-specific insights, and the available detailed EU analyses are limited to the precursors. The European Parliament review of the PADR and EDIDP to derive lessons for the EDF (2021), is the most extensive document identified in our research.[15] The review analyses the status of the precursors and what challenges need to be addressed for a more successful implementation for the then upcoming EDF. While the document provides an extensive analysis using open sources and more than 70 interviews, it focusses on a general discussion of the programmes as a whole within the wider EU defence context. Hence, country-specific insights are not a focus of the report. Another pertinent analysis is the European Court of Auditors (ECA) their review of the PADR program.[16] The report evaluates whether the PADR was successful in preparing for the EDF, identifying key lessons learned from its implementation and estimating its success. While the audit points to some successes, such as testing project management processes and facilitating cooperation among the participating countries, it also highlights challenges, including delays in project execution, limited actual results, and a lack of a long-term strategy for the EDF. However, similar to the Parliament review described above, the ECA review focusses on lessons that can be derived for upcoming EU-level mechanisms. Hence, it does not deep-dive into the relevance for participating countries.

More specifically for Belgium, in a short paper, Heuninckx et al. (2023) from Belgian Defence provide a short discussion on Belgium within the EDF and its precursors.[17] Most notably, they include aggregate information on co-financing amounts, which is not publicly available. They estimate the total obtained amount via the EDF and co-financing for Belgian legal entities amounts to about 102 to 118 million EUR, with the federal

[14] (Mason 2024) [LINK]
[15] (Mauro et al., 2021) [LINK]
[16] (Stefan et al., 2023) [LINK]
[17] (Heuninckx et al. 2023) [LINK]

government providing co-financing of around 23 million EUR.[18] Hence, while all contribution data was not yet available at the time of their analysis, they estimate the direct EDF contributions amount to around 79 to 95 million EUR. This amount co-financed by the federal state thus encompasses around 24 to 29 % of the obtained EDF and precursor contributions for all Belgian legal entities. While this is already a significant amount on its own, the co-financing is directed to 36 of the projects, with research action projects not receiving any co-financing due to these being funded 100% by the received EDF contributions.[19] While the information in the paper remains limited to an aggregate amount for all projects receiving the co-financing, and can therefore not be employed for more detailed analysis, it thus provides some limited insight on the extent of federal co-financing in relation to the obtained amount through the EDF and its precursor programs. The scope of their paper, however, is limited to providing a general overview of the EDF and the relevant processes at Belgian Defence. Hence, it does not intend to provide a deeper analysis on the extent of success of the EDF for Belgium. Another study relevant for Belgium is Lundberg's (2024) analysis of the EDF21 and EDF22 for selected countries, to compare relevant insights to Sweden's participation.[20] Given Belgium is considered a comparable case unit, it is included within the assessment. The report briefly analyses each selected country according to key characteristics, such as it largest area in the EDF, key export areas and the general defence industrial profile. While the report provides some interesting insights, its analysis per country is purposely brief in scope.

Methodology and data collection

Approach

We employ the EDF and its precursor programs to assess the comparative success for Belgium in the *Competitive-portion* of the EU cooperative ecosystem and its alignment success to Belgian-specific characteristics. As our analysis emphasizes the competitive side, we only include competitive 'research actions' and 'development actions' within these programs. Hence, we exclude non-competitive direct awards (MALE-RPAS; ESSOR), framework partnerships (RESILIENCE) and support actions (EOA). There are

[18] Ibid, p. 78
[19] Ibid, p. 78
[20] (Lundberg 2024) [LINK]

several reason for excluding these. First and foremost, including these non-competitive portions would draw away from the focus of the analysis; namely analysing the success of Belgian entities in the competitive environment. The purpose of the direct rewards is distinct to the development and research actions, with the direct awards focussing on capability delivery of high strategic importance. Hence, including these non-competitive direct awards heavily skews the data toward mainly the larger participating countries with larger system integrators directly receiving the contribution. Given the different purpose for the funding including these would muddle the derived insights. Last, even if one were to include the direct awards in the analysis, it faces the limitation that there is no detailed data publicly available on the received contribution per entity. In the FTS, only a bulk transfer to OCCAR can be retrieved, which manages both direct award projects and has, to the best of our knowledge and research, not published information on the received contribution per entity publicly at the time of this writing.

At first glance, our approach seems similar to Giumelli and Marx (see: *supra*), which uses the precursor programs of the EDF (PP, PADR, EDIDP) to analyse the change of the European defence market between 2016-2020. Contrary to Giumeli and Marx, who estimate contribution per entity by dividing the total EU contribution for the project by the number of participating entities, we look at the actual contracted EU contribution per entity based on the available data from multiple sources (see: Table 2), which prevents skewing the impact analysis.

Table 1 indicates the difference between the two approaches for the 21 and 22 EDF program. When using the averaging approach, the skewing of the data misses relevant insights. The Netherlands, for instance, is the 6th highest recipient when analysed through the averaging method, but when looking at the 'actual received EU contribution' falls to the 9th position. This differentiation between the two may imply Dutch legal entities are often sought out for minor roles or specific expertise within a larger project; a hypothesis which is confirmed by digger deeper into the data (see: *infra*).[21] Furthermore, the 'actual

[21] TNO, a Dutch research and technology organization, is active in many of the project with only a minor role and receiving less funding than most other participants within a project. The high participation rate in projects of TNO thus skews the insights when calculating the 'received EU contribution' for the Netherlands on an averaging basis, as the averaging method assigns too much 'received EU contributions' when compared to the 'actual EU contribution received'.

received EU contribution' is substantially higher for France than the received EU contribution calculated through the averaging method. As we discuss in more detail below, these absolute values alone do not provide the whole picture. Nevertheless, the 'actual received EU contribution' provide the correct absolute values required for this analysis on a relative basis.

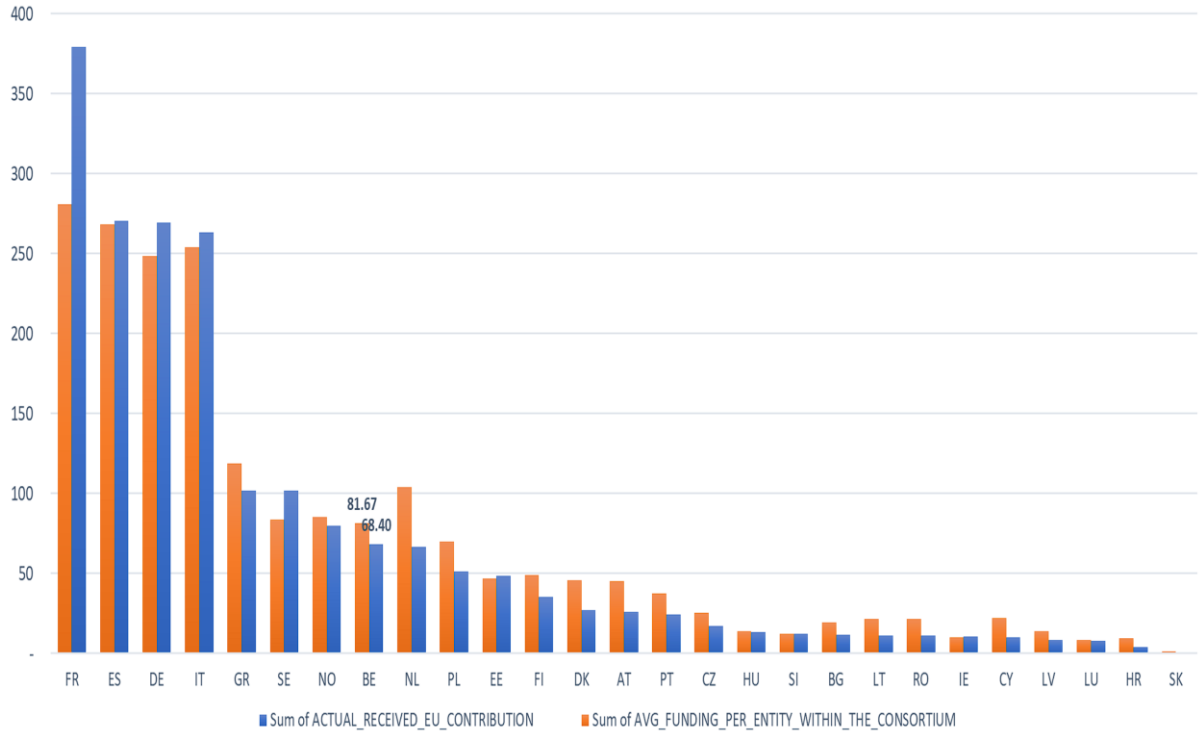

Figure 1: *Actual received EU contribution versus average received EU contribution per entity for EDF-21 and EDF-22 data. Source: Own composition based on analysis of the data.*

Giumelli and Marx, however, should not necessarily be critiqued for employing the averaging approach. While we easily found EU contribution data per legal entity per project for the PP and PADR, we could not immediately identify this for the EDIDP.[22] These are not available in the project factsheets, nor is any data available for the EDIDP on the SEDIA platform. The data that is available for the EDIDP in the Financial Transparency System (FTS) has several limitations, meaning it has to go through a data assessment and linking process to make it employable for analysis. We discuss this in more detail below.

[22] Note: While Giumelli and Marx their study was published in 2023 when EDIDP-data was available in the Financial Transparency System, depending on when they collected their data, the EDIDP-data may have not have been fully uploaded yet to the Financial Transparency System.

Limitations of the approach

The delimitation of only looking at the EDF projects, however, has several limitations as it excludes notable objects of analysis that can be considered relevant to understand the broader defence-related cooperative ecosystem. First, it excludes other (clusters within) programs, which are not directly defence focussed but which can be considered relevant for the EU defence ecosystem due to their focus on security or typical dual-use products. Examples of this are Horizon Europe 'Cluster Civil Security for Society', Horizon Europe 'Cluster Digital, Industry and Space, 'Digital Europe'. Second, it excludes EDA projects, EDIRPA, ASAP, PESCO and other bilateral cooperative mechanisms. Third, and most importantly, it excludes the 2023 EDF call results due to data limitations.

We exclude programs that are not directly defence-focussed as our aim is to *specifically* focus on the position of the BE-DTIB within the EU cooperative defence ecosystem. In short, we choose for a narrower scope with larger specificity, rather than for a broader scope that is less specific and may therefore skew insights. Similarly, to maintain specificity, we exclude other defence cooperative mechanisms as these may skew insights due to employing a different process towards cooperation that is less *competitive* than the EDF call and as there is less data available for analysis; most notably concerning a lack of data availability on the contribution in EUR per involved legal entity. The latter point on data availability is also why we exclude the 2023 EDF call results from our analysis (see: *infra*).

Within the context of the BE-DIRS, our aim is to assess the position of Belgian legal entities within the cooperative EU defence ecosystem and to understand whether it aligns with relevant characteristics of Belgium, i.e. the identified areas in the BE-DIRS, defence-related exports and make-up of the *self-identified* defence industry. Towards this end our delimited objects of analysis suffice as a proxy.

Dataset: Data sourcing and issues

The EDF and precursors dataset was developed based on information from the project factsheets, from data extracted from the EU Financial Transparency System (FTS)[23] and from the EU funding and tenders webportal (SEDIA).[24] The key data collected includes the

[23] EU Financial Transparency System [LINK]
[24] SEDIA EU funding and tenders portal [LINK]

year, acronym, full title, call category, type of action, type of entity, country of establishment of the legal entity, name of the beneficiary legal entity, country of establishment of the beneficiary legal entity.

While the data in the EU financial Transparency system is more extensive and can be directly extracted, the 2022 call data was not yet present at the time of developing the dataset for this paper. This is the case as the budget expenses are only updated at the end of June of the following year.[25] Hence, the 2022 EDF project commitments and expenditure are reported in the 2023 FTS expenditure. As the 'total received contribution per project' in the factsheets differs slightly from the reported 'total received contribution per project' in the FTS, the EDIDP data in the FTS and the data extracted from the factsheets cannot be linked directly. Hence, manual analysis and data processing is required to set up an employable datasheet for the EDIDP data.[26]

We also do not include the 2023 program in our impact assessment. While the results of the 2023 EDF call have been published on the 16th of May 2024, the information has not been published yet on the SEDIA platform at the time of our analysis.[27] Hence, we cannot derive the EU contribution per entity. Once these are available, the approach in this paper can be replicated to update the findings.

Program	Source for 'EU contribution'	Issues
PP	**Factsheets (EDA)**	No transparent public reporting (in EC FTS) as projects are managed by the EDA.
PADR	**Factsheets (EDA)**	No transparent public reporting (in EC FTS) as projects are managed by the EDA

[25] See: FTS FAQ 15 [LINK]

[26] The process for connecting the EDIDP data from the FTS to the proper project was done in the following manner: First, we compared the total received contribution per project in the factsheet to figures in the FTS. When the figures closely aligned we filtered to see what legal entities are connected to the total received contribution. When the legal entities align with the legal entities contained in the factsheet of a EDIDP project, then we manually linked the data to said project in a separate datasheet. Following this process for each EDIDP project sheet, we constructed the EDIDP datasheet required for analysis.

[27] See: Results of the 2023 EDF Call [Link] ; SEDIA platform - EDF [Link]

EDIDP	**Financial Transparency System (FTS)** *(not available in SEDIA or on factsheets)*	No project codes or names in "subject of grant". To link project to EU contribution value requires manual assessment (as the contracted values do not exactly correspond to actual given EU funding).
EDF21&22	**SEDIA & Factsheets** *(partial EDF 2021 data available in FTS. Commenced EDF 2022 projects are added in the FTS in July 2024)*	Data missing in SEDIA for some projects (SEDIA data - structured too complex for API extract) (At the time of data collection, scraping was not possible on the SEDIA portal)
PP: 3 projects *PADR: 18 projects* *EDIDP: 44 projects (42 projects included in analysis. We do not include MALE-RPAS & ESSOR which are non-competitive direct awards)* *EDF: 101 projects (We do not include EOA or RESILIENCE, as the are respectively support actions and framework agreement partnerships)* **The FTS indicates actual received contribution, while the factsheets indicate contracted contributions. For the latter, the actual received contribution in some cases may differ from the contracted contributions (not all grants are 'lump sum' grants, some are 'actual cost').*		

Table 2: *Data sources for EU contribution and issues. Source: Own composition based on analysis of the data.*

Analysis framework: assessing "success"

Comparative success relative to defence investment

While we noted above how using the 'actual received EU contribution', as opposed to averaging approach, provides more correct data for analysis; this does not suffice to derive relevant insights. These figures still only reflect absolute values without making corrections for the differences in contribution of each country to Defence *'burden sharing'*.

We employ 'defence investment' as a denominator to assess the funding obtained from the EDF on a relative basis. Defence investment concerns "defence equipment procurement expenditure and R&D (and R&T) expenditure", with defence equipment procurement including all major equipment categories other than funds needed for operations and management.[28] Defence investment is the most applicable burden-

[28] (EDA 2024) [LINK]

sharing indicator to employ here, as it reflects a country's commitment to, and capacity for, developing or procuring defence capabilities, which, given the continued national focus for much of the procurement, affects the size of its DTIB. Hence, larger DTIBs in countries like France, Germany, Italy, and Spain also naturally allow for a broader set of legal entities to apply for EDF funding, leading to these countries securing a larger share of the funds in absolute terms. Viewing only the absolute figures, thus provides little insight on the actual competitive success. By comparing EDF funding to defence investments, we can assess the relative funding success of the EDF per country, while accounting for its contribution to overall EU-wide capabilities as seen through its defence investment values. We employ the defence investment figures available via the EDA defence data portal for the majority of the participating countries.[29] For the countries for which the EDA provides no or incomplete information (Norway, Denmark, the UK), we employ NATO Defence Expenditure data.[30] Comparing the definitions and cross-referencing the countries for which data is available in both the EDA and NATO reporting, we find that the combined figures of category 2.1 and 3.1 of NATO Defence Expenditure Data report aligns to the EDA definition above.[31]

We use a simple estimation for success. If Belgium is within the top 9 per relative indicator, it is considered a *comparative* success. The following relative indicators are assessed: relative overall funding, relative research funding, relative development funding, and relative program competitiveness over time.

- *Relative overall funding*: If the overall received EU funding is above the success threshold, then the EDF and the precursors as a means for *overall funding* is rated as a comparative success.

- *Relative research funding*: If the relatively rate of Research Actions of Belgian entities (relative rate based on Research Action EU funding relative to defence investment) is above the success threshold, then the EDF and the precursors as a means for *research funding* is rated as a comparative success.

[29] Ibid.
[30] (NATO 2024) [LINK]
[31] (NATO 2022) [LINK]

- *Relative development actions*: If the relatively rate of Development Actions of Belgian entities (relative rate based on EU funding for Development Action relative to defence investment) is above the success threshold, then the EDF and the precursors as a means for *development funding* is rated as a comparative success.

- *Relative program competitiveness over time*: If Belgium has an overall increase overtime of the distribution of received EU contributions, then *program competitiveness* is rated as a comparative success for Belgium.[32]

Given Belgium's relatively low defence investment compared to the other participating countries in the analysed years, it is important to recognize how this affects the relative ratio's analysed in this paper. In the unlikely scenario Belgium changes course to increase its defence investment spending more rapidly than other participating countries in the upcoming years and if the participation rate and received EU contribution in the EDF remains similar, then its ratio of obtained EU contributions compared to its increased total defence investment amount may decrease. One may argue this does not necessarily imply Belgium's success has decreased, but rather that it is diluted by the increased defence investment. This is true when considering the ratio itself. However, it is the ranking of its ratio compared to other participating countries that indicates Belgium's relative positioning within the EDF, not the ratio itself. Hence, even when increasing its defence investment, Belgium should seek to retain or improve its position in upcoming years to fully leverage the EDF.

Belgian-specific alignment success

- *DIRS prioritization alignment*: To what extent do the niches identified in the current DIRS align with the received EU contribution of Belgian legal entities in EDF projects? Given that the size of the call categories differs, we measure this by the relative position of Belgium compared to others in the EDF and its precursors. If the two

[32] Note: Another, and more exact approach, for program competitiveness per country would be to consider the amount of applications for a call compared to the amount of wins. However, there is no reporting available of legal entities that applied for a call, but which were unsuccessful. Hence, one cannot analyze the actual competitive application-to-success ratio per country.

priority domains of the DIRS are in the top 5 for received EU contribution, we consider this a success for *prioritization alignment*.[33]

- *Overall DIRS alignment:* If all categories in the top 5 can be linked to a domain of interest in the DIRS, we consider this a success for *overall DIRS alignment*.

- *Defence export alignment:* To what extent does the BE EDF participation correspond to key defence-related export areas? If there is an overall alignment, then *export alignment* is deemed a success. We measure this by comparing the top 3 Military List (ML) export categories with comparable categories of action in the EDF and its precursors.

- *Defence industry alignment*: To what extent does the participation of Belgian entities in the EDF correspond to or align with the key characteristics of the 'self-identified' Belgian defence industry? If there is an overall alignment of key characteristics with the received EU contributions, then *Defence industry alignment* is deemed a success. We measure this by comparing the proportion of the top-3 Capability Technology areas of the self-identified Belgian Defence Industry with the proportion and position of the received EU contributions in the comparable EDF categories of action.

Network success

- Distinct connection ratio: To what extent do Belgian legal entities have connections with other legal entities participating in the EDF and its precursors? If Belgian legal entities have a ratio above 50%, then *distinct connection ratio* is deemed a success.

- Consortia funding ratio: To what extent do the consortia that Belgian legal entities are active in take from the total EU contributions from the EDF and its precursors. If more than 50% of the total EU contributions are allocated to the consortia Belgian legal entities are active in, then *consortia funding ratio* is considered a success.

[33] Note: This indicator does not imply the DIRS priority setting should necessarily align. However, we consider an efficient DIRS will focus on leveraging the strengths of its respective DTIB.

ANALYSIS

Comparative success

Belgian participation and comparison to other participating countries:

Within the outlined delimitations (see: *supra*), 44 distinct Belgian legal entities have participated in 59 projects of the EDF and its precursor programs. In total Belgian legal entities participated 89 times in the 59 projects, giving Belgium a participation rate of 1.51 Belgian legal entities per project a Belgian entity participated in. In total, the Belgian legal entities received about 85 million EUR in EU contributions for their participation in the projects. This figure closely aligns with the estimations made by Heuninckx et al. before all figures became available (see: 'literature' *supra*).

As shown on Figure 3, compared to other participating countries, Belgium finds itself in the 7th position for overall received EU contributions and total participation of Belgian legal entities. Some direct noticeable insights are that the Netherlands has a higher number of participations but receives less total EU contributions than Belgium, indicating many participations of Dutch legal entities play a relative smaller role; Eastern-European countries overall trend to the lower-end of the distribution; and France clearly surpasses the rest in terms of both received EU contributions and participations.

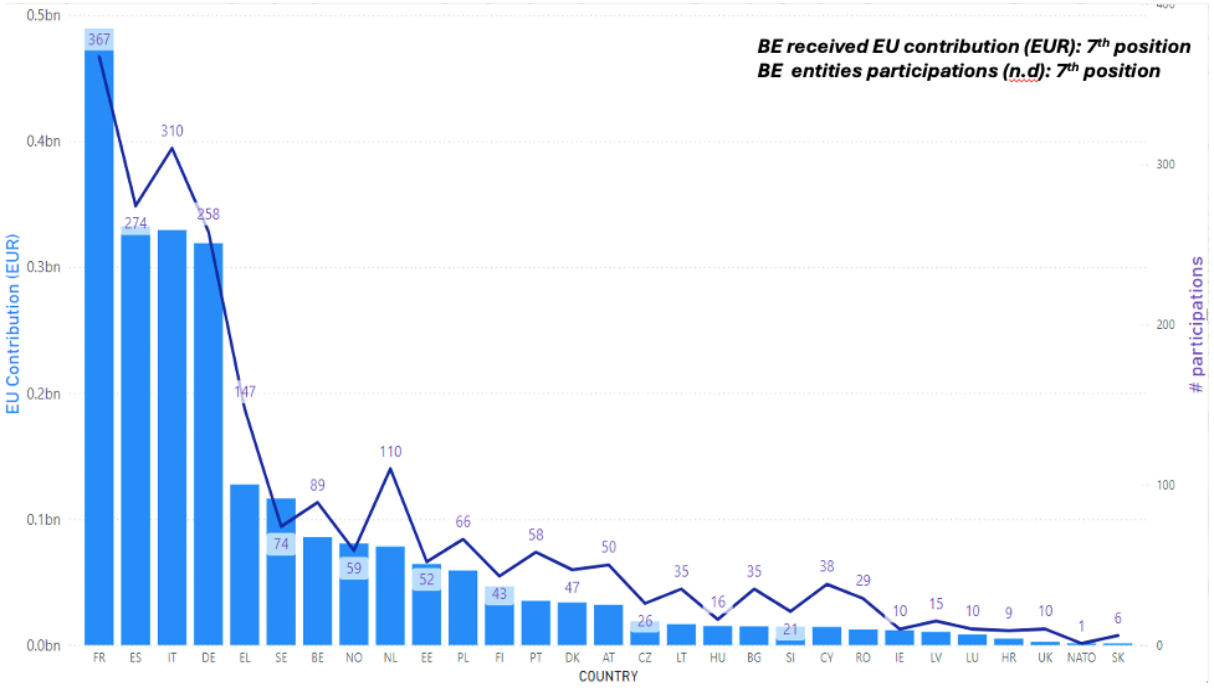

Figure 3: *Comparison of Belgium to other participating countries – absolute values. Source: Own composition based on analysis of the data*.[34] Note: n.d = count is not distinct, meaning a legal entity can be counted more than once if it participated in multiple projects.

At first glance, one may argue the latter supports the often-heard critique in Defence (industry) circles that France receives disproportionate support. However, the absolute values on its own should not be interpreted as implying that France, or rather French legal entities, receive(s) too much EU funding. For this, we argue one must look at the received contributions relative to the most applicable burden sharing indicator for the relative analysis, i.e. *defence investment* (see: 'analysis framework' *supra*).

Relative EU funding ratio's (relative to country defence investment)

Setting the absolute values of the overall received EU contribution of the country in perspective against the defence investment of the country results in a more nuanced view of which countries, in relative terms, receive the bulk of the support. Viewed from this perspective, Belgium takes a large amount of EU contributions relative to its comparatively low defence investment *burden sharing*. Belgium, which receives the 7th highest amount of EU contributions in absolute terms, moves to the 4th position from this relative perspective, with it receiving EU contributions equalling 2.09% of its defence investment from 2016 to 2022. France, on the other hand, drops from the 1st to the 20th position, indicating that relative to defence investment they do not receive a disproportionate amount of EU contributions, with its received EU contribution amounting to 0.61% of French defence investment spending in the same period.

Concerning Research Actions (RA), Belgium has the 10th position of EU contributions received in absolute values, but the 6th position in relative terms, with a ratio of 0.45% received EU contributions relative to its total defence investment. For Development Actions (DA) Belgium is the 7th highest recipient of EU contribution for development action in absolute terms. However, Belgian legal entities received EU contributions worth 1.64% of its total defence investment for the years 2016 to 2022, giving it the 4th highest relative ratio among participating countries. Across the years, the relative position of

[34] *Note: Based on values per members of the consortium. Sub-suppliers involved in these projects through contracts with the consortium-members are not included in the data as this information is not published for all projects and, when it is, often only partially.*

Belgium slightly trends upwards, with it reaching a high point in 2019, yet falling under the trendline in 2022 (see: Figure 7).

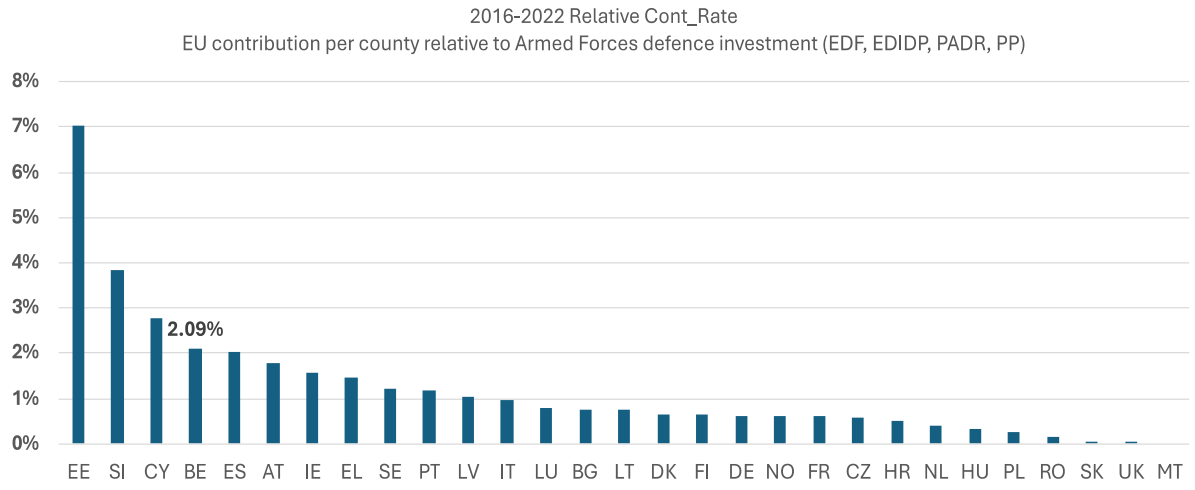

***Figure 4**: Received overall EU contribution per country relative to Armed Forces defence investment. Source: Own composition based on analysis of the data.*[35]

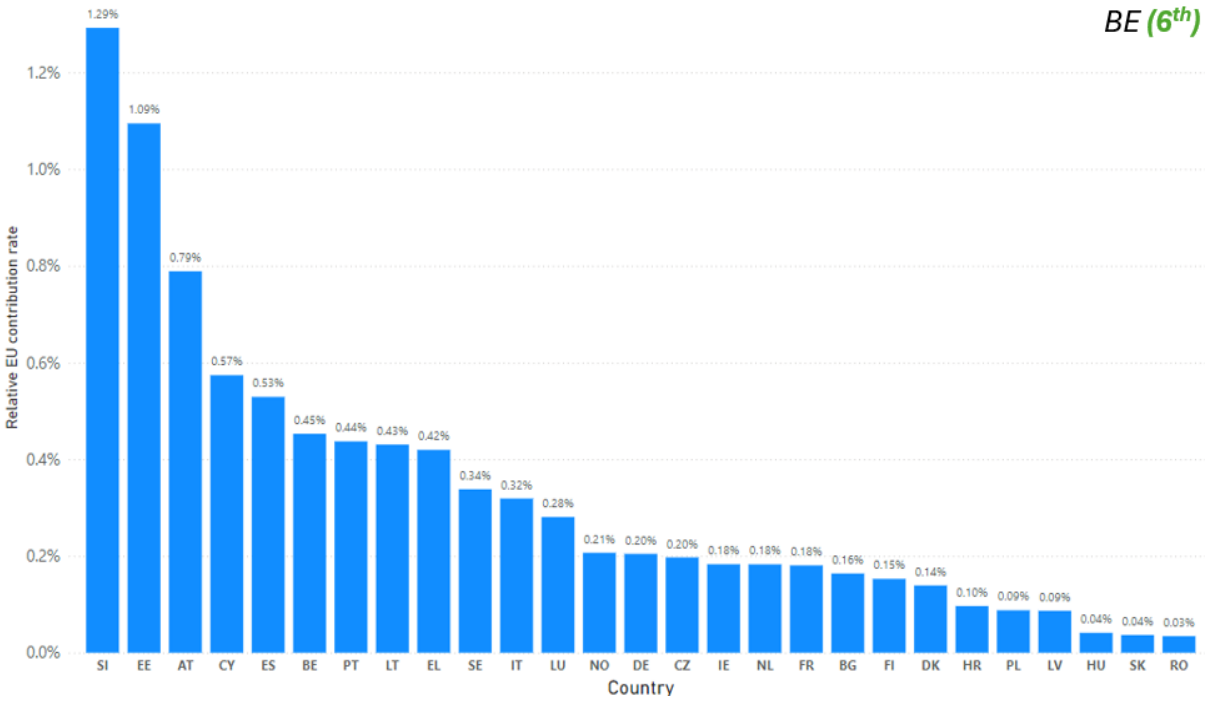

***Figure 5**: EU contribution for Research Actions relative to armed forces defence investment per country. Source: Own composition based on analysis of the data.*

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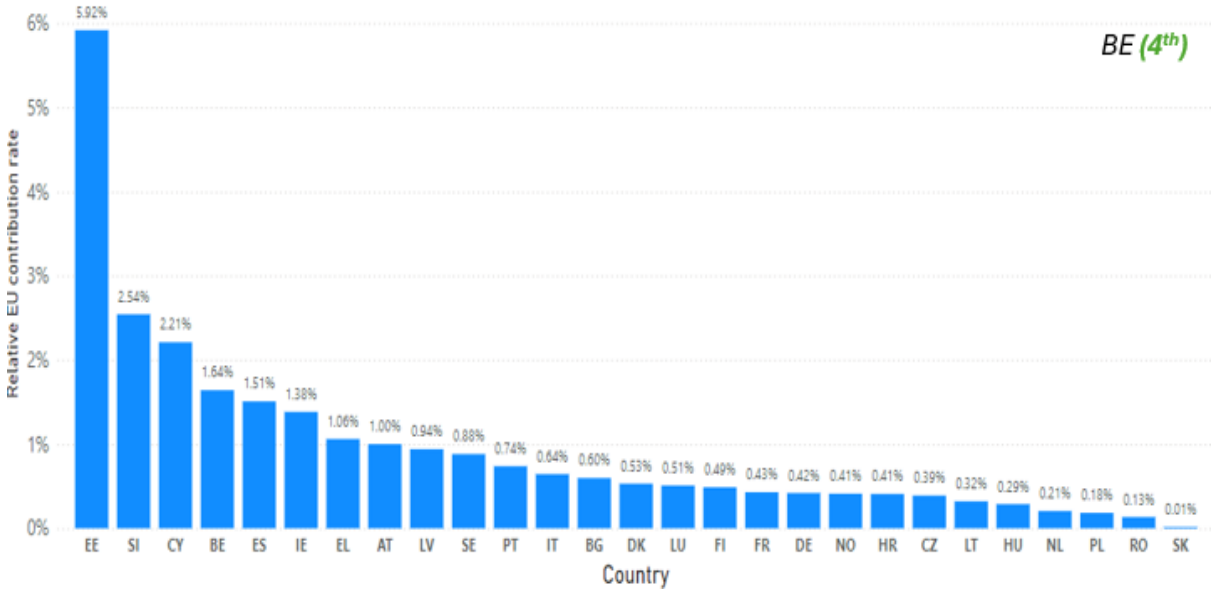

***Figure 6**: EU contribution for Development Actions relative to armed forces defence investment per country. Source: Own composition based on analysis of the data.*

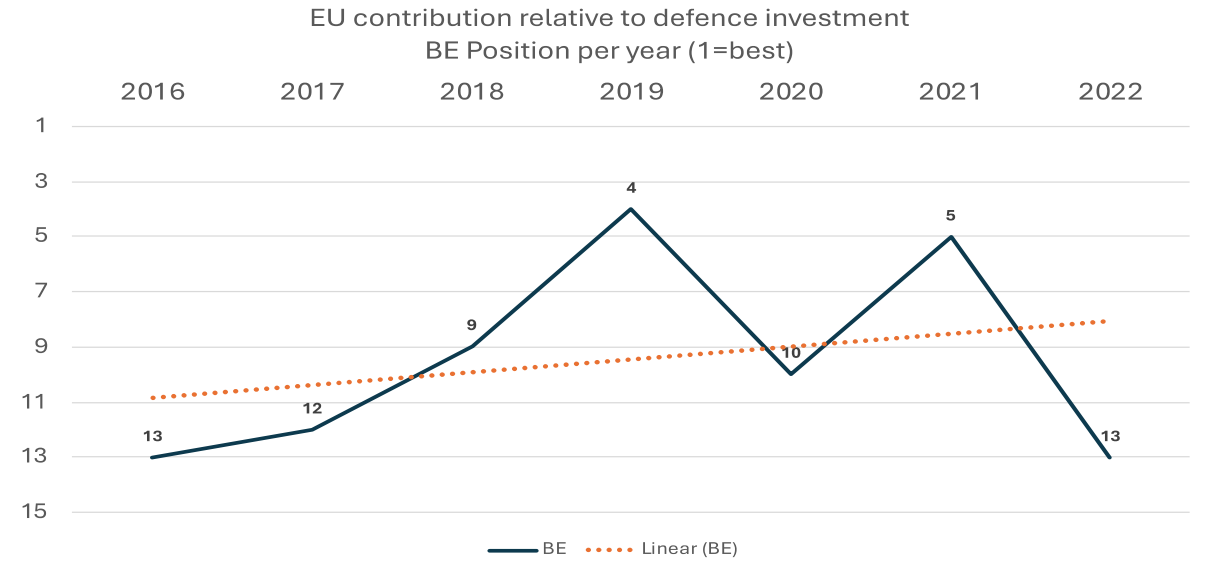

***Figure 7**: Relative position of Belgium per year. Source: Own composition based on analysis of the data.*

Alignment success

1. **<u>To what extent does Belgian participation correspond to priority areas indicated in the BE-DIRS?</u>**

As indicated in the methodology section, we seek to identify if there is alignment for the 2 priority domains of the BE-DIRS (Maritime mine Countermeasure technologies; Defence-related cyber) with the received EU contribution in the EDF and its precursors.

To assign EDF and precursor projects to a category in the DIRS, we analysed the projects according to the factsheets, SEDIA (for EDF) and supplemental material (project website), assigning each to a category in the DIRS it most corresponds with. For projects for which there was no DIRS category it could be assigned to, we allocated them to categories as indicated in the EDF program and added a prefix “no alignment” to the category (see: Figure 8).

Looking at the absolute values, there seems to be aligned performance for ‘Maritime mine countermeasures’, with it receiving over 14.4 million EUR. On the other hand, ‘Defence-related Cyber’, which only receives around 2.6 million EUR in EU contributions seems to be underperforming. Other top performing domains are ‘unmanned intelligent Systems (12.6 million EUR) and ‘Space-related applications’ (10.1 million EUR). Furthermore, there are numerous projects with participation from Belgian legal entities which could not be assigned to any of the DIRS domains, representing a total of over 10.5 million EUR (12%). Two of these, ‘simulation’ and ‘mobility’ are at the bottom of the range with only minor amounts of received EU contributions. However, ‘armoured systems’ accounts for 9.4 million EUR of the total received EU contributions.

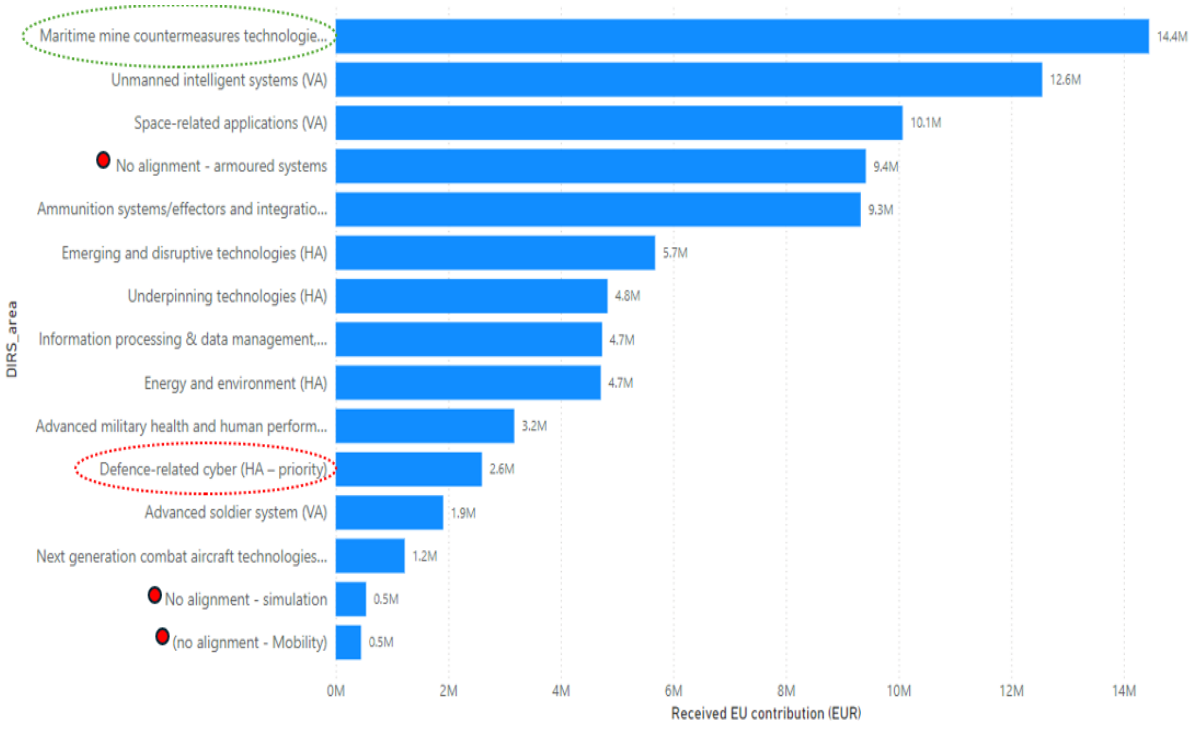

***Figure 8**: EU contributions to Belgian legal entities assigned according to areas of the BE-DIRS. Source: Own composition based on analysis of the data.*

These absolute values described above, however, do not provide sufficient insight into the *relative* competitive position of the participating Belgian legal entities as viewed through the DIRS categories. Each category receives a different amount of total funding from the EDF and its precursors. Hence, the received EU contributions per category for Belgium should be viewed in accordance with the total EU contribution for that category. Doing so allows us to derive in what categories Belgian legal entities have been most successful in obtaining EU contributions, as it enables analysis on a common basis by accounting for funding differences per category. As shown in Figure 9, the ratios provide a more nuanced view on the relative competitive position for obtaining funding. First, 'Maritime mine countermeasure technologies' has the 5th highest ratio for Belgium among the categories, with it taking 4.2% of the total EU contributions for the categories. As it is within the top 5, it suffices the outlined conditions to be considered an *alignment success* with respect to the DIRS (see: methodology *supra*). However, the EU contributions obtained by Belgian legal entities for the category 'Defence-related cyber' finds itself at the bottom of the distribution with a ratio of 1.8%. Furthermore, the category for which Belgium has the highest *relative* position (9.7% of the EU contributions for the category are obtained by Belgian legal entities), 'armoured systems and related technologies', is one for which there is no outlined area in the DIRS. This latter insight is significant given that Belgian legal entities have a strong competitive position, at the very least to obtain EU funding, compared to other legal entities of the participating countries in the EDF and its precursors. It must be stated, however, that this only concerns one company, i.e. John Cockerill (formerly CMI Defence). The success of this company to obtain EU contributions does not necessarily translate into aligning with the competitive strength of the BE-DTIB for developing defence equipment. [36] For this, we also need to assess whether the relative position of these categories aligns with the export positions of Belgium. However, as we show below in table 10, this analysis further supports the relative competitive position of the 'armoured systems and related technologies' within the EU.

[36] Interesting to note is that Arquus (FR), which John Cockerill completed the acquisition process for in 2024, is the top participant in the 'armoured systems' projects. See: John Cockerill (2024) [LINK]

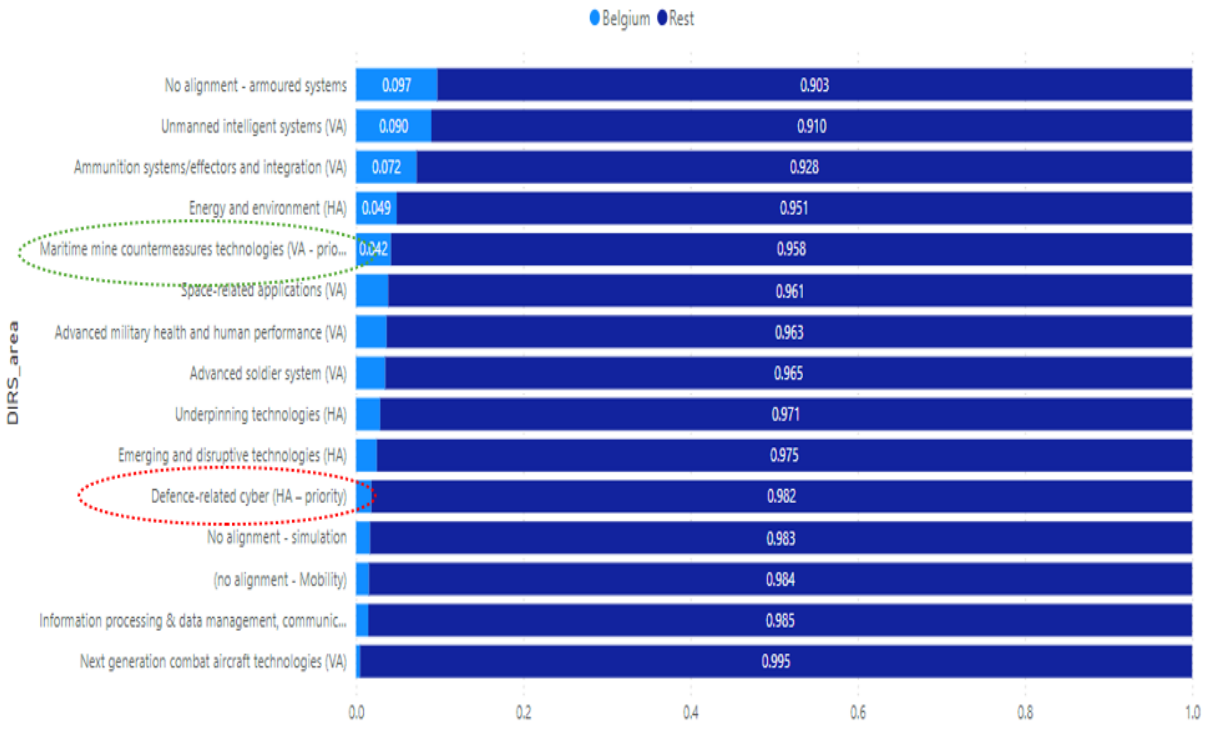

***Figure 9**: Ratio of received EU contribution within each category – BE vs rest. Source: Own composition based on analysis of the data.*

2. To what extent does Belgian participation correspond to top defence-related export categories and to the main defence industry?

Table 10 shows the top 3 export categories of the EU Military List (ML) for Belgium in terms of export license value from 2016 to 2022.[37] The most notable ML category for Belgium is 'ground vehicles and related components' (ML6), representing 38.58% of the total Military List export licence value for the analysed period. More notably, Belgium's export represents 6.26% within the total registered EU export licence value for the ML6 category, giving it the 4th position for export within this category. Hence, it has a strong relative competitive position for the category compared to other EU member countries. The linked category for the EDF and precursors is the 'ground combat'. Here Belgium as well is in the 4th position within the category, receiving 9.41% of the EU contribution available within the category. This accounts for 25.46% of the total EU contributions by all Belgian legal entities across all EDF categories, making it the top category in terms of value

[37] Limitation: Based on export license values, not actual exported values. The latter is not published by Belgium in the COARM database.

received for Belgium. Hence, the 'ground combat' participation is in line with export position in the EU (4th) and aligns with the position within Belgium's export ranking (1st).

BE-top 3 (16-22)	Export license value (EUR)	% within EU export license value of ML category	% of BE total Def export value	Linked EDF/prec. Categories	% within EU contribution of category	% within BE total received contribution
ML-6 (Ground vehicles & rel. components)	4.26 bln	6.26% (4th)	38.58%	Ground combat	9.41% (4th)	25.46% (1st)
ML-10 (Aircraft, UAVs, rel. components)	1.68 bln	0.73% (9th)	15.28%	Air combat & information superiority (when UAVs)*	0.52% (12th)	1.61% (bottom 4)
ML1 (~weapons <20mm)	1.57 bln	7.55% (3rd)	14.28%	/	/ (n.a)	/ (n.a)

***Figure 10**: Top-3 BE ML export categories compared to EU contribution per comparable category in the EDF.[38] Source: Own composition based on analysis of the data available in the EU COARM database.[39]*

The second notable category for Belgium is 'aircraft, UAVs, related components' (ML10), accounting for 15.28% of the total defence export licence value. Belgium's exports in this category represent 0.73% of the total EU export license value for ML10, placing it 9th within the EU.[40] Belgium's participation in the linked EDF category 'air combat & UAV information superiority' is much lower, with only 0.52% of the total EU contribution, ranking 12th in the category. This accounts for only 1.61% of Belgium's total received EU contributions in the EDF and its precursors across all categories, reflecting a relatively weaker position compared to other EDF categories. The export and funding disparity in this category highlights that the importance for Belgium's export does not fully align with both the relative and absolute EU contributions obtained for the category.

When we consider the make-up of the main self-identified defence industry in Belgium, we again find that the Air combat & information superiority for UAVs underperforms compared to the its position within the distribution of the main self-identified defence

[38] There are no categories in the EDF or the precursors focussing on the weapons under 20mm.
[39] COARM database [LINK]
[40] Note: It is not unexpected that larger countries such as France, Spain, Italy and Germany have a higher relative position than Belgium. Sweden, with its prominent defence aeronautics industry spearheaded by Saab also surpasses Belgium. However, Belgium is surpassed as well by Poland and The Netherlands. On the other hand, the remaining EU countries have a limited impact within the ML10 category. Belgium has the 8th position compared to other EU countries (when excluding the available UK data until 2020 from the analysis).

industry in Belgium.[41] As indicated in figure 11, the largest category in the main Belgian defence industry is the CapTech AIR, followed by AMMO and LAND. Comparing this to the comparable EDF categories (see: Table 12), we find that while the legal entities CapTech AIR represents 38.82% of the main defence industry for all their economic activities, ranking first in the distribution, it represents a disproportionate low amount in the relative and absolute received EDF contributions for Belgium.

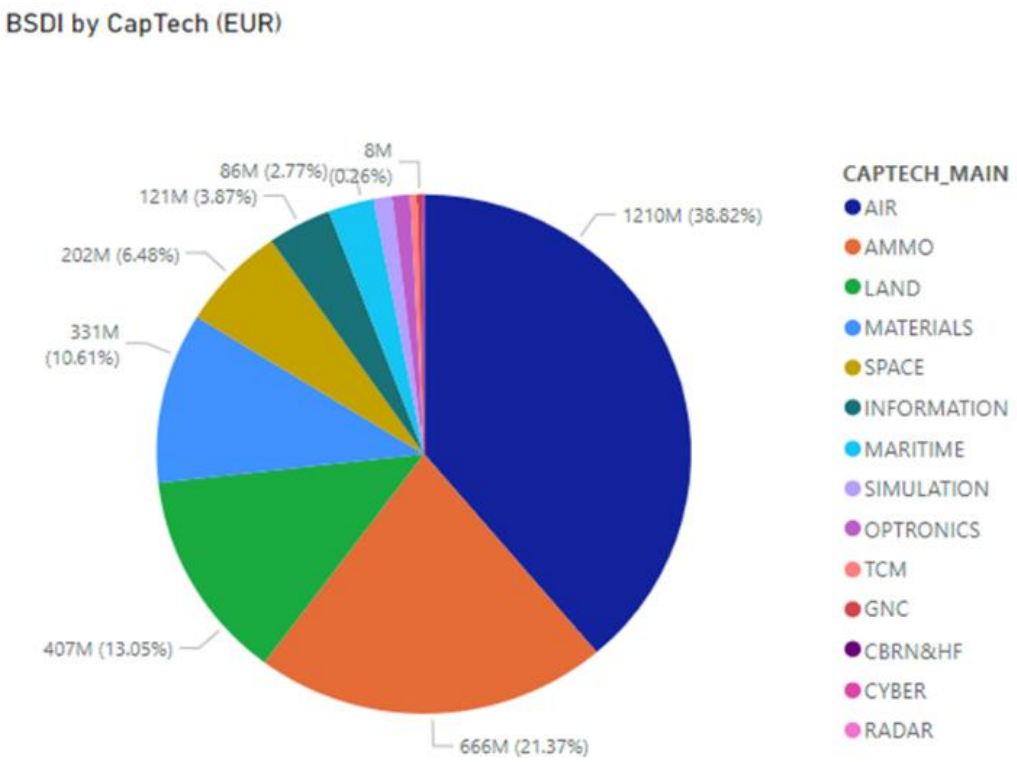

Figure 11: *Main self-identified defence industry in Belgium (BSDI) – 2022 figures for all economic activities. Source: Own composition based on analysis of BEPIDS BE-DTIB database.*

EDF Categories (linked to the related CapTech)	**% within BE total received contribution**
Air combat & information superiority (when UAVs) (AIR)	1.61% (bottom 4)
Air and missile defence (~AMMO)	10.89% (4th)
Ground combat (~LAND)	25.46% (1st)

[41] We consider turnover from all economic activities here, as opposed to only DTIB-related activities, as this emphasizes the size of the underlying industrial base per CapTech.

Table 12: *Approximation alignment of CapTech to EDF categories. Source: Own composition based on analysis of the data.*

Network success

Figure 13 illustrates the number of interactions between Belgian legal entities and legal entities of other participating countries. In total Belgian legal entities have 995 interactions with 519 distinct legal entities of other participating countries through its participation in the projects. In total there are 943 distinct legal entities for all EDF projects, including those a Belgian legal entity does not participate in. Hence, Belgian legal entities interact with the majority (55 %) of the legal entities participating in the EDF and its precursors.[42] The highest number of interactions is with France (FR), with 186 interactions for 86 distinct legal entities, signifying a strong network connection between Belgian and French legal entities. With 140 distinct French legal entities participating in the EDF and its precursors, this gives Belgium an overall cooperation ratio of 61.4% with France.

Figure 14 represents the total EUR received by projects a Belgian legal entity is active in and Belgium's aggregate portion thereof. Given the total direct EU contributions for the analysed period amount to around 2.38 billion EUR, Belgium on the aggregate participates in projects accounting for more than half of this total amount (1.33 billion EUR). Hence, Belgian legal entities are successful in participating in the majority of the EDF and the precursors when viewed from the perspective of total EU contributions. Belgian legal entities obtain around 6.4% of this 1.33 billion EUR.

[42] Note: There is, however, a caveat to high amount of connections when viewed at the project level. As indicated by the European Court of Auditors, more consortium members implies a need for more resources for coordination. Furthermore, as noted by the European parliament report, it is generally considered that the actual "cost of a projects is multiplied by the square root of the number of participants". A high number of connections, depending on the type of project, may thus work against the efficiency and success of the projects. While the built connections through the EDF is thus still an overall measure of success due to the building of connections and positions within emerging value chains, it is important to consider that high amount of connections per project can entail drawbacks for success. See: (Stefan et al., 2023, p. 31); (Mauro 2021, p. 41)

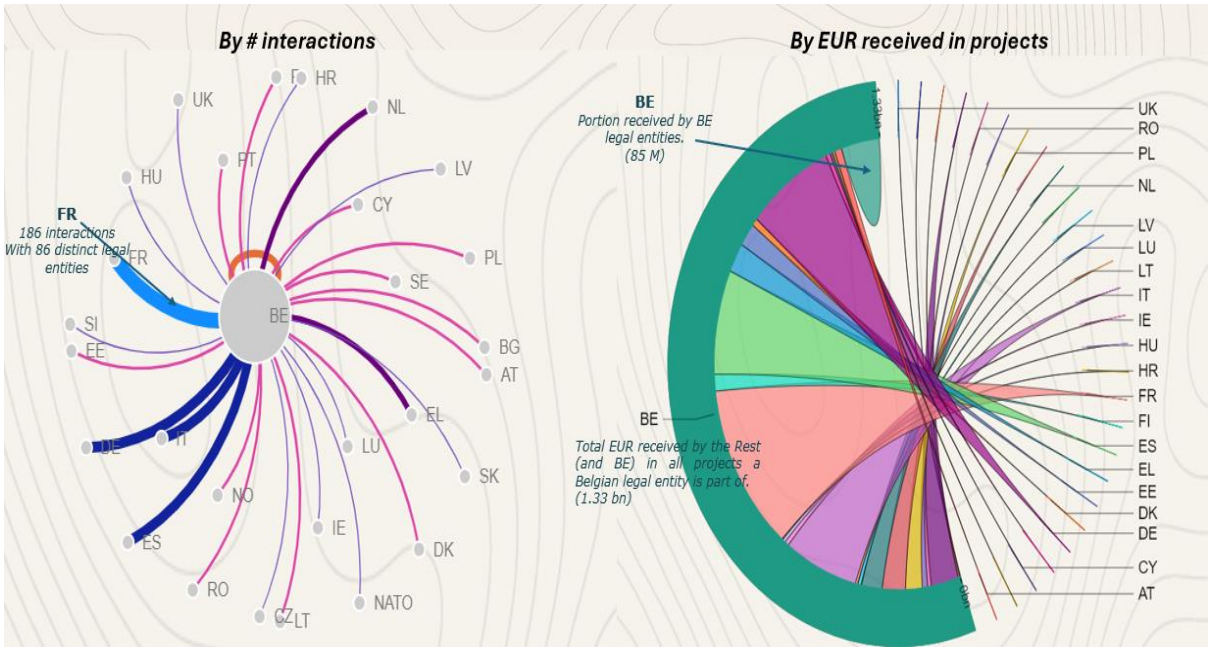

Figure 13: *Interactions between Belgian legal entities and other participating countries.;* ***Figure 14:*** *Total EUR received by projects with Belgian participation. Source: EDF+ Powerbi drafted by BEPIDS researchers.*

Result summary

In the table below, we indicate the outcomes of the success indicators outlined in the methodology section. The EDF and its precursors are a success for Belgium concerning its *comparative success in obtaining funding relative to defence investment* with all indicators scoring above the threshold. Belgian legal entities also meet both thresholds for the indicators outlined for *network success*, meaning Belgian legal entities are successful in participating in the majority of the EDF in terms of *consortia funding* and *network connections*. However, Belgium does not fulfil the outlined success criteria for *alignment success*, indicating that its funding success does not align with key strategic priorities of the DIRS or general characteristics of Belgian defence export or the self-identified main defence industry.

Indicator	Success Criteria	Result
<u>Comparative/Relative Success Indicator</u>		
Relative overall funding	Rank better than 9th	4th
Relative Research funding	Rank better than 9th	6th

Relative Development funding	Rank better than 9th	4th
Relative program competitiveness over time	Increase of position over time	Yes
Alignment Success (to BE characteristics)		
DIRS prioritization alignment	If both priority domains are in the top 5 categories of % funding received by BE.	Cyber (11th)
Overall DIRS alignment	No significant capabilities/tech funded by EDF & precursors that are not a domain in DIRS.	Armoured systems
Export alignment	No significant misalignment	AIR
Defence industry alignment	No significant misalignment	AIR
Network Success		
Distinct connection ratio	If Belgian legal entities have connections in consortia with more than 50% of all participating legal entities.	Yes
Consortia funding ratio	If more than 50% of the total EU contributions are allocated to the consortia Belgian legal entities are active in.	Yes

Table 15: *Result summary for the outlined indicators. Source: Own composition based on analysis in the paper.*

Conclusion

Conclusion and recommendations

From the analysis in this paper we can conclude that the EDF and its precursors are an overall success for Belgium. Taking into account defence investment, Belgium outperforms most other countries in obtaining funding. Hence, the EDF and its precursors are considered successful as a funding support tool for the BE-DTIB

comparatively to other participating countries. Furthermore, Belgian legal entities successfully participate with the majority of legal entities active in the EDF and within the consortia that take a majority of the overall available funding. However, the funding obtained by Belgian legal entities in the EDF and its precursors is only partially aligned to key defence characteristics of Belgium.

The latter implies there is room for further considerations within the BE-DIRS program. On the one hand the DIRS can choose to lean into supporting capabilities which have competitive strength in the EDF and its precursors as well as within defence-related exports (e.g. 'Ground Vehicles and related components'), which are currently not a key focus in the DIRS. On the other hand, it can also use the findings concerning where the BE-DTIB currently lacks positioning within the EDF to support domestic programs and more proactive multinational cooperation, to rejuvenate the participation of parts of the BE-DTIB within the EDTIB deemed key for Belgium. A key example of this is for the DIRS domain 'next generation combat aircraft technology', which had the lowest competitive position for Belgium across all the EDF categories, yet is vital to maintain a positioning in if Belgium wants to maintain an edge and competitiveness to its defence-related aeronautics industry. This is moreover the case given that 'Aircraft, UAVs and related components' (ML10) is a top defence export category for Belgium in terms of absolute value. The recent call for the Belgian NGCAT program,[43] which will provide funding for R&D related to Next Generation Combat Air Technologies (NGCAT), is a good step to correct the discrepancy between its importance for Belgium and lack of positioning within the emerging EU value chains as seen through the EDF and its precursors. However, long-term success will also necessitate proactively positioning Belgian legal entities within value chains being developed in multinational development programs (e.g. The EU Future Combat Air System – FCAS), which is dependent on political decision-making and follow-through of made commitments.[44]

[43] The NGCAT 2024 R&D call outlined 60 million EUR in support (36 million EUR across 4 themes, with a remaining 24 million EUR depending on the projects). See: (BELSPO 2024) [LINK]
[44] At the time of this writing, Belgium maintains its observer status to the FCAS program, which it initiated in June 2023 and obtained in April 2024. The intention remains to become a full partner in the program in June 2025. See: (News.Belgium 2024) [LINK]; (Proposition of resolution 2021) [LINK]

Policymakers may also wish to emphasize that domestic defence-specific funding programs (e.g. DEFRA, NGCAT, Inno4Def) are not intended to replace EU funding, but rather to complement it. Belgian legal entities should be expected to pursue funding via EU and NATO defence funding programs and initiatives, as these aligns with broader defence requirements and facilitate positioning within new value chains. For lower level TRLs (Technology Readiness Levels), funding can be allocated for projects where participation in EU or multinational programs is a realistic future expectation, while those successful in obtaining EU funding could be rewarded by receiving funding continuation to develop capabilities. Domestic funding programs can then serve as supplementary support, filling gaps where EU funding is not available or addressing national priorities that are not sufficiently covered by the scope of EU funding programs. This approach ensures optimal resource allocation by continuing to incentive EDF participation, thus strengthening Belgium's role in EU defence initiatives and avoiding duplication of efforts, thereby contributing to a more efficient EDTIB and the BE-DTIB's positioning within it.

Finally, it may be valuable to explore the possibility of expanding delta financing decisions to include regional authorities alongside the federal government. While the federal government, in coordination with Belgian Defence and the Federal Public Service (FPS) Economy, currently handles the co-financing of EDF projects, the regional governments also have an economic and industrial policy interest in supporting certain defence-related initiatives. Each region has its own strategic focus on specific sectors such as aerospace, materials, or cybersecurity, which contribute to an overall industrial and technological base that can contribute, both direct and indirectly, to European and NATO defence requirements. By integrating the regions into the decision-making process, or at minimum by providing the option to the regions to add co-financing to projects the federal government did not co-finance to the full extent, there is an opportunity to better incorporate regional industrial and technological strengths and objectives with EU and NATO defence requirements. This expansion of co-financing would be similar to the recent DIANA and NATO innovation fund interfederal funding agreement, which established funding cooperation between Flanders, Wallonia and the federal state.[45] Furthermore, similar initiatives could be taken for the BE-DIRS, as well as for the foreseen

[45] (EWI 2023) [LINK]

participation in the FCAS program. To ensure alignment with the DIRS, it is sensible to avoid setting up distinct cooperation mechanisms per interfederal cooperation agreement, but rather to include these within, or add these to, the DIRS governance mechanisms where possible. This not only increases efficiency in terms of saving time and costs, but also enables a better flow of information and cooperation between the parties required to develop a stronger BE-DTIB.[46] From a governance perspective, it is also more likely to increase transparency on the decision-making process and enable tracking of the effectiveness of support. It must be noted that calls for an interfederal cooperation mechanism for defence industry and innovation are not new.[47] Currently, there is a 'proposal for strengthening interfederal cooperation on security and defence for defence industry and defence innovation' pending in the Belgian house of representatives. At the time of this writing it does not seem likely the proposal will reach an agreement within the current legislative period before the 2024 elections, meaning it will need to be re-introduced in the next legislative session.

Limitations

The first key limitation concerns the scope of this paper. We attempt to find a balance between providing key information and some deeper insights without overwhelming the reader with information. Hence, given the scope, we do not delve into all details that may be interesting to analyse. Belgian policymakers may wish to further extend and analyse the PowerBi dashboard drafted by the researchers for this analysis, where filtering and drill downs can be employed to derive deeper insights.

This research has analysed the "success" of the EDF and its precursor programs. The indicators for success look at the received EU contribution relative to defence investment, the network, and to the alignment with Belgian-specific characteristics, as a means to asses the success of Belgium to enter EU value chains. The analysis is limited

[46] The same can be said concerning developing datasets and analysis. While the regions to some extent compete with each other, there are more benefits to closer cooperation on strengthening the BE-DTIB than downsides. Assigning trusted POCs within the framework of the DIRS governance mechanisms that can share data and analysis with each other will do much to improve the flow of information.
[47] E.g., Cfr. Proposal for strengthening interfederal cooperation on security and defence for defence industry and defence innovation. [LINK] [LINK]

to using this approach due to data limitations and due to the relatively recent introduction of the analysed support programs. A complete picture of the actual effectiveness of the EDF and its precursor programs requires an analysis of the use of its results. For instance, through case studies assessing to what extent projects resulted in the development of required goods and services (including components, technologies, or intangible inputs such as skills or knowledge) for Defence actors or within the value and supply chain.

Future research

As we note in the methodology section of this paper, our current research does not include the EDF data from the 2023 call results announced in May 2024, as detailed data was not available at the time of this writing. The dataset and analysis can be updated once more detailed data becomes available in SEDIA or once the data is published in the EU's Financial Transparency System (FTS) in the following year. The research can also be expanded by linking the Belgian co-financing data to the co-financed legal entities. Currently we can only derive estimations based on the aggregate co-financing insights from Heuninckx et al., as indicated in the literature discussion. Especially interesting may be to assess to what extent there is room in the co-financing mechanism for regional involvement. Furthermore, it may be interesting to expand the dataset with ownership and control information, as well as key financial data, to further analyse the positioning and consolidation of corporate groups within the EDF. For instance, John Cockerill Defence (BE) acquired Arquus (FR) in 2024, which was a prime cooperative partner during previous EDF projects in the EDF category 'armoured systems'. Hence, it can be informative to analyse to what extent Belgian legal entities are involved in EU-wide consolidation. Lastly, the network analysis included in this paper remains limited to a high-level assessment in accordance to the outlined success indicators. To manage scope and readability, further deep-dives expanding the analysis per category to understand the networks being developed are best reserved to a separate paper.

To maintain specificity, the scope of our research limits itself to the EDF and its precursor programs. Nevertheless, follow-up studies looking at the broader European defence and security ecosystem relevant for Belgium may also choose to include the other defence- and security-focused support programs. Of course, one then runs into the issue on

deciding to what extent they include projects with dual-use potential not falling under either of the defence-focused or security-focused EU funding mechanisms. However, this can add more insight to the extent that Belgian legal entities are cooperating within more dual-use prone value chains such as Cyber.

Lastly, we note that several Eastern European countries exhibit particularly low participation rates in the EDF and its precursors, which may be explained by several factors. One hypothesis is that internal domestic funding mechanisms are perceived as sufficient for domestic legal entities, reducing the need for seeking additional funding from the EDF. This is especially true in cases where governments do not sufficiently co-finance legal entities that have secured EDF funding or which reduce other national support funding when a legal entity obtained EU funds already, thereby disincentivizing EDF participation. Additionally, some of these countries may rather wish to focus their defence cooperation only through NATO, prioritizing bilateral relationships primarily with the United States (US). This strategic alignment with the US could lead to a perception that EU defence initiatives, including the EDF, are peripheral for their national security or even counter to it when EU defence cooperation is deemed as disruptive to long-term NATO cohesion. Consequently, these countries may be less inclined to engage deeply in EU-driven defence collaborations, opting instead for partnerships that are seen as more directly aligned with their national defence priorities. Follow-up research can check these possible factors to further understand the emerging cooperation within the EU ecosystem and the obstacles standing in its way.

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APPENDIX

BE Legal entity involved in project	(no alignment - Mobility)	Advanced military health and human performance (VA)	Advanced soldier system (VA)	Ammunition systems/effectors and integration (VA)	Defence-related cyber (HA – priority)	Emerging and disruptive technologies (HA)	Energy and environment (HA)	Information processing & data management, communications & embedded intelligent systems (HA)	Maritime mine countermeasures technologies (VA - priority)	Next generation combat aircraft technologies (VA)	No alignment - armoured systems	No alignment - simulation	Space-related applications (VA)	Underpinning technologies (HA)	Unmanned intelligent systems (VA)	Total
⊟ Yes	31	49	27	49	74	70	66	70	140	32	22	9	96	41	78	563
⊞ FR	4	5	7	10	9	14	7	11	21	8	2		15	8	22	86
⊞ DE	5	15	2	4	3	4	7	7	14	8	3		17	4	6	63
⊞ IT	3		5	1	5	5	18	12	19	2		7	10	7	7	63
⊞ ES	5	1	4	8	6	9	4	7	14	6	3		10	5	7	48
⊞ BE	2	3	2	6	5	12	4	5	8	2	1	1	7	2	7	44
⊞ EL	4	3			7	8	2	9	13	1	1		4	3	4	36
⊞ NL		5		1	4	1	2	1	12	1			4	3	3	24
⊞ PL	2	2	4	4		2	2	2	3				4	1		22
⊞ NO		2	1	1	3	2	2	1	6		1		2	2	2	19
⊞ SE	1	1		1		1	5		4	1			4	2	5	18
⊞ AT	2	5			3	1	1				2	1	3		1	15
⊞ DK		1	1		1		1	2	4		2		3		1	13
⊞ FF		2	1		2	1	1	1	4		1		3		3	12
Total	31	49	27	49	74	70	66	70	140	32	22	9	96	41	78	563

A1: Distinct count of interactions of BE legal entities, per project reallocated according to DIRS domains – Top 10 countries. Source: EDF+ Powerbi drafted by BEPIDS researchers.

BE Legal entity involved in project	(no alignment - Mobility)	Advanced military health and human performance (VA)	Advanced soldier system (VA)	Ammunition systems/effectors and integration (VA)	Defence-related cyber (HA – priority)	Emerging and disruptive technologies (HA)	Energy and environment (HA)	Information processing & data management, communications & embedded intelligent systems (HA)	Maritime mine countermeasures technologies (VA - priority)	Next generation combat aircraft technologies (VA)	No alignment - armoured systems	No alignment - simulation	Space-related applications (VA)	Underpinning technologies (HA)	Unmanned intelligent systems (VA)	Total
⊟ Yes	28.93M	75.46M	38.81M	115.21M	82.97M	46.47M	77.02M	48.08M	259.16M	79.87M	96.82M	2.60M	226.45M	42.43M	114.37M	1,334.65M
⊞ FR	5.65M	20.56M	9.69M	8.76M	11.35M	15.88M	8.66M	9.98M	34.04M	22.66M	31.21M		74.01M	12.49M	33.94M	298.88M
⊞ DE	3.54M	25.77M	7.10M	8.06M	2.57M	7.14M	8.37M	7.02M	23.65M	14.69M	4.40M		50.25M	10.47M	12.20M	185.25M
⊞ ES	6.25M	1.00M	8.06M	46.96M	7.94M	5.07M	2.91M	3.07M	35.01M	15.50M	9.77M		27.83M	3.13M	10.53M	183.02M
⊞ IT	5.95M		8.43M	0.38M	11.34M	1.72M	22.37M	6.06M	35.53M	13.62M		1.84M	34.53M	4.63M	12.03M	158.41M
⊞ BE	0.45M	3.17M	1.91M	9.33M	2.60M	5.67M	4.71M	4.73M	14.45M	1.22M	9.42M	0.54M	10.07M	4.83M	12.55M	85.65M
⊞ SE	2.94M	0.35M		7.69M		0.25M	10.45M		16.00M	10.00M			2.26M	1.09M	8.60M	59.64M
⊞ EL	1.57M	1.41M			7.89M	3.31M	0.85M	10.18M	11.11M	0.35M	7.83M		1.93M	0.95M	4.67M	52.04M
⊞ NO		4.89M	0.53M	7.69M	6.20M	1.11M	3.21M	1.18M	11.26M		5.67M		5.20M	1.83M	1.55M	50.31M
⊞ NL		5.15M		0.51M	4.56M	0.20M	4.06M	0.31M	21.05M	0.33M			5.69M	1.41M	1.25M	44.52M
⊞ EE		1.36M	1.63M		2.72M	0.26M	0.90M	0.30M	23.93M		0.16M		0.45M		9.77M	41.47M
⊞ PL	1.42M	0.41M	0.97M	16.45M		0.90M	2.19M	0.30M	10.34M				2.83M	0.37M		36.17M
⊞ FI	0.27M			0.11M	0.86M				0.45M		20.15M		3.63M		4.25M	29.72M
⊞ AT	0.21M	4.53M			4.20M	0.23M	0.45M				3.73M	0.22M	0.57M		0.67M	14.80M
⊞ DK		0.05M	0.51M		2.66M		1.20M	1.02M	4.66M		1.59M		1.79M		0.20M	13.69M
⊞ PT				0.14M	1.55M	1.26M	1.33M		6.66M	0.75M						11.69M
⊞ CZ		1.35M		8.03M			0.30M								0.41M	10.08M
⊞ IE		4.37M			0.44M			0.25M	3.25M				0.67M			8.98M
⊞ RO	0.44M			0.11M	1.08M	0.36M	0.84M	0.14M	3.35M	0.40M			1.34M	0.30M	0.06M	8.41M
⊞ LV					2.57M			0.35M	0.57M		2.90M		0.35M		0.35M	7.09M
⊞ HU		1.10M			5.13M	0.53M		0.29M								7.06M
⊞ BG				0.04M	4.48M	0.10M		0.72M					0.67M			6.02M
⊞ CY				0.63M	2.31M	0.07M	0.25M	1.13M							1.04M	5.43M
Total	28.93M	75.46M	38.81M	115.21M	82.97M	46.47M	77.02M	48.08M	259.16M	79.87M	96.82M	2.60M	226.45M	42.43M	114.37M	1,334.65M

A2: Distinct count of interactions of BE legal entities, per project reallocated according to DIRS domains – Top 10 countries. Source: EDF+ Powerbi.

ALLIGNED_NAME_OF_LEGAL_ENTITY	# Participations	Received EU contribution (EUR)
John Cockerill Defense (CMI DEFENCE)	7	14,214,168.88
SOCIETE NATIONALE DE CONSTRUCTION AEROSPATIALE SONACA SA	1	7,691,458.62
NAVAL GROUP BELGIUM	5	6,191,492.24
DOTOCEAN	4	6,052,763.39
Ecole Royale Militaire - Koninklijke Militaire School	11	4,988,879.06
XENICS NV	3	4,639,095.01
FN HERSTAL SA	4	4,497,003.81
INSTITUT VON KARMAN DE DYNAMIQUE DES FLUIDES	2	3,930,325.00
Space Applications Services NV	4	3,787,442.49
ST ENGINEERING	1	3,745,095.25
ANTWERP SPACE N.V.	3	3,110,553.57
SHIPYARDS AND MARITIME EQUIPMENT ASSOCIATION OF EUROPE	4	2,543,498.61
(UN)MANNED	1	2,215,440.00
VON KARMAN INSTITUTE FOR FLUID DYNAMICS	2	1,448,453.74
EUROPEAN RESEARCH INFRASTRUCTURE ON HIGHLY PATHOGENIC AGENTS	1	1,265,025.00
C&V CONSULTING	3	1,156,854.06
SPACEBEL SA	2	1,095,231.41
AEROSPACELAB	1	1,068,000.00
ECA ROBOTICS BELGIUM	1	1,036,720.18
SOITEC BELGIUM NV	1	1,036,186.00
Total	**89**	**85,648,723.07**

A3: Top 20 legal entities by received EU contributions. Source: EDF+ Powerbi drafted by BEPIDS researchers.