

New roles and skills in public procurement of innovation for the Dutch Defence Sector

Author: Jasper Schurink
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

ABSTRACT,

After the fall of the Berlin Wall, the end of the Cold War and the collapse of the Soviet Union, the threat of war on the European continent diminished. This led to shrinking defence budgets in Western Europe despite the 2% NATO budget norm. However, since the special military operation by Russia in Ukraine is the Russian threat back. This has led to unique defence budget increases after decades of slack in the defence sector. Moreover, the European Commission, Commission Von der Leyen, presented the European Green Deal, which aims to become the world's first climate-neutral continent by 2050. The military sector has a large carbon footprint, and carbon dioxide emissions will have to be significantly reduced to achieve the objectives of the European Green Deal. This presents the procurement professionals from the Ministry of Defence with a vast challenge. This paper aims to answer the questions of which new public innovation procurement roles will emerge to face this challenge and be able to utilise this opportunity together with the competencies that belong to the respective roles. This paper tries to answer the question and add to the existing knowledge by conducting qualitative research with procurement professionals in the Dutch defence sector. In this research, four newly identified roles might emerge due to current developments and the skills one should possess for each role.

Graduation Committee members:

1st supervisor: Dr Klaas Stek

2nd supervisor: Prof Dr Louise Knight

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1. INTRODUCTION

The fall of the Berlin Wall in 1989 and the collapse of the Soviet Union in 1991 marked the end of the Cold War and led to a new, more peaceful time (Betts, 2019). The post-Cold War era and decreased Russian threat led to a change in NATO's primary mission, shifting from a military to a political focus (Berger, 2002). Since then, have the armies moved from large arsenals to innovative and precise weapons systems (PwC, 2005). When Russian forces invaded Ukraine with a "special military operation", the Russian threat resurrected. European Union member states reacted swiftly by condemning the Russian actions and imposing economic sanctions. The same countries support Ukraine in the war against Russia (Jain et al., 2022). Western countries increased military spending because of their safety concerns, and large military donations were made to Ukraine (Tian et al., 2023). However, the change away from large arsenals showed its limitations in ongoing warfare fast. Currently, supplies from European countries are getting low (Calcara et al., 2023). The current situation presents a significant challenge for defence procurement professionals. They must navigate the complexities of public procurement to acquire enough materials and stock up on their supplies. There is urgency due to the need to support Ukraine, especially considering the neglect of the European military industry for decades. Defence procurement must balance the dual pressures of ensuring security and meeting broader societal expectations. This includes the timely acquisition of military resources and alignment with emerging priorities such as sustainability, which is increasingly essential in defence and public procurement strategies.

Moreover, climate change must also be addressed from a public procurement perspective. Society needs to change its way of living and use of the earth to combat or mitigate the effects of climate change. The European Commission (EC), Commission-Von der Leyen, addresses this problem and wants to lead the creation of a solution. The EC achieved that in 2021, and the first European climate law was accepted, the European Green Deal. The objective of the Green Deal is for Europe to become the first climate-neutral continent by 2050. The Green Deal also comes with an intermediary milestone of reducing greenhouse gas emissions by 55% compared to 1990 (European Commission, 2019). The EC has said that the Green Deal is now one of their main priorities, and efforts need to be made by almost everyone to reach this goal. So, efforts need to be made in procurement, too. These efforts can be made using horizontal policies¹ in the purchasing department (Arrowsmith, 2010).

This paper focuses on public procurement since it has a significant combined purchasing power. In the EU, public spending is good for around 14% of the EU GDP, about € 2 trillion annually, making it the largest spender in the EU (Hawkins et al., 2011; Sapir et al., 2022). This implies that public authorities combined have a vast theoretical purchasing power and can set significant demands. Public authorities are the most critical buyers in multiple sectors, such as national defence (Hafsa et al., 2021). Given the size of public procurement and the fact that member states are implementing new policies to meet the objectives of the European Green Deal, the role of public procurement professionals is increasingly essential. Procurement will likely impact environmental goals if done well, efficiently, and with fitting horizontal policies.

This paper examines the new roles and skills demanded by public procurement professionals in the context of the European Green Deal. It analyses existing literature on the vital roles and abilities in public procurement. However, there is a knowledge gap

concerning the positive influence on the environment, especially regarding the Green Deal. This paper aims to delineate the current landscape of essential roles and skills in the field of public procurement to identify and address this knowledge gap. To this end, extensive qualitative research among mostly Dutch defence procurement professionals has yielded valuable insights into the roles and skills expected to become essential for public procurement professionals.

The research question to be addressed is: **What are the new roles and skills required for public procurement of innovation professionals in the defence sector in the context of the European Green Deal?** This study aims to identify the roles and skills needed for procurement professionals to fulfil good procurement practices. This paper may assist (future-) procurement professionals in developing the necessary skills for the roles they will fulfil in light of the European Green Deal. This paper aims to contribute to creating sustainable procurement practices while providing a nuanced understanding of the challenges and opportunities arising from the evolving public procurement field.

Although the Green Deal is an initiative of the European Commission, this paper will focus on Dutch public defence procurement. However, can the findings in this paper still be valuable to procurement professionals in the defence sector of other EU member states?

2. LITERATURE REVIEW

2.1 What is public procurement, and how does defence procurement differ?

Public procurement refers to public authorities' buying process of goods and services, such as municipalities and national defence (Uyarra & Flanagan, 2010). This procurement process is described by Van Weele (2005) as a process that involves six different key activities: specification, selection of supplier, contracting, ordering, monitoring, and evaluation. The Van Weele procurement process can assist organisations by providing a structured framework for their procurement activities and creating a competitive edge. Nevertheless, it is essential to note that this is a universal procurement process. The most significant distinction between private and public procurement lies in the legal and regulatory frameworks that public procurement professionals must adhere to (Harland et al., 2013). Telgen et al. (2007) also identified other key differences, such as the higher number of stakeholders involved, including political parties, citizens, and taxpayers of a country. Consequently, PP professionals are held to higher ethical standards, responsible for preventing favouritism and ensuring the prudent use of taxpayer funds (Alkadry & Patrucco, 2023). As previously discussed, national governments and international organisations such as the World Trade Organisation and the EU have issued relevant regulations to this paper to prevent unethical behaviour.

As said before, public procurement is significant in the EU and gives public authorities vast purchasing power. Regulation was created to ensure that procurement in the EU is done fairly, transparently, and effectively. The headlines of these rules are that purchases above a certain threshold need to be published in the Tender Electronic Daily (TED) (Grandia, 2018).

The mission of the Dutch Ministry of Defence (MoD) is to "protect what we value" (Ministerie van Defensie, 2018). The MoD's mission comprises three tasks: 1. Protect the national

¹ Policies that can support economic, social, political, environmental, etc. goals.

territory, including the Caribbean part of the kingdom and the territory of allies; 2. To protect and promote the international legal order and stability; 3. To support civil authorities concerning law enforcement, disaster relief and humanitarian assistance nationally and internationally. The Dutch defence sector comprises several small and medium-sized enterprises (SMEs) operating in a civilian capacity (Dirksen, 1998). These companies collectively generate approximately 4.5 billion euros in revenue (Ministerie van Algemene Zaken, 2018).

When the Ministry of Defence (MoD) decides to make a procurement, two sets of regulations are generally applied: the Public Procurement Act 2012 (Aanbestedingswet 2012) or The Public Procurement Act concerning Defence and Security (ADV). It is possible to deviate from the regulations in the procurement process under strict conditions that are essential for national security (Ministerie van Algemene Zaken, 2018). The Dutch law, known as the AW2012, sets out the regulations for public authorities in conducting their procurement. This law ensures the tender process is efficient, fair to competitors, and transparent. The law also sets out guidelines for selecting suppliers, which include the requirement that all suppliers should have an equal chance to take part in the tender process, that the selection of suppliers should be based on objective criteria and should be stated clearly, and that all possible suppliers should have access to the same information. This law also encourages sustainable procurement, although these criteria are not legally binding (Ministerie van Economische Zaken, 2022). The ADV is a European directive establishing specific procurement rules for the defence and security sectors. It aims to enhance competition and transparency in these sectors, facilitating more EU tenders. The most significant difference between the ADV and previous directives is suppliers' need to adhere to security and confidentiality requirements to ensure that the EU member state's security is not compromised (European Commission, 2022).

2.2 Rolls and skills

This section will describe the current skills needed to perform the procurement role. Tassabehji and Moorhouse (2008) have created an extensive list of skills for procurement professionals. These skills are divided into technical, interpersonal, internal and external enterprise, and strategic business skills. They have noted a change in the division between procurement-specific and generic business skills. This framework was updated by Bals et al. (2019) to meet the present and future challenges. Additionally, the framework was further extended with 17 new competency areas. The most notable new competencies were related to automation and sustainability. The results are shown in Table 1, which shows the ten most coded competencies for the current and future situation in alphabetical order; the grey colour indicates commonality between current and future competencies.

Current Competencies	Future Competencies
Analytical skills	Analytical Skills
Basic knowledge on PSM role & processes	Automation
Communication skills	Big Data Analytics
Cross-functional abilities & knowledge	Computer Literacy
Interpersonal Communication	eProcurement Technology
Negotiation	Holistic supply chain thinking
Stakeholder Relationship Management	Process optimisation
Strategic sourcing	Strategic Sourcing
Strategic thinking	Strategic thinking
Sustainability	Sustainability

Table 1. Top ten current and future competencies for PSM

Next, job openings across the European Union member states were examined to see if the procurement skills found were the same for the procurement professionals at the Ministry of Defence. An analysis of job vacancies is a proven form of researching skills since the organisations themselves present

their requirements (Kennan et al., 2006). The research consisted of eight vacancies from five countries, specifically from the Czech Republic, Denmark, France, Latvia, and the Netherlands at their respective Ministry of Defence. The translated job titles differ somewhat across these nations, from procurement specialist to strategic procurement officer. However, it is found that some roles are commonly required at different institutions. The most common role is the contract manager, who oversees the contract during its entire lifecycle. Extra emphasis has been placed on drafting the contracts in Denmark, the Czech Republic, and the Netherlands to make sure the contracts adhere to existing directives. Next, some job offers have also emphasised managing the agreed-upon terms in the contract.

Other roles mentioned in the vacancies included researching and keeping in touch with the Defence market and connecting multidisciplinary groups. The last two roles are negotiating with suppliers and performing administrative tasks for the sourcing department; however, both were mentioned in only one vacancy.

The vacancies also describe various skills considered essential to fit the job and perform well in the roles mentioned earlier. It must be noted that the Czech Republic vacancy does not specify specific skills an interested person should have for the job. However, it specifies that applicants must be 18 or older and have finished their higher education, as was common in most vacancies. The vacancy research identified ten essential skills for procurement professionals. The skill that was sought after by most is for the applicant to be a good team player and work with people from different disciplines. The following skills were mentioned in three of the vacancies: persuading or arguing, being precise, English proficiency, and communication. These skills cover the same ground to some extent. Next are two skills named twice: analytical skills and the ability to plan and adhere to the plan. Lastly, the skills mentioned in only one vacancy are being agile, accountable, and persistent.

The skills in this comparison that correspond the most to each other are analytical skills, (interpersonal) communicational skills (including teamwork), and the ability to influence others. The Dutch Ministry of Defence also has a competency manual that describes 27 different skills for the whole organisation. This manual explains what the competencies mean in the context of the armed forces. There is also the Quality Framework Procurement column (Kwaliteitsraamwerk Inkoopkolom (KWIK)) that explains all the job positions in procurement with the required skills (Functiegebouw Rijk, 2023). For analytical skills, the person must be able to look at a challenge from multiple perspectives and see the links between them. Concerning communication skills, should the person convey complex, abstract or sensitive information concisely and clearly to different stakeholders. For teamwork skills, the person is expected to actively connect with others outside their department, understand the goal, and see who can contribute to their common goal. Ultimately, the ability to influence, a person with this skill knows how to respond to resistance and can gain support for their message (Leijh, 2009).

2.3 The European Green Deal

In December 2019, the European Commission presented the European Green Deal. The European Green Deal is a roadmap to create a sustainable economy in the European Union, and it has the key objective of making Europe the first climate-neutral continent in the world (European Commission, 2019). In doing so, the hope is that the European Union can become a "modern, resource-efficient and competitive economy" that is inclusive to all citizens, in which there will be no net emissions of greenhouse gases by 2050 and in which economic growth is decoupled from

the use of fossil resources. A revision of the European Emissions Trading System (EU ETS), land-use, land-use change and forestry (LULUCF) regulation have been adapted to reduce emissions by 30% before 2030 (Skjærseth, 2021). To work towards having no net emissions of greenhouse gases by 2050. The EU ETS is most applicable for companies as it gives them a specific allowance on the EU carbon market and requires them to use these to account for their emissions in a year. Heavy fines will be imposed if companies cannot account for their emissions. (European Parliament, 2024).

Changes must be made within the companies in the European Union to meet the goals set out by the European Green Deal. Whereas the objectives of public procurement typically included quality, cost, minimising business, financial and technical risks, maximising competition and maintaining integrity, there has been a shift towards sustainable public procurement (SPP) (Pouikli, 2021). SPP refers to “the acquisition of goods and services in a way that ensures that there is the least impact on society and the environment throughout the full life cycle of the product” (Meehan & Bryde, 2011, p. 97). This includes an economic, social and environmental responsibility and is divided into multiple public procurement framing measures, including the Green Public Procurement (GPP). The GPP is a component of the SPP that focuses on the environmental responsibility of public procurement. The GPP criteria are not binding but rather set an example for Member States to make purchasing greener. However, because of the non-binding nature and questionable formulation of these criteria, as stated in Article 18(2), it is doubtful to what extent they will genuinely be met (Pouikli, 2021). Implementing these criteria is further limited by the lack of training for public procurement officers, intergovernmental coordination and information on financial benefits and higher costs (Badell & Rosell, 2021).

According to the European Commission, are the militaries the biggest public consumers of energy in the EU (Fiott, 2014). Therefore, the question arises regarding the extent to which the military is held to the European Green Deal and subsequent GPP criteria. Whereas intergovernmental defence policies are in place, defence spending and procurement are the responsibility of each Member State. With the introduction of article 364 TFEU, defence procurement has been excluded from the internal market rules. Furthermore, Member States can withhold information if it serves their ‘security interests’, with ‘security interests’ being loosely defined and therefore offering an excuse. It is thus arguable whether information regarding sustainable procurement could be withheld (Castiello, 2024).

2.4 The increased Russian threat

Whereas the fragmentation of the defence market with its clashing procurement schemes was argued before the war between Russia and Ukraine, the need for intergovernmental policies has risen since then. The general tendency of the Member States to cut defence expenditures has led to a military gap, which has, in turn, given rise to a new proposal for joint procurement (Castiello, 2024). This is the European Defence Industry Reinforcement through the Common Procurement Act (EDIRPA), followed by the European Defence Investment Programme (EDIP).

As part of the EDIRPA, a defence joint procurement task force has been established to coordinate and assist in procurement needs. The task force has established areas of common interest between Member States and produced a mapping of the supply capacities of the European defence industry. Based on the results of this analysis, a programme proposal has been drawn up, which is the EDIP. This led to the Act in Support of Ammunition

Production (ASAP) that covers the reinforcement of the EU’s industrial production capacities for defence products, the creation of a mechanism to map, monitor and better envisage potential bottlenecks in the supply chain and to introduce a temporary regulatory framework to address the shortage in ammunition. Whereas the formulation of ASAP addresses the need for fast production of defence products and does not immediately show initiative to support the sustainability goals of the EU, the potential for introducing intergovernmental sustainable procurement does lay in the formulation of EDIRPA. The legal basis for EDIRPA is formulated in Article 173 TFEU and mentions encouraging environmentally favourable undertakings. Whereas this does give way to ambiguity and has the potential to generate the same outcomes as the non-binding criteria of the GPP, EDIRPA, therefore, does have the potential to allow for the implementation of joint sustainable defence procurement once the crisis of the war and its subsequent focus on fast production has passed (Clapp & European Parliament Research Service, 2023).

2.5 Innovative procurement and digitalisation

The last section of this chapter discusses other, more general trends in public procurement and how the field will evolve in the coming years. Increasingly frequent are public procurement policies applied to spur innovations in the private sector (Nijboer et al., 2017). Rolfstam (2012, p. 303) explains innovative public procurement as follows: “purchasing activities carried out by public agencies that lead to innovation”. Because of the policies applied, is the public procurement profession changing from a traditional function of fulfilling the need as efficiently and cost-effectively as possible to a strategic instrument used for value creation (Patrucco et al., 2017). Innovative procurement can be a helpful tool when buying products in the strategic items quadrant from the Kraljič Matrix, items with a high financial impact and a vast market complexity (Kraljič, 1983). This changes the role of procurement professionals to become facilitators and connectors for the shared value creation (Grandia & Volker, 2023). This also means that new skills are required from public procurement professionals (Yeow & Edler, 2012).

The primary function of innovative procurement is to establish and maintain internal and external relationships. Its secondary role is to connect internal needs with external innovative capabilities. Lastly, it is responsible for encouraging and motivating suppliers to innovate. To effectively fulfil these functions, individuals must exhibit entrepreneurial behaviour, be willing to take risks, demonstrate courage and confidence, and show persistence (Stek, 2021).

Procurement will become more digitalised and automated. Components of this are artificial intelligence, blockchain and the Internet of Things (Althabatah et al., 2023). Remarkably, all these parties mention digitisation and automation as essential trends in the procurement field. And according to Grandia and Volker (2023) is AI part of moving forwards. However, Dutch purchasing knowledge institutions notice that the use of and priority given to AI tools and robotisation by purchasers in the Netherlands is relatively low compared to other trends (Beek et al., 2024; Heuts et al., 2024).

3. METHODOLOGY

3.1 Interviews

The literature review yielded valuable insights into the skills required to perform well in the public procurement profession.

However, the research question still needs to be answered. The knowledge uncovered in the current literature also highlighted the knowledge gap. A qualitative case study was employed in this research to bridge this existing knowledge gap. The following organisations were targeted to identify suitable interviewees: the Ministry of Defence, suppliers in the defence sector, and higher defence educational institutions. In addition, the interviewees were required to be either procurement professionals or researchers in the field of procurement, with at least five years of experience in the field, as mentioned earlier.

The process of identifying potential interviewees was comprehensive. The researchers utilised various methods, including LinkedIn, direct emails to relevant persons and organisations, and personal contacts to reach out to professionals and experts in the field of public procurement. A total of 27 professionals, experts and organisations were contacted with an interview request, demonstrating the thoroughness of the study. Of these, six individuals accepted the request for an interview, while 17 did not respond to the initial contact. In addition, four individuals or organisations declined the request or indicated they could not assist with the study. The six interviewed individuals were anonymised and named A, B, C, etc. Table 1 provides an overview of the vital information about the interviewees.

Table 2. Key interviewee information

INTERVIEWEE	ORGANISATION TYPE	LAND OF ORGANISATION	JOB TITLE	YEARLY PROCUREMENT BUDGET
A	Ministry of Defence (MoD)	Netherlands (NL)	Procurement advisor legal	N/A
B	MoD	NL	Head of Purchasing Department IT	€7 billion
C	MoD	NL	Senior contract manager	€1.1 billion
D	MoD	NL	Project leader innovation-oriented procurement	€1.7 billion
E	MoD	NL	Senior managing consultant	N/A

The qualitative study on the interviewee involved a semi-structured interview, allowing for spontaneous comments. Before the interview, an interview guide was constructed (see Appendix A for the interview guide) with the research question in mind to best address the existing research gap. The guide was tested on one of the interviewees and subsequently adapted to better align with the research's objectives. The interview guide served as the basis for each interview. However, given that nearly every question was open-ended, it was occasionally necessary to alter the question sequence to align with the specific conversation. The interview guide was also translated into Dutch, as native Dutch speakers might prefer to speak Dutch.

Nevertheless, the questions and sequence of the interview guide remained consistent across both languages. The interviews were conducted in different settings: one interview was done in person at the University of Twente, three interviews were done via an online meeting room like Microsoft Teams, and the last two interviews were conducted via a phone call. All the interviews took place between the 13th of May and the 5th of June. The interviews were recorded with permission for the researcher to listen to them again and transcribe them afterwards. The interviews lasted an average of 37 minutes.

3.2 World Café

A workshop was organised at the Ministry of Defence, divided into three sections. First, innovative procurement was presented, followed by a World Café, and the workshop concluded with a plenary discussion of the results. A World Café is a method of qualitative research where experts come together to share their knowledge (Brown & Isaacs, 2005). They share their knowledge by moving between different discussion tables, each focusing on a specific aspect of the overall topic. Typically, all the participants are split into smaller groups of no more than four to six participants per table and one moderator. Each table has a discussion point to talk about. After each round, the participants change to a new table and can discuss the discussion point of their respective table. Figure 1. illustrates the setting of the World Café and how this process works. After all the rounds are completed, a speaker will collect and share the insights of the discussions with the whole group, often also areas identified for future actions or research. The World Café method is based on the idea that the people attending together have the knowledge and skills to address the problem addressed in the World Café (Lagrosen, 2019). This means that outside help is not necessarily needed for an organisation or researchers and that much knowledge can be gained if the attendants combine their knowledge.

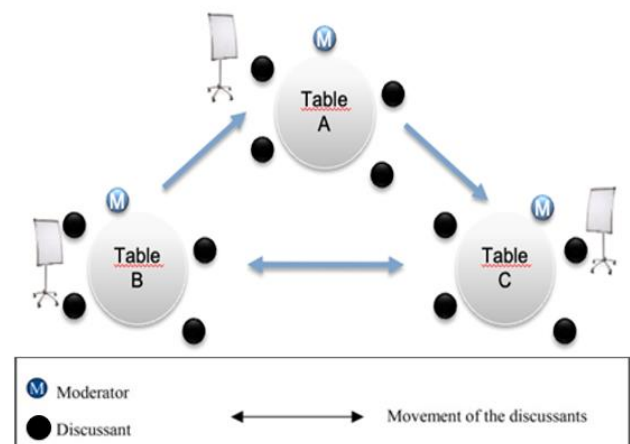


Figure 1. The setting of the World Café

The World Café has multiple advantages over expert interviews; first, information gathering is done much faster. Typically, it is a World Café organised as a one-day workshop that grants the opportunity to get insights from many people compared to interviews that often occur over multiple months (Fouché & Light, 2011). The next advantage is that cross-fertilisation occurs between the participating experts, which does not happen in a traditional interview setting (Schiele et al., 2022). Another noticeable advantage is the satisfaction from the participants because the World Café immediately gives them results and thus can also be seen as a learning experience for them (Chang & Chen, 2015).

The article by Schiele et al. (2022) presents a four-step model to organise a World Café: define the problem, identify participants, conduct the World Café, and analyse and validate the results. For the particular World Café used in this research, was the problem statement or the theme of how to increase innovation sourcing for military equipment? To answer this question, were there three tables with the discussion points: What are the barriers and enablers for innovative sourcing (Table A)? Which new roles emerge for procurement professionals, and which skills are vital (Table B)? Lastly, how do you facilitate a risk-taking, intrapreneurial and innovative mindset (Table C)?

The second step is the participants; the group consisted of 12 persons, from young to experienced professionals. The commonality within this group was that they were involved with innovation within the Ministry of Defence. The World Café was conducted in the Hague at a Ministry building on May 23 between 13.00 and 16.00. The group was split into three smaller groups, each discussing the mentioned discussion points. Each round evaluates and adds to the works of the previous group. After three rounds of 15 minutes each, the participants joined the plenary session, and the moderators showed the workshop results. The pictures, notes, and flip-over papers created were saved to analyse and validate the results.

4. RESULTS

This study aimed to discover the emerging roles and competencies needed to fulfil these roles for procurement professionals in the defence sector, especially regarding the current and coming challenges, i.e., the Russian invasion and sustainability goals. The results reflect the experiences and perspectives of procurement professionals in the defence sector. Through analysis of the semi-structured interviews and the World Café, multiple roles have been identified, and the skills needed to perform these roles have been identified. Next to that are also other findings presented that contribute to facing the current challenges.

4.1 Interviews

4.1.1 Current situation

In the current situation, all the participants say that the Ministry of Defence is growing, especially the procurement department. The growth will become visible in the number of personnel and budget. According to the participants, the increase in funding resulted from faster depletion and the need for more acquisitions because of Ukraine's support. Another reason identified by participants for increases in the budgets is the wish for an army prepared for a long-term conflict.

One of the participants said, *"We are finally leaving the budgetary ice age,"* and then explained what had become possible for them. Participants said they could now experiment more and start more ambitious projects.

Participants also explained what they viewed as the most crucial roles and what skills were necessary. Table 3 presents the roles mentioned and an overview of the critical skills according to the participants. Another thing observed in the current situation is how the participants stay updated with best practices and developments. All the participants mentioned following PIANOo; other institutions mentioned to keep track of developments are TNO, Gardner, and Nevi.

Roles	Skills
Negotiator	Flexibility and Adaptability
Representative	Courage and Decision-Making
Innovation enabler	Analytical and Problem-Solving Skills
Supply chain manager	Communication and Presentation Skills
Jurist	Legal knowledge
Facilitator of team development	Creativity
	Collaboration

Table 3. Overview of Current Roles and Skills

4.1.2 Impact of the European Green Deal

The researcher initially noticed some resistance from multiple participants when addressing the European Green Deal. One participant said, *"Defence is inherently non-sustainable; we demolish things."* Other participants had a more positive view of sustainability efforts and the Green Deal. Participants explained their efforts and what they did. According to interviewee C, the most practical way to implement environmental efforts is with the help of ISO certifications (ISO 26000). However, multiple interviewees believed that the sustainability efforts made are often superficial. They noted that the MVOI (Socially responsible procurement and purchasing) and sustainability criteria stated in the tendering phase are frequently not monitored after the tender is awarded. The participants who mentioned this said that it should be essential to monitor and review to ensure that the sustainability claims made by the suppliers are adhered to.

Interviewees who took a more pragmatic approach to sustainability and the Green Deal agreed that it would be good if they could procure environmentally friendly products or services. Still, they should not hinder the current operations or be lower quality than the "normal" product or service. They said they liked the practice of circularity and explained it with examples of catching the bullet casings of specific fast-shooting guns and using certain types of batteries for electric vehicles. Another person pointed out the suppliers and that sustainability efforts depend on the market's readiness. Interviewee C pointed out that many environmentally friendly products exist for coffee machines, but this might not be the case for highly complex systems.

Interviewee D concluded that the people working at the Ministry of Defence know what efforts should be made; however, they need to believe intrinsically in the goals to make a difference regarding this challenge.

4.1.3 New roles and skills

When the researcher directly asked the interviewees to identify future roles for procurement professionals, they were hesitant to answer directly. However, when asking a little further, combined with the challenges they explained before, tasks were identified that they would like to see somebody fulfil. These tasks are to help intrinsically motivated people to make sustainable procurement choices. The interviewee made a vital notion here that this should only be applied to people who are open to it and should not be forced on people. Skills identified for this role are persistence and the ability to convince someone to add to the skills already perceived as necessary in the current situation.

One of the challenges is that the sustainability criteria, as stated in the tenders, are often not monitored and evaluated once the tenders have been awarded. Participants mentioned that the organisation should be stricter on these criteria. They also noted that the supply chain is often unclear; therefore, they cannot verify the MVOI claims a supplier makes. The skills associated with and mentioned to most for these responsibilities are curiosity and good communication skills.

Other challenges are too much bureaucracy and the involvement of procurement professionals too late in the process. These challenges created the tasks to better connect internal departments, making the process more efficient. The most critical skills for this role were argued to be networking and strategic thinking (the ability to link organisational needs with solutions).

For the legal department, does Participant A expect that the roles would stay the same in the legal profession for procurement. Concerning the skills, the participant said they should be

constantly trained, especially for reading and writing. However, interviewees not from the legal department advocated for persons with a deep understanding of the regulations who can proactively and creatively find solutions to problems instead of only pointing out the issues and telling what is not possible.

Lastly, many skills were mentioned that did not necessarily fit a specific role but were stressed by the participants to become more critical for procurement professionals in the future. These skills are creativity and the ability to think outside the box, receive feedback and criticism, and handle transformations without fear.

4.1.4 Future Outlook

Lastly, the participants were asked about their ideas for the future concerning the procurement field. The most often mentioned idea was that the Ministry of Defence should work on more collaborations with start-ups and SMEs. This identified the need for more active engagement in the Defence industry. This is crucial because start-ups and SMEs often do not realise their potential value for the Ministry of Defence.

Next, in order of most often mentioned, is the topic of automation and AI. There is still some scepticism about AI in the workplace; however, the overall tendency is that AI will be able to automate routine tasks, but personal skills such as communication and creativity will stay essential and irreplaceable, at least in the short term.

Lastly, the geopolitical situation was discussed, and how the Netherlands and the European Union are too dependent on other countries, such as the United States and especially China. The participant believes production should be done more in Europe or the Netherlands. For example, the participant mentioned the production of highly advanced chips, which are now mainly produced in Taiwan, using the machines of the Dutch company ASML.

4.2 World Café

4.2.1 What are the barriers and enablers for innovative procurement

In the first round, the focus was mainly on finding the barriers, and several were identified. In the subsequent rounds, the enablers were described, and a ranking of the barriers and enablers that were the most important was made. The most significant obstacles are the procurement department's (too) late involvement and the will to be creative.

The incentives that can make innovative procurement possible are to set multidisciplinary goals together, buyers need to take a proactive attitude to think along and share (legal) knowledge, and risks need to be accepted.

Very briefly, there is a lack of time, capacity and continuity or, in other words, an overarching strategy. There needs to be a greater sense of urgency to overcome the previously mentioned barriers and allow the incentives to flourish.

4.2.2 New Roles and Competences in Innovative Procurement

The first round of discussions at this theme table focused mainly on new roles to promote innovative procurement. In the second round, key competencies were added, and in the last round, a few more points were added and discussed which issues were most important.

Two new roles were discussed. The first is innovation scout; the person in this role needs to be creative and able to communicate skilfully. The next role is entrepreneurial broker, which was identified as the more important of these two. There was a feeling

that there was too much hassle for questions and to get an agreement, and the buyers were involved too late in the project. To take on this role, knowledge of the organisation and its ecosystem and the ability to network were identified as most important. Other capabilities needed by a person in this role include a remarkable ability to learn, connect, communicate, and be aware of the environment (e.g. when to push something or perhaps leave it alone for a while).

4.2.3 Facilitating an intrapreneurial and risk-taking mindset

This table discussed how to facilitate an intrapreneurial and risk-taking mindset. This is important for innovative procurement as it promotes creativity, adaptability and collaboration, leading to more efficient and effective procurement strategies. To achieve this, the following points were devised. One of the first critical points mentioned is trust. Trust in the leaders who are sometimes allowed to be more daring, trust the experts and their expertise, and trust in each other. This led to the next point: there should be a safe working atmosphere where people are kind and can empathise with others. A safe working atmosphere is essential for sharing knowledge and practical experiences. The successes and situations where things did not go as planned should be shared. Other points mentioned were encouraging internal competition, which goes hand in hand with a reward in the form of recognition and perhaps an employee of the month award. However, it is essential to set limits to competition to maintain a healthy working atmosphere.

5. DISCUSSION

By conducting the literature review and the observations from the interviews and the World Café, this research set out to answer the following research question: **“What are the new roles and skills required for public procurement of innovation professionals in the defence sector in the context of the European Green Deal?”** The findings identified some main patterns, such as recognition of resistance, strict legal regulations, a strategic gap with the organisation's main goals, a gap in sustainable knowledge, contract management compliance, fast changes in the geopolitical situation, and technological developments.

The interview results make clear that there is a need for a role which can oversee the entire supply chain from a sustainability point of view. This cross-functional role can be named as a sustainable supply chain manager. A new role is necessary because of the recurring condition of intrinsic motivation in the results and the assigned importance to this. In this role, there must be a focus on the recognition of resistance, analysis of resistance, reduce resistance to promote a change in a sustainable way of working. This role can be indicated as a change agent.

The World Café results identified a new role for an intrapreneurial broker who can act cross-functional and cross-departmental in an inside context and cross-organizational in and outside context: an internal connector and an external connector.

So, the answer to the research question regarding the roles is that four new roles are identified: 1. change agent, 2. sustainable supply chain manager, 3. internal connector, and 4. external connector. The corresponding skills identified are mainly soft skills, such as communication and networking skills, persistence, curiosity, creativity, courage, persuasiveness, learning ability, empathy, and, last but not least, patience. The identified skills align with the skills mentioned in the literature review in 2.2 (competency manual Ministry of Defence and the KWIK document). What is predicted in the framework of Tassabehji and Moorhouse (2008). Later, Bals et al. (2019) updated the study

about future competencies, and there is a discrepancy between skills related to automation, data analytics, and computer literacy, as shown in the results of this study. A significant similarity with the results is the skill of holistic supply chain thinking.

5.1.1 *Recognition of Resistance*

The literature review identifies procurement roles without the influence of the recent changes in the geopolitical situation and the European Green Deal. The literature review shows the complexity of binding laws and regulations in public procurement. In the last 15 years, this knowledge of law and regulation has been integrated into the current procurement roles. This is due to the public procurement regulations (Aanbestedingswet). For two years, there has been a severe geopolitical threat that appeals to the eagerness (in accordance with the mission statement of Defence) of procurement professionals to do their jobs effectively and get them done. They are already confronted with legal hurdles; they have learned to deal with legal implications and impossibilities. Sustainability is already an essential criterion in the current procurement process, and the Green Deal makes this process still more critical. The findings identified that procurement professionals sometimes experience a contradiction between these two things. This can explain the resistance to sustainability found in procurement processes.

The change agent must first recognise and analyse to develop workable and supported solutions. The findings also learned that creating and investing in this awareness is essential before sustainability thinking is in the DNA of each procurement professional. Additionally, it is apparent from the findings that there is no unwillingness. The researcher will recommend supporting the change agent with (external) behavioural experts.

5.1.2 *Strict legal regulations*

The literature review described the legal context of procurement. The findings indicate a focus on restrictions and a need for more flexibility in regulation, a more solution-oriented approach, and support from the legal department. The intrapreneurial broker, the internal connector, is very suitable for analysing and handling this issue in the part of the organisation that has an impact on it. In this cross-functional role, cooperating and involving procurement in an early strategic stage will be key activities.

5.1.3 *Contract Management Compliance*

According to the literature review and interviews, contract management currently has a role in procurement. This role involves cooperation and discussion with suppliers about providing their products and services. The findings indicate that there should be more care, control and questioning about the sustainable agreements in the tender contracts. Both suggested roles, the “sustainable supply chain officer” and the “change agent”, can act in this area. When they can bridge the gap between promises and agreements about sustainable supply and factual results, it will have a sustainable impact and promote more attention to sustainable contracts.

5.1.4 *Innovative Public Procurement*

Innovative public procurement is very impactful for purchasing and the way of working for the purchasers. In the literature review, Van Weele's procurement process is mentioned. A key component in this process is the Kraljic matrix. This is a tool that helps determine the purchasing strategy based on the complexity of the market and the importance of the item. The strategic products of this matrix have a high financial impact and a vast market complexity. These strategic products are ideally suited to innovative purchasing strategies. In the World Café, the new roles for innovative procurement are discussed. The discussion

focused on the new roles and skills for innovative procurement in general and the Ministry of Defence. Cross-functional, cross-departmental, and cross-organisational roles are needed for an innovative (strategic) purchasing method. Cooperation with internal and external stakeholders is crucial in this role. Soft skills are essential for this type of cooperation for strategic products (high financial impact and a vast market complexity). Skills like creativity, courage, persistence and sensitivity.

A limitation was that sustainability was not a specific assigned issue in the discussion. On the other hand, sustainability is more or less a logical result of innovative procurement. Therefore, the explanation is that innovative procurement is used for strategic products with high financial impact and complex technological products with a long development or production time. Over time, knowledge about sustainability and technologies improve, and the results will be seen in high-tech products with a (maybe unexpected) more significant impact on sustainability. So, the foundation of sustainable impact in technological innovations lies in raising awareness among purchasers and influencing technical innovation. Sustainability is an inseparable part of this process, making innovation an accelerator for sustainability.

5.1.5 *Intelligence, technological innovation and automation*

Technological innovation, intelligence, and automation are not mentioned much in the literature review and the interviews. Although they are recurring topics in the World Café findings, they have not been made concrete. For all roles, it is advised to investigate where technology and intelligence can support the procurement process in general and specifically in sustainable procurement.

5.2 Conclusion

The research question of this thesis is, again: **“What are the new roles and skills required for public procurement of innovation professionals in the defence sector in the context of the European Green Deal?”**

The research identified four new roles with corresponding skills. Cross-functional, cross-departmental, and cross-organisational roles are needed that can oversee the entire chain inside and outside and have the connecting power and ability to influence stakeholders inside and outside the organisation. Impact in sustainability requires an overview of the whole (supply)chain.

The mentioned skills are all in the range of soft skills. This is consistent with the current skills in the procurement department. For the support in applications and information which requires hard skills, a connection with other parts of the organisation is needed, i.e., the management of the organisation for strategic involvement, the business for specialist and technical specifications of products and services, the legal department for legal and contractual solutions, the ICT department for new technological and digital applications, HR for training, learning and development. This can be done in the intrapreneurial broker role, particularly the internal connector.

The change agent is responsible for awareness and must know the sustainability efforts in each procurement profession. The sustainable supply chain manager overviews sustainability in the entire chain and is responsible for supporting technical implementations to make the processes more insightful and efficient. Because of these roles, procurement professionals can focus on their main activities, do their best to buy what is required, and get the most optimal sustainable impact.

Lastly, this research concludes that innovative procurement and innovative-orientated procurement led to products with technical innovation, of which sustainability is inseparable. In this way, innovative procurement and (technological) innovation are accelerators for sustainability.

5.3 Practical implications

The findings of this research are usable by the Dutch Ministry of Defence and, to some extent, by the Ministries of Defence of other European Union member states. The findings, as depicted in Figure 2, found in Appendix 8.2, provide a practical overview of the expected roles and necessary skills at the Ministry of Defence procurement department in the future. The new roles can be implemented in the organisation.

Another contribution of this research is reducing resistance by implementing a learning and development program. Training and education are needed to integrate sustainability more effectively in the procurement processes.

5.4 Theoretical implications

This research aims to discover the new roles and skills of public procurement professionals in the defence sector in the context of the European Green Deal. This research adds to the skills framework from Tassabehji and Moorhouse (2008) and Bals et al. (2019) with future skills regarding the Green Deal.

Furthermore, it can be worth considering the Ministry of Defence's mission statement: *"To protect what we value."* When this mission is interpreted in a broader context than a geopolitical threat, thus interpreted in a context of environmental and climatical threats, it will be logical to take responsibility for sustainability. When defence employees are committed to this mission statement, they should also fight for a world without climate changes, pollution and depletion of raw materials. Because climate changes (extreme heat, forest fires, flood hazards, migration) and pollution are severe threats to people's freedom and safety.

5.5 Limitations

Despite the valuable insights gained from conducting interviews with different and carefully selected experts in the procurement department of the Ministry of Defence and related organisations, there can be a non-response bias in this research. There is a limitation of the small number of five respondents. 27 professionals were selected and invited to an interview (paragraph 3.1), but only five participants participated. This small number of five may not completely represent the chosen group participants. Although the interviewees were able to provide valuable information to answer the research questions, by including more interviewees in the research, these findings could have been strengthened. Perhaps this would have offered new factors and suggestions.

Moreover, this research was limited to the Dutch Ministry of Defence and related organisations. Therefore, it applies to the legal, political, and cultural context of the Netherlands. Different countries have different legal, political and cultural contexts. Further research is recommended to determine whether these findings are transferable to the other European member states.

Another limitation of this research lies in the World Café. The theme and discussion points in this World Café differed slightly from those in this study. This research focuses on "What are the new roles and skills required of public procurement professionals in the defence sector in the context of the European Green Deal?"

The context of the European Green Deal was not a named central theme in the World Café, neither in the presentation nor in the smaller groups. Nevertheless, the outcome of the World Café is valuable. It is recommended that future research focus on a World Café that is more focused on the context of the European Green Deal.

Lastly, a limitation of this research is that there is much referenced literature in the procurement discipline and less literature about skills for sustainability. Much grey literature about the subject can be found in newsletters and websites, but it cannot be considered scientific information. Only assumptions can be made about grey literature. Further qualitative research of these assumptions is necessary.

5.6 Future Research

In this section, recommendations for future research in the study of "new roles and skills in public procurement in the context of the European Green Deal" will be given. First, future research could investigate how to reduce resistance to sustainable procurement. What is resistance? What are the underlying factors? Which relations can be made with sustainability and reducing environmental impacts? How to recognise resistance? How to deal with resistance? How do you direct, influence, create awareness, collaborate, and take responsibility? These questions should be answered in future research.

Secondly, further research is recommended for the impact of innovative procurement and technological innovations on sustainability. It is expected to accelerate the sustainable impact. It seems that (technological) innovation and sustainability reinforce each other.

Lastly, future research is recommended for practising digital, technological, and data applications, such as AI and blockchain, on the topic of sustainability. The literature review in this study mentioned the importance of these innovations. Still, there's not much said about this by the interviewees and in the World Café discussion groups, especially regarding new roles and skills. For example, does a blockchain-based procurement system have the advantage of containing transactional data (Thio-Ac et al., 2019). Future research can be done to see if this helps shape an overview of the supply chain.

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8. APPENDIX

8.1 Appendix A. Interview guide

1. General points

- a. Can this conversation be audio recorded only for the researcher's use and analysis at a later date?
- b. The respondent voluntarily consents to participate in this interview, but consent can be revoked at any time without explanation.
- c. The interviewee will be anonymised and will be named professional A, etc.
- d. If desired, the final paper will be sent to the respondent.
- e. The researcher's contact information is provided to the respondent.
- f. If requested, will the recording be deleted. If not requested, the audio recording will be deleted after finishing this research.

2. Goal of the study

The study aims to research the new roles and skills needed by public procurement professionals in the defence sector concerning the European Green Deal.

3. Introduction

- a. Please introduce yourself, the organisation, and the purchasing department, including job position, department size, budget, and key suppliers.
- b. Can you describe your current role and responsibilities in public procurement?

4. Current situation

- a. According to you, what are the most essential roles and responsibilities in public procurement?
- b. What do you see as the most essential skills to have as a public purchaser?
- c. Has the Russian invasion changed procurement, particularly concerning the roles and skills described before?
- d. How are you updated with developments and best practices, especially in sustainable procurement?

5. Impact of the European Green Deal

- a. Do you consider environmental consequences in the procurement process?
- b. Do you measure the environmental impact of your procurement activities? If yes, how?
- c. How familiar are you with the European Green Deal and its objectives?
- d. How do you expect the European Green Deal to impact the defence sector's public procurement practices and policies?
- e. What specific changes or challenges do you expect from the European Green Deal?

6. New Roles and Skills

- a. Which new roles or responsibilities do you think might emerge for public procurement professionals in response to the European Green Deal? And how do you think these new roles differ from the current procurement roles?
- b. What specific skills do you believe will be necessary for public procurement professionals to deal with the goals of the European Green Deal effectively? Are these new skills, or rather skills, now perceived as less important?
- c. Are there areas where you and your colleagues might need extra training to meet these new demands?

7. Stakeholders and barriers

- a. How do you currently interact with stakeholders in the procurement processes, and do you expect this to change in response to the European Green Deal?
- b. What do you think are or will be the main barriers to implementing sustainable procurement practices concerning the European Green Deal?

8. Conclusion

- a. How do you think the profession of public procurement will develop? This answer can be outside the scope of the European Green Deal.
- b. Is there anything you would like to add?

Thank you very much for your time and insights.

8.2 Appendix B. Figure 2. Future Roles and Skills






FUTURE ROLES AND SKILLS FOR EXPERTS IN PUBLIC INNOVATION PROCUREMENT		
	<p>Change Agent, Is responsible for fostering awareness and promoting sustainable practices within the procurement process. This role involves recognizing and analyzing resistance to change and developing solutions that are workable and supported by stakeholders.</p>	
	<p>Internal connector, acts as an intrapreneurial broker, facilitating cross-functional and cross-departmental collaboration within the organization. This role is crucial for strategic involvement and addressing issues that impact the organization internally.</p>	
	<p>Future important skillset The essential skills for public innovation procurement experts, especially for the new roles, are listed here in alphabetical order: Ability to learn, creativity, communication, courage, curiosity, empathy, networking, patience, persistence, persuasiveness, sensitivity, and strategic thinking.</p>	

Figure 2. Future Roles and Skills