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Interregional Industrial Disaster Abatement in the Netherlands: the Need for Public-Private Partnerships

Nils Rosmuller[a,*], Philip Stohr[b], Kees Kappetijn[b] and Regis Flohr[c]

[a]Institute for Safety (IFV), Kemperbergerweg 783, Arnhem, The Netherlands
[b]Kappetijn Safety Specialists, Einsteinstraat 16G, Dordrecht, The Netherlands
[c] Safety Region Haaglanden, Dedemsvaartweg 1 , Den Haag, The Netherlands
nils.rosmuller@ifv.nl

In the Netherlands, petrochemical and other chemical industries in the Seveso categories, nuclear facilities, container terminals and marshalling yards may be obliged to have a company-owned firefighting unit. These specialised units prepare to deal with the risk profile and likely incident scenarios of the company. The minimum requirements regarding vehicles, equipment and personnel are prescribed by the local safety authorities.
The capacities of these industrial units might also be useful for assisting with industrial incidents outside their own site, and even outside their own region. However, so far, no arrangements have been made for this private firefighting capacity to provide interregional assistance. The Netherlands Fire Service and industrial companies have therefore joined forces to develop a set of arrangements.
To this end, the literature regarding public-private partnerships (PPPs) was examined. The goal was to identify organisational constructs and do's and don'ts. Secondly, the thirteen existing regional PPPs in the Netherlands, as well as 4 international PPP constructs were analysed. Thirdly, interviews were taken with the main spokespeople of the Netherlands Fire Service and the private companies, as well as some relevant advisory bodies, to discover their wishes and constraints.
These three research activities provided us with the elements to fuel a lively discussion between the Netherlands Fire Service and the industry. The discussions concerned the routing of the request for involving the private partners, liability and responsibility issues, who is in charge, and the roles of the various response teams and of course, financial issues as well.
The results of the discussion formed the basis for an interregional public-private partnership for industrial incidents that is currently being implemented in the Netherlands.

1. Introduction

Under Dutch legislation, Safety Regions have the opportunity to appoint industrial companies, under predetermined conditions, to maintain a corporate fire brigade (Dutch Safety Regions Act, article 31). These specialist units prepare to deal with the risk profile and likely incident scenarios of the company; the minimum numbers of vehicles, equipment and personnel, and response times are laid down by the Safety Regions. Having an appointed corporate fire brigade on site requires considerable efforts by companies. For this reason, in areas with a high concentration of industrial companies, collaborative efforts are often formed to share the valuable resources needed to run an industrial fire service. These kinds of initiatives are called 'Mutual Aid'.
To take the next step towards the optimization of resources, public organisations can get involved in a Mutual Aid initiative. These public-private partnerships provide firefighting for both industrial sites and public areas. PPP can be defined as 'a sustainable collaboration between public and private stakeholders to develop mutual products/services and share risks, costs and benefits' (Klijn and Teisman, 2000). On a regional scale, there are several examples of such public-private partnerships that have been operating successfully for years in the Netherlands. A few more public-private partnerships are currently in the development phase.

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On an interregional scale, the use of public-private partnerships is less common. Interregional PPPs must be seen as a chance to take the next step in the optimisation of resources. For example, the emergency response capabilities for very specific scenarios like large scale tank and bund fires can be organised more efficiently through PPP. Luckily, these scenarios are very rare. However, if they appear, very specific resources, such as equipment, training and knowledge, are needed. The characteristics of these types of scenarios make it very practicable to use of PPP on an interregional scale.
This paper presents a summary of the current state of the development of emergency response PPPs. The paper also examines the issues that public entities and the industry might face in relation to the topic of an interregional emergency response PPP. To close the gap between the issues and the achievable benefits, guidelines for public-private disaster abatement partnerships are described.

2. State of the art PPP

The introduction made clear the difference between Mutual Aid and PPP. Public and industrial stakeholders collaborating in a PPP may have partly opposing interests. For this reason, it is important to take note of the success factors of earlier PPPs in order to make this kind of collaboration successful. The following factors have been identified to be important for the success of an emergency response PPP (Center for Defense and Homeland Security, 2014 and Hueskens et.al., 2016):

a) There must be a clearly defined goal and the route towards the achievement of this goal also needs to be clear. This allows potential stakeholders to know exactly what the commitment is that is being asked of them. It also helps to avoid any unpleasant surprises in a later phase in the project.
b) There must be a clear framework of financial and organisational boundaries. Participating stakeholders need to give their word that they will collaborate in a PPP based on a number of certainties and well-calculated risks. This is necessary, for example, to convince internal board members and shareholders of the advantages of participating in the PPP.
c) The possible stakeholders need to be identified, but it is important to take into account that the group of stakeholders should not be too big in the starting phase of the PPP. A bargaining table with the key stakeholders and awareness of the total field of stakeholders gives the right balance between efficiency and support.
d) When the goal has been identified, a process starts to get more stakeholders on board. To do this successfully, it is necessary to be clear about the advantages of the PPP for public and industrial stakeholders, as well as for society. It is necessary to get to know each other, increase mutual trust, and be aware of the interests of the other stakeholders. Every stakeholder needs to have the feeling that they have the ability to be influential and contribute to the PPP. The involvement of an outside stakeholder that is perceived to be independent by the other stakeholders in the process can help to increase confidence and bring stakeholders together. In the current development of an emergency response PPP in the harbour area of Amsterdam (NL), the Port of Amsterdam, as the landlord, is filling this role very successfully. Aside from the fact that the human factor is really important, the basis of the PPP has to be the agreement so as to make sure that stakeholders stay on board even though stakeholder representatives may change.
e) To maintain a PPP, it is important to have realistic goals laid down in policy. Working groups are set up to achieve the pre-set goals. The working groups have appointed leaders who will take care of external communications and the achievement of goals. The regulation of meetings is crucial to maintain the support of all stakeholders for the PPP.

The success factors pointed out above make visible that the ‘soft’ factors of collaboration are crucial to the success of a PPP. Apart from financial, organisational and legal issues, behaviour, high-quality relationships, involvement in the PPP and knowledge of the interests and preferences of other stakeholders play a main role. Stakeholders should know and recognise each other’s interests: companies aim for compliance and individual cost reductions, the authorities for controlling the costs and for a well-organised cluster of companies and authorities in the region. The main ports aim for economic development and activities. Knowing such interests and respecting them is crucial.
The Netherlands has thirteen examples of collaborations that can be labelled as PPP in the field of emergency response on a local scale (Flohr and Rosmuller, 2018). An analysis of these thirteen examples suggests three main variations of organisational models.

- Model 1 is the establishment of a separate legal entity that delivers emergency response services in the name of, or to, the involved public and private stakeholders. The Unified Fire and Rescue Serves in the Rotterdam harbour area (NL) is an outstanding example of this variation. This separate legal

entity is responsible for the performance of both the municipal emergency response and the industrial emergency response in the Rotterdam harbour area.

- A public stakeholder takes a leading role in model 2. Besides being responsible for municipal emergency response, the public stakeholder takes care of the execution of industrial emergency response. An agreement is signed between the stakeholders involved to define 'the rules of the game'. This model is used in the industrial harbour area of Moerdijk (NL). Here a large group of industrial stakeholders has set up a cooperative platform that has signed an agreement with the safety region 'Midden-West-Brabant'. Besides the municipal emergency response, the safety region also delivers industrial firefighting.
- Model 3 is exactly the other way around. A large industrial stakeholder in the area takes care of the execution of both industrial and municipal emergency response within a certain area. Like in variation 2, the stakeholders sign an agreement to define topics such as the deliverables, quality and funding. This model is used in an area close to the town of Petten (NL). There is an agreement with a nuclear facility to formalise the fact that the corporate fire brigade will take care of municipal firefighting on site.

In all these models, it is possible to outsource the actual performance of the emergency response to a specialised service provider. This is how it is done in the areas of Kijfhoek (large marshalling yard in The Netherlands) and Delfzijl (industrial area with many petrochemical and other chemical companies in the Netherlands).
In addition to the successful regional examples mentioned above, there is an increasing demand in the Netherlands to also start interregional collaboration in the field of emergency response. This type of collaboration makes it possible to deliver appropriate and high-quality emergency response for very specific incident scenarios, e.g. scenario types that are rare, but can have very significant negative impacts.
In the process of developing an interregional PPP initiative, several issues appeared on both the industrial stakeholders and the public stakeholders sides. The remainder of this paper address these issues and the formulated solutions/guidelines to deal with them.

3. Some issues

We interviewed ten key persons in the Netherlands: three from corporate fire brigades, four from the public fire brigades, and three specialists in industrial firefighting. We interviewed them to explicate their desirable outcome on relevant PPP aspects. For the interviews, we used a pre-developed list of interview items.
Despite the fact that several regional PPP constructs operate successfully, several specific interregional issues occurred during the interviews. These issues need to be solved to develop and implement the intended interregional PPP for industrial accidents. An issue is a topic where public and corporate fire brigades have different desires. We, ourselves, elaborated the issues and developed several options to resolve the issues. The table below presents gives an overview of the preparatory work for the discussion: the issues, the dilemmas, and the options to resolve the issues.

Table 1: overview issues, dilemmas and options to solve the issues (continue)

#	Issue	Dilemma	Option A	Option B
1.	Alerting	Interregional assistance can be requested in several ways	1. Safety region A asks safety region B which subsequently asks the corporate fire brigade in safety region B 2. Safety region A directly asks the corporate fire brigade in safety region B 3. Safety region A contacts the interregional public back office which subsequently asks the corporate fire brigade	
2.	Remaining capacity: a) Does the company still fulfil permit requirements when	a) Assistance outside the region causes a deficit in respect to the permit.	a) Accept the capacity shortage for the short term, knowing that additional capacity is being organised and factoring in the negligible probability of similar accidents in the other region.	a) Do not accept. First organise sufficient capacity in own region, before leaving the region.

	assisting elsewhere in the country?	b) Assistance outside the region causes a problem in respect to business continuity	b) Make agreements about when capacity shortages are acceptable and how this shortage is managed	b) Do not accept shortages
	b) Business continuity of industrial processes			
3.	Command and control	Request for specific knowledge and equipment, but who is responsible	Safety region is in charge	Specialist private partners are in charge
4.	Responsibility	Is the (public) safety region responsible for the personnel and equipment of corporate companies?	Safety region is responsible unless there are clear omissions	Each employer is responsible for their own personnel and equipment
5.	Financial compensation for private party	Assistance costs money: who will pay for the assistance and to what extent?	Compensate all costs, such as man hours, equipment and consumed resources	Only compensate hardware use and consumed resources (like firefighting foam)
6.	Professionality/quality of personnel	Quality of third-party personnel may be guaranteed in several ways	Trust the corporate party and its quality	Develop education and training programmes
7.	Management organisation	Several ways exist to organise the management of the cooperation	One of the participating stakeholders is also the management organisation A separate organisation is appointed to manage the cooperation No management at all: it is an ad hoc cooperation	

4. Guidelines for public-private disaster abatement partnerships in the Netherlands

These issues, and the options to resolve them, were discussed with the steering group (public and corporate fire brigades in the Netherlands regarding PPP). We facilitated the discussion between the two directors of the corporate fire brigades, the two directors of the public fire brigades, and the director of the IFV. The discussions were animated and, in the end, clear solutions were formulated regarding each of the issues. Some of the solutions are beyond the options we prepared and came from the participants themselves. The solutions per issue are presented below.

The next step is to organise and implement the interregional industrial PPP, and to implement the solutions described above. Several existing national and international structures could be useful. Examples are the ICE organisation of the European Chemical Industries that supplies emergency capacities throughout Europe in case of a chemical (transportation) accident, or the Industrial Incident Management Platform (PII) in the Netherlands which unites Dutch public and corporate fire brigades in order to suppress large industrial accidents. Rather than developing entirely new structures and organisations for the interregional industrial PPP, connecting to such existing structures seems wise. Hence, there would only be a need to develop the interregional specialities, on a low-profile basis.

Table 2: Issues and solutions

#	Issue	Solution
1.	Alerting	A national back office of the public fire brigades regarding hazardous materials incident management will be asked for assistance in organising the corporate fire brigade capacity. Likewise, the industry works with a national back office that can be contacted for assistance.
2.	Remaining capacity:	
	• Does the company still fulfil permit requirements when assisting elsewhere in the country?	• Private companies will make clear capacity agreements with regional authorities. The agreements are 'facts of life' for the public fire brigades. Therefore, corporate fire brigades have the obligation to do their best, hence no results commitment
	• Business continuity of industrial processes	• Business continuity is a private-to-private matter
3.	Command and control	The law is leading: the public fire brigade is in charge.
4.	Responsibility	The law is leading: the public fire brigade is responsible for all personnel and equipment.
5.	Financial compensation for private party	Agreements are made before providing assistance. Corporate equipment used, resources and man hours are compensated. Safety regions have well-organised regular capacity
6.	Professionality/quality of personnel	The professionality of corporate fire brigades is guaranteed by the fact that they are under the legal regime of article 31 (Dutch Safety Regions Act) which describes the required capacity, knowledge and equipment as well as the inspections and quality control
7.	Management organisation	This will be organised by the national back offices for hazardous materials incident management of the Dutch public fire brigades.

5. Conclusions

The analysis of the success factors for regional emergency response PPP shows that, apart from financial, organisational and legal issues, behaviour, high-quality relationships, involvement in the PPP, and a knowledge of the interests and preferences of other stakeholders play a main role. For the interregional industrial PPP, the same pattern is visible. Key players need to understand the contents and even more importantly, should trust each other. Trust and knowledge are the fundamentals of the interregional industrial incident management disaster guidelines that were developed. In addition, several other aspects contributed to this successful end result, i.e. knowing the facts, such as the success factors of the regional PPPs, the costs of several interregional incident management efforts, and of course, knowing the PPP literature. In addition, involving the directors , and having the time to explore in 'peace' and to properly prepare for the discussions was essential. Finally, the role of an independent facilitator may have contributed to the success as well.

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