Overview of literature on defence-related skills

Annex to report: Vision on defence related skills for Europe today and tomorrow

January 2019
Defence-related skills:
Building evidence on skills shortages, gaps and mismatches and defining the sector’s strategy on skills
EASME/COSME/2017/014

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This Annex forms a part of the first Work Package of Defence-related skills project. Gathering data and taking into consideration all relevant defence sub-sectors, this Annex provides an in-depth analysis on the skills state of play in the following 10 EU countries: Germany, Denmark, Spain, Finland, France, Italy, Netherlands, Poland, Sweden, and the UK. This Annex forms part of the Interim report entitled European vision on defence-related skills of today and tomorrow.

The analysis presented in the Annex draws upon a literature review, desk research, stakeholder and expert interviews and a survey. This Annex was prepared in cooperation with the Danish Technical Institute.

Any statements not specifically referenced in this chapter reflect the findings of RAND Europe stakeholder engagement (namely expert interviews and workshops with EDSP members). Insights obtained during the interviews are integrated throughout the report and the interview protocol can be found in the Methodologies Annex.

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Overview of selected literature on defence-related skills

The purpose of this section is to provide an overview of selected research on the sustainment and development of defence-related skills, including an overview of publications produced by global consultancies. The project team has conducted a preliminary analysis of such publications, dating between 2013 and 2018 in order to capture the most recent insights, and the results are presented below. For the final version of this report, this overview will be expanded and supplemented with additional sources.

Beyond the Executive Summary (and annexes) of 2015 RAND Europe study on Key Skills and Competences for Defence, publicly available academic and scientific sources on defence-related skills are extremely limited.1 This study, commissioned by the European Defence Agency, analysed key skills and competences for defence industry across Europe and developed concrete recommendations to maintain these skills and competences across the defence sector. More specifically, it provided the EDA with taxonomy of skills and competences in the defence sector, the supply and demand dynamics of these skills and competences now and in the future given likely developments/deliverables in military capability requirements, and of the measures needed to ensure that these skills and competences are available when required. In this instance, the recommendations were directed at the EDA and included: a) coordinating a strategic approach to the defence labour market with active involvement from the defence industry, b) maximising skills impacts of joint procurement programmes managed by the EDA and c) facilitating access to the existing European instruments that may be relevant to defence skills. In 2013, RAND Europe has also published a report, based on a research project conducted for the UK’s Defence Science and Technology Laboratory (Dstl), entitled ‘Future Technology Landscapes: Insights, Analysis and Implications for Defence’.2 The publication provided evidence and tools to better navigate the contemporary R&D environment, which is increasingly dominated by civilian investment, limited by budgetary constraints, and characterised by growing internationalisation of supply chains. Importantly, the study highlights the important role that skills play on fostering innovation.

An older study examines the different levels of employment and configurations of skills and competencies that will be required to support the EDTIB, based on a range of scenarios along which the European

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defence market could develop. The scenarios focus on the potential emergency of an integrated EU procurement regime, in turn driving industry consolidation and supply chain rationalisation. Amongst the study’s key recommendations is increasing industry’s awareness of future procurement trends and outlining good practices. Another somewhat dated, but nevertheless informative study on the ‘Development of a European Defence Technological and Industrial Base’ examines drivers of the EDTIB future trajectory and competitiveness, among them access to human resources and skilled labour. This analysis is reiterated by the contemporaneous study on the impact of emerging global competitors on the European defence industry. The studies point to skills shortages that they viewed as likely to increase in future, driven by aging populations across Europe, stagnation of defence budgets, and technological change. This study identifies training the existing workforce, developing a new workforce through education, and sourcing skills from outside the defence industry as potential approaches to addressing skills shortages.

Several studies address the skills aspect in the context of specific stakeholders, namely European SMEs and regions. For instance, the 2009 ‘Study on the Competitiveness of European SMEs in the Defence Sector’ by Europe Economics highlights the importance of clusters to SMEs as mechanisms of facilitating access to specialist skills, market information, and resources. The study points to the prominent role a university or a technical college can play as part of the cluster – specifically as a source of skills and research capability. A 2017 European Parliamentary Research Service (EPRS) study considers skills levels as a factor influencing the competitiveness of European regions, highlighting that human capital affects the rate of innovation and technology adoption. In this context, the study draws attention to the variability of education attainment and labour productivity across the EU’s regions.

However, the majority of the most recent publications that do exist in the public domain are authored by leading management consultancies, and are reviewed below, along with other relevant literature. A 2016, a McKinsey publication entitled ‘Managing a downturn: How the US defense industry can learn from its past’ stressed the importance of programme management skills within US defence industry to manage the

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6 Europe Economics. 2009. ‘Study on the Competitiveness of European Small and Medium-sized Enterprises (SMEs) in the Defence Sector.’

Department’s of Defense (DOD) recent tendency to cap costs of defence equipment programmes in an effort to prevent cost escalation. In a 2017 article ‘Five steps to digitising aerospace and defence companies’ the management consulting firm McKinsey provided recommendations for improving the effectiveness of digitalisation initiatives, which are being rapidly and widely adopted within the defence industry. Attracting and retaining digital talent, such as data scientists and software experts, was one recommendation, and included ensuring that employees not only have advanced technical skills, but are also able to evaluate and procure new technological solutions. Specific steps to achieve this include rewarding high-achievement and high-potential employees with career progression and additional responsibility as well as fostering a ‘digital-native’ environment for their digital teams. Other consultancies, such as the Boston Consulting Group (BCG), Alix Partners, and Accenture have published similar advisories for defence industry on effective digital transformation, with the importance of attracting digital talent and retraining current employees featured prominently in all publications.

Another prominent theme of recent publications relevant to defence skills is on the future of the work and workplace.

These publications do not focus on the defence industry, beyond highlighting the difficulties it is experiencing, and will likely continue to experience, in attracting the ‘best and brightest’ talent needed to navigate the future environment, given the competition from the commercial sector in particular. These sources, do, however, project the impact of emerging technological, demographic, geographical - meteorological, and political trends on skills and processes underpinning the defence industry. A particular focus in this area is on robotics, artificial intelligence (AI) and automation. Publications stress that, as industrial production and the nature of work become increasingly digitised and automated, the demand for non-cognitive skills, particularly in the ICT and STEM area, will grow, but employers will increasingly expect employees to combine these with cognitive and social skills. Furthermore, although

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automation is increasingly transforming the manufacturing process, studies on the future of work by the leading international management consultancies challenge the perception that AI ‘will automate everything’. Rather, they expect the adoption of these technologies to drive increased demand for human skills in managing and interacting with robotics and AI.¹⁴ A related strand of academic and scientific sources is dedicated to understanding the risk of automation to various skill-levels and occupations across a selection of countries.¹⁵ One of the most recent, published by the OECD in 2018, finds that across the 32 OECD member countries, approximately one in two jobs are expected to be considerably impacted by automation, although the extent of this effect will vary significantly in each country.¹⁶ Having provided an overview of cross-cutting and multinational studies, the report now turns to selected national contexts, which capture illustrative examples of defence-related skills gaps, supply and demand structures.

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