

Clustering in defence-related procurement, the case of a Belgian naval construction cluster

Peeters, C. - University of Antwerp. Department of Transport and Regional Economics. ⁱ

Pilon, R. - Policy Research Corporation.

Abstract: This paper examines the importance of closer co-operation in defence-related procurement. Led by the decision that Belgium will lead the procurement of 12 Mine CounterMeasures Vessels (MCMV), the case of a potential Belgian naval construction cluster is discussed. The feasibility of a potential cluster is investigated by looking at key elements of a successful naval construction cluster, the Dutch naval construction cluster, and comparing those key elements to the current Belgian situation. Forming a sustainable Belgian naval construction cluster will be difficult. Most of the procurement process of the MCMVs is set on a European tender. In the long run, due to the absence of both a launching customer and leader firms, no party is able to carry the cluster with investments and knowledge spill-overs. In order to keep public support for large defence-related investments, clustering around the MCMV integration system and proactive cluster support is recommended.

Keywords: naval construction, cluster, Belgium, defence industry, public policy, triple helix

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Introduction

Porter made the initial contribution to the theory of clustering. In his definition he described a cluster as a “geographically proximate group of interconnected companies and associated institutions in a particular field.”¹ The main reasons for cluster formation are possible knowledge spill-overs, a joint labour pool and the proximity of both suppliers and customers.² The particular field of clustering this research will focus on is naval construction. Although the literature specifically on clusters in the naval construction industry is rather limited, the literature on clustering in the maritime industry in general is more comprehensive. Literature on the added value of clustering in maritime industries underlines the above mentioned reasons for clustering, while it adds significant economies of scale and development of both leader firms and coordinating institutions.³ Many, mainly European, countries carry out the concept of maritime clustering, such as Norway, Japan, Great Britain and The Netherlands.⁴

ⁱ Corresponding author: chris.peeters@uantwerpen.be

One of the more successful naval construction clusters can be found in The Netherlands. The strength of the Dutch naval construction cluster (NCC) is that it is successful in organising close co-operation within the cluster amongst the Dutch government, industry and knowledge-institutes. The regular term for such a model is the triple helix model, as proposed by Etzkowitz and Leyersdorff.⁵ Due to this co-operative relationship, the Royal Netherlands Navy can procure high-end products at relatively low cost, while the industry has been (and still is) able to take innovative steps forward.

In 2016 the Dutch and Belgian Ministries of Defence (MoD) signed a letter of intent for the co-purchase of four M-frigates and twelve Mine CounterMeasures Vessels (MCMVs). The letter of intent states that The Netherlands will lead the procurement of the M-frigates, whilst Belgium will be responsible for the procurement of the MCMVs. The budget for both the frigates and MCMVs is around €4 billion.⁶ The Dutch and Belgian navies cooperate intensively. Right after World War II both navies signed a treaty (BeNeSam) where simple collaboration was discussed. The level of collaboration increased every decade. As of now, the two navies are practically merged. Both navies are under the commandment of an Admiral Benelux, which is the Commander of the Royal Netherlands Navy. When it comes to the investment amount and the deployment of the navy into conflict zones, both parliaments decide for their own navy. Virtually all other decision are made as a joint organization. This entails education, procurement, logistics and maintenance.

In procuring defence-related material, roughly two methods of procurement can be identified: an open European tender or taking the lead in developing material. In the procurement of maritime-related material, the Dutch MoD traditionally takes the lead in developing material as their standard method of procurement, provided that the appropriate level of knowledge to lead the development is present in the Dutch naval construction cluster (NCC). Thus, the Dutch MoD is able to choose this method of procurement because the Dutch NCC is in place. Note that taking the lead in developing material does not mean that 100% of the ship is produced within the domestic cluster. For example, in developing the Joint logistic Support Ship (JSS) Zr. Ms. Karel Doorman, 76% of the total investment was spend in The Netherlands.⁷ The essence is to be actively involved in the development process of material.

Belgium has a history in developing defence-related material, especially MCMVs for the Belgian Navy. However, in the procurement of material (ships) for the Belgian Navy, the Belgian MoD has not been taking the lead in developing material for the last sixteen years.⁸ This is reasonable, since Belgium does not have a cluster dynamic in the naval construction sector as can be seen in The Netherlands.

This paper will look into the feasibility of setting up a Belgian naval construction cluster for the procurement of the 12 MCMVs. The procurement of the 12 MCMVs will act as starting point, but the focus will be on the feasibility of a sustainable cluster over the long run. Thus, this paper will focus on the procurement of 12 MCMVs as a catalysing role for a sustainable Belgian NCC. The

aim of this paper is not to explain how a Belgian naval construction cluster can be formed (e.g. procedure- or structure-wise), but rather to investigate the feasibility of forming a Belgian NCC.

Due to the shared procurement of material and the fact that the Dutch were successful in forming a sustainable cluster, the Dutch NCC will be used as benchmark. Therefore, the focus will be on the Dutch NCC first. The goal of this first part is to identify the conditions of the Dutch NCC. The second part focusses on a potential Belgian NCC. More specifically, on the current gap towards a successful Belgian NCC.

The Dutch naval construction cluster

The description of the Dutch NCC relies heavily on previous research by Policy Research Corporation (PRC). Mainly a report on the Dutch NCC specifically, a report that aims to describe the outline, state and value of both the Dutch marine and Dutch NCC.⁹ Plus, a series of PRC reports on the state of the Dutch maritime sector.¹⁰

General description of the Dutch naval construction cluster

The Dutch NCC consists of three equal players: the government (Royal Netherlands Navy to be more precise), knowledge-institutes and industry. The strength of the Dutch NCC is the sustainable co-operation and alignment amongst the three players. The Netherlands takes the lead in developing material rather than an open European tendering process, thereby making use of the Dutch NCC, through the use of exemption articles¹¹ of the EU Directive (2009/81/EC) on defence and sensitive security procurement. These exemption articles are meant to secure essential security interests. Plus, to encourage co-operation amongst EU member states. More specifically, the European Commission actively supports collaborative defence-programmes (procurement and operation) in order to build a strong European defence industry. For instance, exemption article 13(c) of the just mentioned guideline can be used when at least two EU member states collaborate in an R&D programme. That way, in awarding a defence-related contract, a specific market (i.e. Dutch or French) or even a specific company can be chosen. Thus, using the exemption articles is not merely out of protectionism; undermining the open European 'level playing field', but the main reason is cost-effectiveness due to European collaboration. Logically, the European Commission is vigilant on the use of the exemption articles for protectionist reasons, undermining the European level playing field. The Netherlands not only aim for European co-operation in procurement of material, The Netherlands aim for European co-operation in operations as well. In understanding the difference between taking the lead in developing material by making use of a cluster and making use of a European tender it is important to note that both methods are not opposites but gradations. In other words, when the Dutch make use of their cluster, not 100% of the investment ends up with Dutch companies. The Dutch NCC does not produce the entire project in The Netherlands. For example, in recent years

the hull of the ships were built at foreign shipyards. Vice versa, in the case of a European tender, countries still manage to involve their native businesses in the process. It is a matter of gradation. Taking the lead in developing material enables a country to keep a higher percentage of the investment in their own cluster.¹²

The Royal Netherlands Navy is a catalyst of the Dutch NCC by being a launching customer – or role model customer. As a versatile ‘leader firm’, the Royal Netherlands Navy contributes heavily to the innovative capacity of the Dutch NCC, both through investments and knowledge spillovers. Furthermore, the Royal Netherlands Navy enhanced the demand for the Dutch NCC as a whole, through their material procurement and by stimulating export. A questionnaire taken by the Dutch defence-related industry concluded that the Dutch Ministry of Defence (MoD) was the most important customer of the Dutch defence-related industry.¹³ The Royal Netherlands Navy stimulates exports for the Dutch NCC by proving that products of the Dutch NCC work. Naturally, by having a successful example, the export potential of those products increases. In a 2012 study on the costs to, and benefits of, the Dutch military, *The Hague* Centre for Strategic Studies (HCSS) stressed the importance of the Royal Netherlands Navy for its exports potential as well. HCSS states first of all that “a structural relationship between MoD, R&D and industry crucially contributes to the competitiveness of the defence-industry”.¹⁴ Moreover, the report concluded that the Royal Netherlands Navy acting as launching customer is determinative in order to get exports to a profitable level. Kulkarni endorses this claim as well, by describing the pivotal role a launching customer has in the export of a naval construction cluster in general.¹⁵

Not only the industry benefits from a launching customer, the Royal Netherlands Navy benefits itself threefold, as well. Firstly, through better quality products. Off-the-shelf products are less compatible with the requirements of the Royal Netherlands Navy compared to customized products, a problem that arose in Great Britain as well.¹⁶ Secondly, through better adaptivity of the most latest technology. Material procurement processes in defence industry are generally complicated, long procedures and filled with red tape. The Royal Netherlands Navy can lead the design process and thereby forces the Dutch NCC to meet the required technology level. This way, end-products have more recent technology incorporated in them when compared to a more traditional European tendering process. Thirdly, through a better value for money due to the fact that the Royal Netherlands Navy can carry part of the project risk, thereby lowering the production cost for the industry. Because there is in-house knowledge, the Royal Netherlands Navy is able to do that without being reckless.

The Dutch NCC has an entire knowledge infrastructure. The knowledge institutes play a crucial role in this knowledge infrastructure by making sure that the knowledge level is proficient for producing naval ships. Some of the most influential knowledge-institutes in the Dutch NCC are TNO and MARIN.

The industrial players within the Dutch NCC are generally companies that carry a long tradition in naval construction. Damen, Thales NL and RH Marine¹⁷ are rather well-known examples of leader firms within the Dutch NCC. Furthermore, important factors in streamlining the relations

amongst the three players are the multiple cluster organisations.¹⁸ Cluster organisations within the Dutch NCC are networks of businesses, governments and knowledge-institutes working on stimulating, organising and realising more business activity within the sector.

This close co-operation amongst the three players of the Dutch NCC has led to significant economic activity. As of 2015, the turnover of the Dutch NCC is around €3 billion, of which nearly €1 billion is related to military use and more than €2 billion is related to civil use. Military use entails both domestic (Royal Netherlands Navy) and foreign demand. The relative share of domestic and foreign demand is changing rapidly. In 2000, 70% of the Dutch NCC's incoming orders were domestic. In 2015, 78% of incoming orders originated from foreign defence-related customers. The explanation is twofold. Firstly, investments by the Royal Netherlands Navy have been stagnating. However, the Royal Netherlands Navy remains an important institute. In 2016, the Royal Netherlands Navy employed 11.000 people and had a total expenditure figure around €1.3 billion. Secondly, foreign defence-related demand increased (mainly) due to the Dutch NCC. As mentioned before, by having the Royal Netherlands Navy proving that products of the Dutch NCC work, the export potential of those products increase.

Through *dual use*, the usage of products meant for military applications for a civilian purpose or vice versa, the Dutch NCC is able to land added value in civil sectors. The share of civil production value in the total production value has been increasing this decade. The diversification in shifting to the civil market helps in stabilizing the Dutch NCC.

All the above mentioned value the Dutch NCC generates is direct value. Furthermore, because of production and procurement in The Netherlands, the Dutch NCC generates indirect value as well. Examples are the return of added value to the state treasury through taxes and additional employment opportunities in the periphery of the Dutch NCC (e.g. advisory, administrative services and legal services).

Key elements of the Dutch naval construction cluster

When looking at the feasibility of a Belgian naval construction cluster, the lessons from the Dutch NCC are there to be learned. Therefore, when identifying conditions of a potential Belgian naval construction cluster, the conditions of a successful Dutch NCC have to be recognized first.

The cornerstone of the Dutch NCC is the Royal Netherlands Navy playing the role of launching customer. In order to pick up the role of launching customer, *in-house knowledge* is a key capability of the Royal Netherlands Navy. To be more specific, in-house knowledge is needed for the Royal Netherlands Navy to be able to formulate their own needs. By being able to formulate their needs, the Royal Netherlands Navy can lead the design process and thereby initiating innovative processes. The PRC report states that "realistic needs from the Ministry of Defence should form the basis for the naval construction ecosystem. This way the ecosystem, based on a trustworthy relationship between Royal Netherlands Navy, knowledge-institutes and industry,

can result in greater effectiveness with a smaller investment by the Ministry of Defence".¹⁹ The PRC report states furthermore that knowledge on both the process and content of the design process is required when formulating needs.

Furthermore, in order for the Dutch NCC to be sustainable, a role as launching customer in the long run has to be secured through *continuous investments*. Discontinuity in investments can cause relatively high maintenance costs, disruption in the cluster's supply chain and, foremost, loss of knowledge through human capital flight. Although the report does not provide any further explication of the term 'discontinuity', it stresses the importance of timely investments to avoid a loss of knowledge.

As mentioned before, the Royal Netherlands Navy possesses an adequate level of knowledge to be able to lead the design process. This condition assumes another condition of a successful cluster: in the Dutch NCC, both industry and knowledge-institutes, the *level of knowledge* of the domestic industrial players is high enough to meet the criteria set by the Royal Netherlands Navy. Arguments for this reasoning can be intuitive. Knowledge is required in order to perform complex development processes and deliver high-end products. When developing high-end products, knowledge within solely the Royal Netherlands Navy is not sufficient. Without an adequate knowledge-level in the Dutch NCC, the Royal Netherlands Navy will still be able to lead the design process, however, the Dutch NCC will not be able to deliver the requested high-end products.

An *appropriate culture* is another condition of the Dutch NCC. Especially trustworthy relations and the opportunity of mutual consultation are deemed essential elements of the required culture. This argumentation can be backed intuitively again. The fact that co-operation in a knowledge-intensive environment, amongst public- and private actors, producing high-end products with military precision needs an appropriate culture is clear. The importance of trust for cluster performance is underlined by other research as well.²⁰ The just described culture of the Dutch NCC needs optimisation however. The PRC report recommends governmental renewal to further facilitate structural, trustworthy relations with the opportunity of open deliberation between the players within the Dutch NCC.

There are multiple *leader firms* present in the Dutch NCC. The PRC report states that "these companies have the ability and incentive to invest in the cluster, due to their size, market position, knowledge and entrepreneurship, with positive spin-offs for other companies within the cluster as a result".²¹ This definition is close to a consensus on leader firms in the existing literature. Nijdam and De Langen define leader firms as firms in a cluster that have the ability and incentive to make investments with positive externalities for the cluster as a whole, due to their size, market position and knowledge.²² Lorenzoni and Baden-Fuller add that leader firms have the ability to steer change.²³ Thus, leader firms are able to preserve the Dutch NCC by their investments, especially in times when there are no investments from the launching customer. Many theories exist on what it is those investments accomplish, but three main lines can be identified.²⁴ Leader firms carry a cluster through their investments by:

- Encouraging innovation
- Enabling internationalization
- Enhancing labour pool quality

The Belgian gap

First, the just mentioned conditions of a successful naval construction cluster will be applied to the Belgian situation. To be more precise, the gap between the conditions and the current Belgian situation will be identified. In the second paragraph, four further difficulties obstructing the road towards a successful Belgian NCC are identified. The identified gap and further difficulties are based on interviews with stakeholders of a potential Belgian NCC.

Conditions

Although it has been roughly sixteen years since the Belgian Navy developed part of its own material, this does not mean all *in-house knowledge* has fled the Belgian Navy. Fundamental technical knowledge is ever present. Furthermore, the knowledge to work on a project basis is sufficient too. Focusing on the MCMV project, in-house knowledge on countering mines is present since the Belgian-Dutch Navy is one of Europe's leading experts in countering mines. To illustrate, Eguermin, a mine-countering school under Belgian-Dutch control based in Oostende, is a NATO Centre of Excellence on countering mines.²⁵ Both for the MCMVs as in general, the Belgian Navy is able to formulate its needs on a technical and technological level.

However, experience is a crucial part of knowledge that has been lost in the years of not developing material in-house. Practically all personnel with the experience of working together with the Belgian industry are not working at the Belgian Navy anymore. The Belgian Navy and Belgian industry do work together, but on relatively fundamental research. This co-operation does not entail an industrial channel, which is a crucial part in developing material. Thus, the Belgian Navy has sufficient knowledge on the content, but lacks knowledge on the process. Because of the lack of experience, the Belgian Navy does not feel competent enough to guarantee working material. The fact that the Belgian Navy does not feel competent enough is the dominant thought especially within the Belgian MoD and Ministry of Economic Affairs (MEA).

In-house knowledge is a stretchable concept. In-house knowledge can entail co-operation with the Royal Netherlands Navy or hiring external partners. Both options will fill the gap that the lack of experience created. The option of external help is currently pushed aside by the Belgian MoD. No longer developing own material is a strategic choice from the Belgian MoD. More on the current MoD-strategy can be found in the next paragraph.

Continuity in investments seems to be secured due to three reasons. Firstly, due to the strategic vision released in 2016 by the Belgian Minister of Defence Steven Vandeput. This strategic vision outlines the strategy of the Belgian MoD up to 2030. The strategic vision is not solely an advisory document, the main investments until 2030 have been secured by law.²⁶ The main investments cannot be undone easily by future administrations. It is not so much the strategic vision itself that secures future investments, but the transparency it brings. Future funds for defence-related investments are labelled and openly accessible to the public. Future administrations can hardly use the argumentation that there are no available funds or that it will use the available funds on other domains, since the strategic vision secured the available funds for defence-related investments. This way, pressure from the Belgian- and international defence community would be hard to counter. Secondly, public opinion on defence-related investments has changed over the last decade. Geopolitical threats and terrorism have caused a shift in the public opinion in such a way that the support for defence-related investments increased. Besides geopolitical threats, the 'Trump-effect' can be identified. Nations can no longer cut their defence-related investments to the bone without being called out. 'Naming and shaming' of forsaking countries proves to be an effective tool. Thirdly, with the introduction of the new strategic vision, the R&D budget of the MoD has been increased significantly. Multiple R&D projects have already started due to the strategic vision. These (and future) projects are generally long-term oriented. Therefore, these projects cannot be stopped right away. Only when all previous R&D investments in a particular project are discharged as sunk costs, politically a tough decision, can an R&D project be stopped at short notice.

Looking specifically at the MCMV project, continuity of investment becomes even more likely. When looking at previous investments of the Belgian MoD, countering mines is the most constant factor. Out of all the areas of the Belgian MoD that need investments, mine countermeasures are the most likely candidate for continuous investments.

The current *level of knowledge* within the cluster is not sufficient to take the lead in developing an MCMV within a Belgian NCC. Whether or not the level of knowledge is sufficient to take the lead in developing other vessels in the future, highly depends on the complexity of the vessels to be build. Frigates will be too complex for the current level of knowledge, small patrol vessels will be in reach of the current level of knowledge. In general, the complexity of the majority of vessels used by the Belgian Navy is too high to be developed within a Belgian NCC based on the current level of knowledge. Main contractors capable of such development projects are not to be found within the Belgian industrial landscape. Although the engineering knowledge and capacity is present, Belgian industrial players lack the production knowledge, capacity and experience. Especially when aiming for a lean production process. The Belgian industry acknowledges the current lack of knowledge to take the lead in the development process, but sees an opportunity to create some sort of centre of excellence. The industry hopes to take advantage of the import of knowledge through knowledge spill-overs, thereby acquiring the needed capabilities in order to reach a sufficient level of knowledge for future development projects.

Looking more specifically into the MCMVs, they can be roughly split into the hull and the systems on which the MCMV operates.²⁷ The hull cannot currently be produced in Belgium. Large shipyards are no longer present. Although a revival of large shipyards is theoretically possible, due to fierce European competition and the fact that a business case of 12 MCMVs is way too small for a sustainable revival, the production of the hull in Belgium seems to be history. There is a strong agreement within both industry and government that the construction of the hull in Belgium would not be beneficial. Regarding the systems, some niches are present in Belgium, but the knowledge to develop entire systems is lacking. Although the current knowledge level is not sufficient to produce the hull and entire MCMV systems, Belgian industry is competitive in some niches of the MCMV production. This entails both high-tech niches (e.g. sensors) and non-high-tech niches (e.g. fire extinguishers).

A niche that deserves special attention is the development of the integration system of the MCMV. The MoD leans towards a so called 'plug & play' integration system. This 'plug & play' integration system is meant to avoid major components being outdated shortly after the delivery of the MCMVs. With a 'plug & play' integration system, outdated components can be unplugged from the integration system, whilst new, updated components can be plugged in. Logically, this requires an integration system that has the capability of replacing major components. Currently, the MoD is convinced that no Belgian system developer can guarantee a working integration system. There is no sign that the knowledge level of large, international system developers, which can guarantee a working integration system, is available in Belgium. The MoD sees the capability to develop integration systems as a strategic asset and, therefore, hopes that Belgian industry acquires the ability to develop integration systems in the near future. Hence, the MoD intends to buy the first integration system (version 1.0) from one of the large, international system developers, with the hope of developing the updated integration system (version 2.0) within a Belgian cluster. Note that the emphasis is on *hope*. In order for Belgian industrial players to be able to develop an integration system, a knowledge spill-over from large, international system developers is required. Whether or not the home-countries of those large, international system developers will allow a knowledge spill-over taking place is dubious. The ability to develop integration systems is scarce and strategically important to such an extent, that the likeliness of countries sharing that ability is rather vague.

Opinions on whether or not the *appropriate culture* for a Belgian NCC is present differ greatly. The bottom line of these different opinions is that a culture as can be seen in the Dutch NCC, is not present in the relationship between the Belgian industry and MoD, but that culture is currently not an obstacle towards a Belgian NCC. Communication between industry and MoD in The Netherlands is more open than the communication between their Belgian counterparts. For Belgian governmental agencies, contact with the defence-industry is still surrounded by an aura of discomfort. This is reflected in, amongst others, the Flemish guideline 'Van Den Brande'.²⁸ Be that as it may, culture is not a reason for the Belgian government to avoid cluster formation. In the case of the MCMVs, the Belgian MoD recognises some points of improvement, but believes

that once the contracts are awarded, these points of improvement will be sorted out shortly thereafter.

Currently, there are no *leader firms* present that have the ability to carry a potential cluster. No industrial players within the Belgian naval construction landscape have the size, and accordingly the financial power, to carry a cluster. In response to the planned construction of the MCMVs, some consortia of Belgian industrial players are forming. However, even those consortia miss the financial impact to be able to play the role of leader firm.

There is the possibility of large industrial players of 'neighbouring' sectors, industrial players that do have the ability carrying a cluster, diversifying into the naval construction cluster. Potential leader firms from 'neighbouring' sectors that come to mind are shipping companies or system manufacturers. Be that as it may, diversifying would require heavy investments, while the return on these investments would be long-term oriented. Therefore, it is not likely that shipping companies or system manufacturers are diversifying into the naval construction sector.

Further difficulties

Firstly, the gap towards a Belgian NCC is widened by the fact that the Belgian MoD does not want to develop their own material. Besides the fact that the MoD does not believe the appropriate level of in-house knowledge within the Belgian Navy is present, it is their strategy to no longer develop material. The Belgian MoD does not want to carry the risk of large material procurement projects anymore. Their strategy entails slimming the MoD organisation to mainly operational staff. Supporting staff will always be needed, but the MoD strategy aims to keep this to a minimum. This means that all non-operational parts of the organization will be disposed as much as possible, including the part responsible for developing material. Consequently, no longer wanting to develop material means that the Belgian MoD does not want to act as launching customer. The reason the Belgian MoD chose for this strategy is the hesitant nature of the MoD regarding economic influences. Multiple previous MoD projects²⁹, which were awarded to Belgian industrial parties for economic reasons, costed more in comparison to an open tender, while the end result was of far less quality than promised.

This strategy is effective immediately, thus, the Belgian MoD already³⁰ has a clear view on the method of procurement for the 12 MCMVs. Although the bi-national agreement on the procurement of both the M-frigates and MCMVs with The Netherlands is not official yet, the Belgian MoD is convinced of its strategy to make use of a European tender. Taking the lead in the development of the MCMVs is not a serious option anymore. The MoD is convinced the current timeline to the proposed delivery date is too short to guarantee producing operational material. The selection process for finding the main- and subcontractor(s) has already been started.

A second gap towards a successful Belgian NCC is the fact that the Belgian MoD mainly aims to procure material that is operational immediately after delivery. This leads to the Belgian MoD only buying proven technology: proven in either a military or civil setting.

Furthermore, a third aspect that hinders a successful Belgian NCC is a legal aspect. The Belgian government fears being corrected by the Council of State, the highest general administrative court. Belgian industrial players have a history in bringing governmental decisions regarding defence-material procurement before the Council of State to check the legitimacy of the decision. In order to avoid being corrected and having a major set-back in the procurement process, the Belgian MoD treats the European regulatory guidelines rather conservatively in the procurement procedure.

A fourth difficulty is the relationship between the Belgian MoD and Belgian MEA. Most funding for industry and innovation is not a federal responsibility, but is in the hands of the regions; the Flemish-, Brussels-Capital- and Walloon governments. Logically, the regions will use their funds to support their own region. This makes a contribution of the MEA in supporting cluster formation more complicated and full of red tape. Moreover, the Flemish government is somewhat restricted in supporting defence-related projects by the aforementioned guideline Van Den Brande. This guideline has been used to make sure that no Flemish funds are being used to support defence-related activities. However, the current interpretation of the guideline Van Den Brande is rather strict. The call for a looser interpretation of the guideline is getting stronger. Advocates of a looser interpretation suggest that the scope of the guideline is the manufacturing of weapons, all dual use projects (i.e. systems, sensors, visualization tools) fall outside of the restrictions. Another reason for the call for a looser interpretation getting louder is the fact that the current interpretation prohibits Flanders from significant European funding for defence-related innovation projects. As of now, the loosening of the interpretation of the guideline Van Den Brande is being discussed within the Flemish government.

Conclusion

After the feasibility of the MCMV-project kick-starting a Belgian NCC is concluded, the feasibility of a Belgian NCC in the long run will be discussed.

MCMV

As mentioned before, the Belgian MoD is already set on making use of a European tender in the procurement of the 12 MCMVs. Choosing a European tender as method of procurement does not exclude the formation of a cluster, since it still brings economic activity to the Belgian naval construction sector. Roughly speaking, Belgian companies can be involved in the production of the MCMV in two ways. Firstly, through deeming a niche as an Essential Security Interest (ESI). ESI is meant for strategically important niches, that countries require to be developed

domestically or even by a specific producer. By deeming a niche an ESI, it is possible for the Belgian MoD to make sure that particular niche is developed by a Belgian company. Secondly, through the competitiveness of Belgian companies. Thus, Belgian companies being awarded a particular contract since the company is competitive on a European level. The total amount of the MCMV investment ending up at Belgian companies, the economic return on investment through both ESI and competitiveness, is on average estimated to be around 30%. The Belgian MoD is convinced this 30% only covers the initial return. When keeping life-cycle costs in mind, looking at the long term, this amount will increase to an estimated 70%. Other parties within the Belgian naval construction sector disagree. Either way, the initial 30% economic return is not widespread enough to build a full-fledged Belgian NCC around. 30% economic return means Belgian economic activity in niches, not Belgian economic activity in the majority of the production of the MCMVs. Since the MCMV-project only generates economic activity in niches, the procurement of 12 MCMVs kick-starting the formation of a sustainable Belgian NCC will not happen.

Although the formation of a Belgian NCC for the majority of the MCMV-project will not happen, clustering in certain niches of the MCMV-project is still possible. Because the selection process has just started, it is rather unclear what combination of companies will be awarded certain parts of the contract. Therefore, it is too early to name specific niches where clustering is possible. After awarding the contract, the niches with significant Belgian presence will be visible. Forming a cluster around those niches could be of added value. However, not all niches are large enough to form a cluster around. Some of the MCMV-niches are rather small, at least too small for a cluster to be of added value. The aforementioned integration system is an exception. The knowledge to develop the integration system is deemed by the MoD as an ESI, thereby securing that the integration system will be developed by a Belgian company if possible. Plus, it is a relatively valuable part of the MCMV. The development of a 2.0 version of the integration system by Belgian industrial players is not evident. The ability of developing an integration system is scarce and deemed as strategically important. Other countries might not easily be willing to share this ability. Even though this makes the road towards a potential cluster around the integration system not without difficulties, it is important that government, industry and knowledge-institutes all recognize the opportunity of a potentially valuable 'integration system cluster'.

Long term

Thus, the MCMV-project kick-starting a sustainable Belgian NCC is not feasible. Be that as it may, looking beyond the MCMV-project, is a sustainable Belgian NCC feasible in the long term?

The crucial role the Royal Netherlands Navy plays as launching customer in the Dutch NCC was described at the beginning of this report. As launching customer, the Royal Netherlands Navy impacts the innovative capacity and export value of the Dutch NCC significantly. The Belgian Navy picking up the role as a launching customer in the near future is not likely happening. Firstly,

because of the strategy of the Belgian MoD. The MoD does not want to carry the risk of large material procurement projects anymore. The MoD wants to work towards the situation where all personnel, besides the necessary supporting staff, is operational. Secondly, the MoD only buys proven technology. This is a radically different approach compared to the Dutch. The Royal Netherlands Navy, as a showcase for the Dutch NCC, does not reflect the relation between the Belgian Navy and the Belgian NCC, since the Belgian NCC has to 'prove' their products elsewhere first.

Secondly, because of the lack of in-house knowledge. Although the Belgian Navy has sufficient knowledge in project management and technical fundamentals to formulate their needs on both a technological and a technical level, the experience lacks to lead large development projects. The Belgian MoD is convinced that the Belgian Navy lacks the in-house knowledge to lead a development project, especially when thinking of the MoD's demand of operational material instantly after delivery. Thus, in order to acquire the sufficient level of knowledge, in-house knowledge has to be bought. Either by paying learning costs or by hiring external partners. Due to the just mentioned strategy, buying in-house knowledge is not seriously being considered by the MoD.

Besides the fact that the Belgian MoD is not likely to act as launching customer, no leader firms are present. No industrial players within the Belgian naval construction landscape have the size, and according financial power, to carry a cluster. There is no indication that a leader firm that can carry a potential Belgian NCC will arise in the near future.

Consequently, without the Belgian Navy acting as launching customer and leader firms being present, no one can carry the cluster through investments and/or knowledge spill-overs. Currently, the Belgian NCC is competitive in specific niches on a global scale, but the knowledge level of the industry is not sufficient to be competitive on a whole range of naval construction activities (e.g. developing entire naval systems). In order to become a full-fledged naval construction cluster, investments and knowledge spill-overs are needed. Without a launching customer or leader firms, investments and knowledge spill-overs taking place that are big enough to spark innovation and added value is not a realistic scenario. Therefore, a sustainable Belgian NCC without a launching customer or leader firms is not feasible.

Recommendations

In order to develop a successful naval construction cluster a change of attitude is needed within the Belgian cluster. This entails the government, specifically the MoD, but the industry and the knowledge institutes have their roles to play even so. It will take courage, vision and knowledge to set up a Belgian NCC. These are vital ingredients of a sustainable naval construction cluster. They are not separate pillars, but are inextricably connected to each other. The described further difficulties are complex issues, which are not solved by merely money or time. It will take a deliberate choice for a daring long term vision, based on an appropriate level of knowledge, to

overcome the aforementioned structural challenges. For instance, it will take more in-house knowledge to guide the Belgian MoD through the legal side of taking the lead in developing material. Currently, the Belgian cluster, government plus industry, does not have the appropriate level of knowledge to do so. Therefore, the most secure path is that of a European tender.

The lack of vision and courage and the choice for security is a common thread in the current procurement process. Since public money is at stake, this is somewhat understandable. Be that as it may, the value of economic return should not be underestimated. Logically, the essence of material procurement is to acquire material that responds to operational needs, but in order to keep public support for large defence-related investments in the long run, being able to present an economic return is vital. By excluding the option of taking the lead in development and only considering European tenders in the procurement of material, the Belgian MoD is threatening this public support. We believe that the current MoD strategy still lacks an elaborate focus on co-operation with industry and the knowledge sector. A renewed, closer co-operative relationship between government and industry is necessary in focussing on European co-operation foremost, without losing focus on economic return and the subsequent public support.

We believe that cluster formation is the most effective tool to shape this closer co-operation. In order to achieve cluster formation, we suggest a change in policy towards a more proactive role of both government and industry when it comes to the formation of clusters. A facilitating role is needed to optimize the alignment of needs and requirements amongst government, industry and knowledge-institutes within the naval construction sector. In proactively facilitating closer co-operation, the merit of hiring outside help should not be underestimated. Hiring outside help ensures having partners *in the field*, actively steering towards cluster formation. The main tasks of the outside help are twofold: mediate amongst the three players of the cluster (e.g. on opportunities, needs or legislation) and consultation in applying for EU funds. Potential candidates for this task are either trade associations within the defence industry (e.g. *Belgian Security & Defence Industry* - BSDI) or independent organisations (cluster organisations or consultancy firms). Especially an independent organisation, like *Cluster for Innovation in Defense, Safety and Security* (CIDSS), could take the lead in renewing the relationship between industry and MoD. Both BSDI and CIDSS are looking forward playing a bigger role in the support of cluster formation in defence industry. Note that a trade association and an independent organisation are not mutually exclusive, both could do work complementary to one another. Furthermore, the support for the formation of clusters should be more process-based support. More process-based support will bring more structure in the support of cluster formation, by focusing on the long term rather than merely short term results and by increasing the transparency of the cluster formation support (e.g. added value of using cluster formation support, division of roles, points of contact). Although the change of policy does not instantly solve the absence of a launching customer and leader firms, it does work on gradually building up a Belgian NCC by supporting the formation of clusters in niches where it is possible. After all, as mentioned in the introduction, cluster formation increases the development of leader firms. The development of the integration system is an excellent opportunity to initiate the proposed changes in policy. Lastly, one of the

most important issues of the procurement of defence-related material is European co-operation. European co-operation is an outstanding opportunity in increasing the value for money in defence-related procurement, maintenance as well as operations, and should therefore be the central theme in procurement.

Interviews

G. Heeren – *Head Aeronautics, Space, Security & Defence Industries* at Agoria

E. Sleenckx – *Advisor Economy and Innovation* at cabinet of Flemish Minister of Work, Economy, Innovation and Sport Philippe Muyters

H. Mahieu – *Director International Relations, Economic Policy and Public Enterprises* at cabinet of Deputy Prime Minister and Minister of Economy, Employment and Consumer Affairs Kris Peeters

K. Depreytere – *Management Director* at Cluster for Innovation in Defense, Safety and Security (CIDSS)

A. Quevrin – *President* at Belgian Security & Defence Industry (BSDI) / *Chief Executive Officer* at Thales Belgium

P. Van Gysegghem – *Director Legal Affairs (defence)* at cabinet of Minister of Defence, in charge of Civil Service Steven Vandepuut

Notes

¹ M. Porter, 'Clusters and the new economics of competition'. *Harvard Business Review* 76, No. 6 (1998): 78

² See e.g. A. Marshall, *Principles of economics: unabridged eighth edition*. (Cosimo Inc, 2009); P. Krugman, *Geography and trade*. (MIT Press, 1993)

³ K. Knarvik, F. Steen, 'Self-reinforcing Agglomerations? An Empirical Industry Study'. *The Scandinavian Journal of Economics* 101, No. 4 (1999): 515-532; N. Wijnolst, J. Jenssen, S. Sjødal, *European maritime clusters*. (Foundation Dutch Maritime Network, 2003); M. Shinohara, 'Maritime cluster of Japan: implications for the cluster formation policies'. *Maritime Policy & Management* 37, No. 4 (2010): 377-399.

⁴ G. Benito, E. Berger, M. De la Forest, J. Shum, 'A cluster analysis of the maritime sector in Norway'. *International Journal of Transport Management* 1 No. 4, (2003): 203-215; M. Shinohara, 'Maritime cluster of Japan'; M. Brownrigg, 'The United Kingdom's maritime cluster', in *Dynamic European Maritime Clusters*, (IOS Press, 2006): 93-103; P.D. Langen, 'Clustering and

performance: the case of maritime clustering in The Netherlands'. *Maritime Policy & Management*, 29(3) (2002): 209-221.

⁵ Etzkowitz, H., Leydesdorff, L. 'The Triple Helix: University - Industry - Government Relations: A Laboratory for Knowledge-Based Economic Development'. *EASST Review* 14 (1995): 14-19

⁶ Rozendaal, E.J. 'Damen grijpt naast order van 2 miljard voor mijnenjagers'. *PZC.nl*. March 15, 2019, <https://www.pzc.nl/walcheren/damen-grijpt-naast-order-van-2-miljard-voor-mijnenjagers~a8624b33/?referrer=https://www.google.com/>

⁷ 16% in Romania, 8% in Italy, France and Norway combined. Vries, J.G. De. 'Project joint logistiek ondersteuningsschip (JSS), resultaten gecombineerde voorstudie-, studie- en verwervingsvoorbereidingsfase'. Letter to House of Representatives. November 3, 2009. <https://www.parlementairemonitor.nl/9353000/1/j9vvij5epmj1ey0/vi8idk1g7rym>

⁸ The last class of ships that was taken into service in which Belgium took the lead in development was the Tripartite-class MCMVs. This class was taken in service in the 1985 - 1991 period. Be that as it may, the most recent project in which Belgium took the lead in development was the KMV-class MCMVs. This project was in the midst of development when the project got cancelled in 2002 due to funding issues. Although this class was never taken into service, it is the most recent project in which Belgium took the lead in development. Since 2002, the Belgian Navy procured two patrol boats in which a European tender was used as method of procurement.

⁹ C. Peeters, *De Marine en de Marinebouw Cluster: Een ecosysteem onder druk*. (Nederland Maritiem Land, 2017).

¹⁰ M. van den Bossche, P. Van Donselaar, H. Van Haselen, R. Piers, M. Van der Poel, *De Nederlandse maritieme dienstverlening: economische betekenis en structuur*. (Delft University Press, 1999); M. van den Bossche, P. Van Donselaar, H. Van Haselen, R. Piers, *De Nederlandse visserijsector: economische betekenis en structuur*. (Delft University Press, 1999); M. van den Bossche, P. Van Donselaar, H. Van Haselen, R. Piers, *De Nederlandse watersportindustrie: Economische betekenis en structuur*. (Delft University Press, 1999); C. Peeters, S. Bruynseels, J. Colpaert, A. Lefever, *Het maritieme clustermodel: modellering en scenarioanalyse*. (Delft University Press, 1999); C. Peeters, F. Hendrickx, H. Kneepkens, S. Bruynseels, *De Nederlandse zeehavensector: economische betekenis en structuur*. (Delft University Press, 1999); C. Peeters, A. Lefever, J. Van der Linden, S. Bruynseels, H. Webers, *De Nederlandse maritieme cluster: economische betekenis en structuur*. (Delft University Press, 1999); C. Peeters, A. Lefever, A. Soete, P. Vandendriessche, H. Webers, *De Nederlandse Maritieme Cluster: Literatuuronderzoek en plan van aanpak economische impact studies*. (Delft University Press, 1997); C. Peeters, J. Nietvelt, S. Bruynseels, M. Pouwe, A. Lefever, *De Nederlandse waterbouwsector: economische betekenis en structuur*. (Delft University Press, 1999); C. Peeters, P. Vandendriessche, H. Webers, R. Van der Aa, P. Donker van Heel, V. Van Polanen Petel, H. Otten, *De maritieme arbeidsmarkt: vraag en aanbod van zeevaartkennis*. (Delft University Press, 1997); C. Peeters, H.

Webers, J. van der Beek, A. Lefever, *De Nederlandse offshoresector: economische betekenis en structuur*. (Delft University Press, 1998); C. Peeters, H. Webers, E. Pernot, V. Donink, *De Nederlandsche maritieme cluster: monitor 2010: economie internationalisatie, arbeidsmarkt, innovatie*. (Nederland Maritiem Land, 2010); C. Peeters, H. Webers, M. Pouwe, *De Nederlandse maritieme toeleveranciers: economische betekenis en structuur*. (Delft University Press, 1996); C. Peeters, H. Webers, A. Lefever, J. Van der Linden, *De Nederlandse scheepsbouw-en toeleveringsindustrie: economische betekenis en structuur*. (Delft University Press, 1998); Y.M. Prince, A.P. Muizer, R. Braaksma, P. Van Eck van der Sluijs, J. De Jong, M. Overweel, W. Van der Valk, *De innovativiteit van de Nederlandse maritieme cluster*. (Delft University Press, 2000); G. Van Logtestijn, B. Swildens, R. Haanen, *Maritiem kapitaal forum: onderzoek naar de werking van de kapitaalmarkt in de sector van maritieme toeleveranciers*. (Delft University Press, 2000); Nederland Maritiem Land. *De Nederlandse Maritieme Cluster: Beleidsaanbevelingen*. (Delft University Press, 2000); E. Urbanus, B. Rubbens, *An International Shipping Company in the Netherlands: The Tax Perspective*. (Delft University Press, 2000); F. Waals, *Maritieme websites en e-business: een verkenning*. (Delft University Press, 2000); H. Webers, C. Corstiaensen, V. De Kerpel, C. Peeters, *De Nederlandse maritieme cluster: economische monitor 2006*. (Nederland Maritiem Land, 2006); H. Webers, S. Djohan, C. Van Hese, I. Thienpont, C. Peeters, *De Nederlandse maritieme cluster : monitor 2012*. (Nederland Maritiem Land, 2012); H. Webers, C. Peeters, *De Nederlandse maritieme cluster: monitor en dynamiek*. (Delft University Press, 2003); N. Wijnołst, *Dynamic European maritime clusters*. (IOS Press, 2006); N. Wijnołst, J. Jenssen, S. Sødal, *European maritime clusters*. (Foundation Dutch Maritime Network, 2003).

¹¹ For instance, Art. 13(c), Article 346 TFEU

¹² The knowledge value is often higher as well. Again, it is a matter of gradation. Taking the lead in developing material resorts in a higher knowledge value compared to making use of a European tender.

¹³ TRIARII. *Nederlandse Defensie- en Veiligheidsgerelateerde Industrie 2016*. (TRIARII, 2016)

¹⁴ Original citation: “Een structurele relatie tussen defensie, R&D en industrie draagt beslissend bij aan de competitieve kracht van de DGI.” F. Bekkers, M. Boer, J. Esch, R. Korteweg, J. Selleslaghs, P. Wijninga, *De waarde van defensie* (Hague Centre for Strategic Studies (HCSS), 2012): 63

¹⁵ P. Kulkarni, ‘Review of Global Naval Shipbuilding Trends and Lessons for Indian Shipbuilding Industry’. *Maritime Affairs: Journal of the National Maritime Foundation of India* 11 No. 1, (2015): 116-132.

¹⁶ Parker, J. ‘An Independent Report to inform the UK National Shipbuilding Strategy’. (London: Ministry of Defence, 2016).

¹⁷ Former Imtech Marine

¹⁸ The Hague Security Delta (HSD) and Dutch Institute for Technology, Safety & Security (DITSS) are two of the more well-known cluster organizations

¹⁹ Original citation: “Een realistische behoeftestelling vanuit Defensie moet de basis zijn van het marinebouw ecosysteem. Zo kan het ecosysteem, met vertrouwensrelaties tussen de Koninklijke Marine, de kennisinstellingen en de industrie, resulteren in grotere slagkracht met een kleinere investering vanuit Defensie.” C. Peeters, *De Marine en de Marinebouw Cluster*: 14.

²⁰ P. de Langen, ‘Clustering and performance’.

²¹ Original citation: “Deze bedrijven hebben door hun grootte, marktpositie, kennis en ondernemerschap het vermogen en de prikkel om investeringen te doen met positieve spin-offs voor andere bedrijven in de cluster.” C. Peeters, *De Marine en de Marinebouw Cluster*: 44.

²² M. Nijdam, P. de Langen, ‘Leader firms in the Dutch maritime cluster’. Presented at: *European Congress of the Regional Science Association–ERSA*, (2003).

²³ G. Lorenzoni, C. Baden-Fuller, ‘Creating a Strategic Center to Manage a Web of Partners’. *California Management Review* 37, No. 3 (1995): 147

²⁴ M. Nijdam, P. de Langen, ‘Leader firms in the Dutch maritime cluster’; G. Lorenzoni, C. Baden-Fuller, ‘Creating a Strategic Center’.

²⁵ Eguermin divided its practices in 2015 into the ‘NATO Naval Mine Warfare Centre of Excellence’ and the ‘Nederlands-Belgische mijnenbestrijdingsschool’

²⁶ Belgian Ministry of Defence, *De Strategische Visie Voor Defensie* (Brussel: Belgian Ministry of Defence, 2016): 12.

²⁷ This statement is not without flaws. However, for the sake of simplicity, this rough split is maintained.

²⁸ The guideline states that no governmental funds can be used to support defence-related projects. A more specific description follows in the following paragraph.

²⁹ Across the Belgian MoD, not only within the Belgian Navy.

³⁰ As of February 2018.