Focusing events as catalyst: Changes in external safety policy around fireworks storage and the transport of hazardous substances by rail.

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Abstract

This thesis aims to examine how differences in the development of Dutch external safety policy concerning the transport of hazardous materials by rail and the storage of consumer fireworks can be explained through focusing events, in general and in both policy domains. Using the concept of focusing events, the study analyses how major incidents, such as fireworks disasters and railway accidents, have shaped external safety policy.

To achieve this, the research will employ a comparative case study approach, analysing policy developments in both sectors through document analysis. The study will address three key research questions: (1) What major events have occurred in these policy domains, and which can be classified as focusing events? (2) How has external safety legislation, particularly regarding risk management, evolved in general and specifically for hazardous materials transport and fireworks storage? (3) To what extent can differences and similarities in policy development be explained through the focusing events framework? By combining theoretical insights with empirical data, this thesis aims to contribute to a better understanding of the role of crises in shaping safety regulations.

1. INTRODUCTION

The Enschede fireworks disaster in 2000 is a classic example of a focusing event. This disaster, in which a storage facility for consumer fireworks exploded, led to far-reaching policy changes on fireworks storage and safety in the Netherlands (Torenvlied et al., 2023). A recent investigation into the fireworks disaster led to renewed attention to the topic of fireworks safety regulations, both in society and in the Dutch parliament. Although the Netherlands has introduced strict regulations regarding the storage of fireworks, significant risks remain around storage, especially when these fireworks are stored in densely populated areas (Torenvlied et al., 2023). The explosion in Enschede, along with an earlier incident in Culemborg in 1991, demonstrates the potential risks of accidents involving the storage of fireworks. Although these accidents are rare, they have shown how devastating a fireworks explosion can be for the surrounding community, resulting in injuries and extensive property damage.

Despite the severity of these events and tightened external safety policy following the Enschede fireworks disaster, there has remained a debate whether current regulations are sufficient to mitigate the risks of fireworks storage of consumer fireworks, especially in or near densely populated residential areas.

This fireworks disaster in Enschede is an example of a focusing event. A focusing event is a sudden, shocking event that attracts the attention of policymakers and the public, which can trigger a policy change. Birkland (1998) defines a focusing event as an unusual and damaging event that exposes the risk of a larger incident. Such events may prompt policymakers to introduce new rules and regulations or tighten existing ones.

The absence of a focusing event does not necessarily imply that no policy change occurs. Policy change can also be driven by incremental policy adjustments, international pressure, or technological developments. However, Birkland's work emphasises that "focusing events" often play a key role in policy change by drawing attention to problems and mobilising policy communities. If no focusing event takes place, the process of policy change is often slower and less natural. Birkland suggests that policy change depends on several factors, such as the composition of policy communities and the nature of the problems to be addressed (Birkland, 1998).

Apart from the fireworks sector, there are several other industries involved in the transport and storage of hazardous materials. This occupation has direct consequences for people and the environment, or in other words external safety. Therefore, storage and transport of hazardous substances are often subject to strict external safety policies (IPLO, n.d.).

A policy area that has similarities with the fireworks sector is policy area around the transport of hazardous substances by rail. While not identical, the risks in this policy area bear some resemblance to those observed in the context of fireworks storage. Both policy areas are characterised by the storage

and transport of potentially explosive or harmful substances in or near densely populated areas. In both cases, the probability of an incident is small, but the consequences of an incident can be exceptionally large. Yet no disaster on a comparable scale has yet occurred in the Netherlands around the transport of hazardous substances by rail.

This raises the question of whether, and to what extent, policy change takes place despite the absence of a focusing event. Possible differences in external safety policy of the two policy areas may raise questions about the role of a focusing event on policy change.

This thesis is concerned with the abovementioned policy areas, both of which have social impact for several reasons. First, fireworks, an entertainment product with a turnover of €100 million a year and strong cultural value (ANP, 2023). Second, the transport of hazardous materials by rail, which is of critical social importance for other reasons. Among others, because of the large and future-proof role it currently has within the transport sector (Romijn et al., 2024). Besides societal value, the type of risk is also similar between the two industries. For both, there is a small chance of an incident, but an incident has a substantial impact. Also, the risk of an incident is concentrated in densely populated areas, namely along railways, or in storage facilities in residential areas.

Besides direct policy responses to disasters, Policy changes can also occur through incremental policy adjustments, international regulation, or technological developments. In the Netherlands, for example, external safety policy has evolved through the introduction of the *Basisnet*, a designated rail network for the transport of hazardous substances. This policy is not a direct result of a specific disaster but rather stems from broader policy goals and risk analyses (ILT, 2021). This shows that policy change is not always dependent on a focusing event but can be driven by ongoing assessments and policy processes as well.

Nevertheless, the question remains to what extent focusing events play a decisive role in policy change compared to incremental processes. Birkland (1998) argues that focusing events accelerate policy change by focusing the attention of the public and policymakers on a specific problem, leading to faster decision-making and more far-reaching policy adjustments. The differences between fireworks policy and rail hazardous materials policy can possibly be explained by the presence or absence of such events.

Furthermore, it is interesting to see how Birkland's (1998) focusing events theory holds up when applied to two similar cases within the Dutch safety context. While widely accepted and extensively used, the theory has limitations, particularly when applied to evolving crises instead of sudden shocks. As the theory is originally developed to explain how unexpected, harmful, and attention-grabbing events like natural disasters prompt shifts in the policy agenda, the theory places heavy emphasis on bounded events that generate concentrated media and political attention. However, DeLeo et al. (2021) argue that the theory struggles to account for crises that unfold over time, where no single focusing event exists but instead a slow accumulation of indicators or a series of smaller incidents gradually raises awareness.

Therefore, this thesis examines to what extent these differences in policy development can be understood from the focusing events theory using specific focusing events (cases) in both policy areas and hereby assessing the focusing event theory as an explanation of the role of these events in policy change.

1.1 Research questions

For this study, the main question is as follows:

How can the difference in the development of Dutch external safety policy between the transport of hazardous substances by rail and the storage of consumer fireworks be explained through the occurrence or non-occurrence of focusing events in both policy areas?

1.1.1 Sub question:

1. What 'focusing events' took place within the policy areas of:
    a. The transport of hazardous materials by rail?
    b. The storage of consumer fireworks in residential areas?
2. How has external safety policy - more specifically on dealing with risks - developed in general and regarding:
    a. The transport of hazardous materials by rail?
    b. The storage of consumer fireworks in residential areas?
3. To what extent can differences and similarities in the development of external safety policy in the two policy areas be explained from the theory of focusing events?

1.2 Scientific and societal relevance

Scientifically, this research applies Birkland's in the context of external safety policy change in the Netherlands, specifically focusing on the transport of hazardous substances by rail and the storage of consumer fireworks. As this has not been done before for these policy areas, this research offers new insights into how policy change could be explained in these contexts, and how differences between these areas could be explained. This is especially interesting as both policy areas fall within the same, broader context of Dutch safety policy.

From a societal perspective, this thesis contributes to a more nuanced discussion on the external safety policy of hazardous substances. Understanding focusing events can contribute to faster and more effective policy change to prevent or better learn from disasters and incidents. This ultimately contributes to safer practices and can save lives eventually.

1.3 Overview thesis

In the second chapter the theory of focusing events and other relevant theories will be discussed. Chapter three will explain the methodological approach. The sub question regarding the development of both policy areas and external safety in general in the Netherlands will be discussed in chapter four and serves

as background information for chapter five, in which the focusing events and the following measures in both policy areas will be discussed,. Finally, chapter six provides a conclusion and discussion for this thesis.

2. THEORETICAL FRAMEWORK

The previous chapter introduced the research proposal. In this theoretical framework, key concepts are further shaped based on literature.

2.1 External safety

In the report '*Leren van Twee Vuurwerkrampen'* (Torenvlied, et al., 2023), external safety is defined as:

'The combination of the probability of an accident and the effect of this accident on people and the environment outside the premises (risk) due to storage, production and transport of hazardous substances.'

This definition highlights that external safety is strongly intertwined with spatial planning. For example, when it comes to the distance between high-risk activities and residential areas. This strongly influences the level of external safety. In the Netherlands, external safety policy comprises a comprehensive system of technical and legal frameworks, aimed at preventing, limiting, and controlling incidents involving hazardous substances. For example, companies working with these substances are often required to conduct risk analyses that identify hazards, upon which preventive measures can be taken.

2.1.1 Regulation regarding external safety

Dutch laws and regulations, including the Decree on activities in the living environment, the Environmental Management Act, and the Transport of Dangerous Goods Act, form the legal framework for general external safety. These laws and directives include regulations and guidelines for all kinds of topics related to external safety. For example, these regulations can address topics such as licensing, risk assessment and crisis management as well as the provision of information to residents. In addition, many different specific laws and decrees apply to each topic. Through these frameworks, the government, among others, tries to guarantee a high level of safety and limit the social impact of incidents involving hazardous substances (RIVM, n.d.). a more conclusive overview of regulation regarding external safety in both policy areas will be discussed in chapter four.

2.2 Focusing Events

This thesis revolves around focusing events. According to Birkland (1998), Focusing events play a crucial role in explaining the formation of policy changes. Birkland (1998) writes in his journal article Focusing Events, Mobilisation, and Agenda Setting that disasters, crises and other high-profile events can suddenly draw attention to a specific problem. He defines Focusing events as: "Sudden and unusual events that are damaging or reveal the likelihood of a larger incident, which are widely perceived or recognised and that often have a clear link to an existing policy problem." (Birkland, 1987). The definition he uses is also adopted in this study. These events function as catalysts that focus the attention of policymakers, stakeholders, and the public on specific policy areas.

According to Birkland (1997, 1998), focusing events have the following main characteristics: first, a focusing event is an unexpected and harmful event. It is often catastrophic and causes significant harm, such as a natural disaster, an industrial disaster, or a terrorist attack. Second, a focusing event often gets attention from policymakers and the public The event immediately attracts the attention of both policymakers and the general public, creating increased awareness about a specific risk or problem. Finally, a focusing event creates opportunities for policy change. Focusing events open a 'window of opportunity' for policy change by forcing policymakers to reconsider existing regulations and practices, often under pressure from societal and political reactions. And while according to Birkland, focusing events influence policy change as well as agenda-setting, the focus of this thesis will be on policy change.

2.2.1. Dimensions of Focusing Events

Birkland describes several dimensions that are essential to understand and categorise focusing events. These dimensions determine the impact and effectiveness of a focusing event on the policy process. The most important dimensions are:

- **Impact:** The degree to which a focusing event causes direct physical, social or economic harm. The greater the impact, the more attention the event receives from policymakers and the public.
- **Unexpectedness:** Focusing events are often characterised by their sudden and unpredictable nature. This unexpected nature ensures that they disrupt normal operations and raise urgent policy questions.
- **Public recognition:** The extent to which the public recognises an event as a problem requiring policy action. Media coverage plays a crucial role here, as framing the event influences perception and prioritisation by policymakers.
- **Policy domain:** This dimension refers to the specific area of policy the event affects. Focusing events typically highlight a gap or flaw in a particular policy domain, prompting policymakers to reconsider existing policies or to create new ones in response to the event.

By analysing these dimensions, it is possible to determine why some focusing events lead to policy change, while others do not. Birkland stresses that the framing of an event by media and stakeholders, is as important as the objective characteristics of the event.

2.2.2. Mechanisms of influence

Birkland identifies several mechanisms by which focusing events trigger policy change. The mechanisms that are relevant for this thesis are discussed in this paragraph.

First, Birkland (2006) indicates in his book that focusing events can influence the political agenda. They raise the **visibility** of issues that might have been ignored before. Media coverage is a crucial factor

here, as it helps legitimise the urgency of the problem. Focusing events not only get an issue onto the agenda but also make room for new policy options within the policy process.

Stakeholders can use focusing events as a strategic tool to generate political and **public support**. According to Birkland, focusing events are powerful mobilisation moments because they enable policy coalitions to use momentum to promote their positions and solutions. In Focusing Events, Mobilisation, and Agenda Setting (1998), Birkland describes how, for example, policy coalitions strategically frame events to persuade policymakers and win public support.

Furthermore, focusing events generate **pressure on policymakers** to act quickly, especially when there are human casualties or significant economic consequences. This pressure is amplified when policymakers anticipate public and political repercussions of inaction (Birkland, 1998).

Finally, focusing events create window of **opportunity for policy entrepreneurs** to advance solutions. When public and political attention intensifies, entrepreneurs can strategically couple the event with proposals that may have been previously ignored. This allows them to frame the event as evidence of a policy failure. According to Birkland (1998), successful entrepreneurs are often those who already have policy alternatives prepared and can act quickly before attention fades.

Mechanisms	**Explanation**
Visibility	Media coverage and political attention after a focusing event increase public and policymaker awareness of previously latent or low-salience issues.
Public support	A focusing event can galvanize public concern and increase support for policy change by making risks and vulnerabilities more tangible..
Pressure on policymakers	Heightened visibility and public concern generate political pressure, making it more difficult for policymakers to ignore or delay action.
Opportunity for policy entrepreneurs	The increased attention creates a policy window that enables entrepreneurs to couple solutions to the problem and advocate for change.

Table 1 Mechanisms of focusing events

In table 1 the relevant mechanisms of focusing events are shown. In chapter 5, these mechanisms will be explained in the context of the discussed focusing events.

2.2.3 Focusing events and the Multiple Streams Framework

Birkland places focusing events within Kingdon's (1984) Multiple Streams Framework, which explains how policy change occurs through the convergence of three independent streams: the problem stream, the policy stream, and the political stream. The problem stream consists of issues that gain attention due to indicators, crises, or focusing events. The policy stream includes ideas and solutions developed by experts and interest groups, while the political stream encompasses public mood, political alignments, and the agendas of key decision-makers. A policy window opens when these three streams align, creating a rare opportunity for significant policy change.

A focusing event can function as a catalyst for this convergence. It highlights the urgency of a problem (problem stream), increases the legitimacy of specific policy proposals (policy stream), and generates political momentum (political stream), making policymakers more likely to act (Kingdon, 1984).

However, the mere opening of a policy window does not guarantee that change will occur. Whether a window is successfully used for policy change depends on several contingent factors. Most crucially, policy entrepreneurs must be present. Individuals or groups willing to invest their resources to strategically couple the three streams. Additionally, policy proposals must already be available. The political environment must also be conducive: public sentiment, institutional agendas, and partisan alignments must support the proposed change. Importantly, policy windows are often brief, and failure to act swiftly can result in missed opportunities. Thus, while focusing events may open windows by elevating problems to the policy agenda, actual change depends on readiness, political feasibility, and entrepreneurial action (Kingdon, 2011).

2.2.4 Limits of effects of focus events

While focusing events can be powerful catalysts for policy change, Birkland (1997) stresses that they do not always lead to concrete policy changes. The effectiveness of a focusing event on influencing policy depends on several factors. First, the policy context plays a key role. In some cases, significant resistance to change already exists or consensus on the appropriate policy response is lacking. When stakeholders are divided on how to address a problem, this can reduce the likelihood of significant policy change. This means that *potential focusing events* that fit might fit the definition, do not have to lead to substantial changes (Birkland, 1997).

A second determining factor is framing. How a focusing event is framed by media and stakeholders largely influences the policy response. For example, if a disaster is presented as an inevitable natural disaster rather than the result of inadequate regulation, policymakers are less likely to implement new regulations. Framing can also influence the degree of urgency with which policymakers act and determine which policy solutions are considered legitimate.

Finally, the presence of 'policy entrepreneurs' is essential. These are individuals or groups who actively pursue policy change and use a focusing event to advance their policy agenda. Policy entrepreneurs play a crucial role in connecting a problem with viable policy solutions and, through lobbying, research, and strategic communication, can put pressure on policymakers to bring about change. But if no policy entrepreneur uses the focusing event to bring about policy change or if there is resistance to change, the policies will remain unchanged and the window of opportunity will change.

In summary, focusing events are an important mechanism within the policy process, but their impact is not automatic. The extent to which they lead to policy change is influenced by the policy context, the

way they are framed and the presence of policy entrepreneurs who use the momentum to effect policy change.

2.2.5 Conclusion

The concept of focusing events is an interesting framework to analyse the dynamics of policy change in Dutch external safety domains. By looking at events such as the fireworks disaster and incidents involving hazardous substances, it is possible to examine how policy change has taken place in these policy areas. In doing so, Birkland's theoretical model provides tools to understand the role of media coverage, policy coalitions and political pressure, as well as the constraints that can hinder policy change.

2.3 Policy learning without focusing events

While focusing events often catalyse policy changes by drawing public and political attention to specific issues (Birkland, 1997), policy evolution can also occur through slower, more incremental processes. According to the advocacy coalition framework proposed by Sabatier and Jenkins-Smith (1993), policy change is frequently the result of long-term interactions among coalitions of actors who share similar beliefs and work together to influence policy outcomes. These coalitions engage in ongoing learning, refining their strategies and adapting to new information as it becomes available. This process allows for a gradual alignment of beliefs and goals within and between coalitions, fostering policy shifts that may not be immediately visible but are nonetheless impactful. For example, shifts in environmental policies have often been driven by sustained advocacy from scientific communities and interest groups rather than singular catastrophic events, demonstrating that policy change can emerge from persistent efforts rather than acute crises.

Another important mechanism for policy learning and change without focusing events is outlined in Kingdon's (2014) multiple streams framework. This theory suggests that policy windows can open when the problem stream, policy stream, and politics stream align, creating opportunities for policy entrepreneurs to push for change. Importantly, this alignment does not necessarily require a dramatic event; instead, it can result from routine processes such as data collection, research findings, or expert reports that gradually build awareness and consensus around an issue. For instance, Weiss (1979) highlights the role of "enlightenment" functions of research, where evidence accumulates over time to shape policymakers' understanding of complex problems. In this context, policy change occurs as stakeholders become increasingly informed and motivated to act based on emerging knowledge, rather than reacting to a sudden crisis. This gradual accumulation of evidence and shifting perceptions can lead to policy adjustments that are more deliberate and thoughtful than those triggered by focusing events.

Finally, institutional routines and bureaucratic processes play a critical role in facilitating policy learning and change outside the context of focusing events. As noted by Lipsky (2010), street-level bureaucrats

and other frontline workers often adapt policies in response to practical challenges they encounter in their day-to-day operations. These adaptations, though small in scale, can accumulate over time and influence broader policy directions. Similarly, formal review processes, such as periodic evaluations or audits, provide structured opportunities for reflection and adjustment. Such mechanisms allow governments to refine policies in response to changing circumstances, ensuring that they remain relevant and effective. Furthermore, international norms and best practices can inspire domestic policy reforms without the need for a focusing event. For example, countries may adopt policies aligned with global standards or recommendations from international organizations like the World Health Organization (WHO) or the United Nations (UN) as part of their commitment to global cooperation. Thus, while focusing events undoubtedly accelerate policy change, the interplay of advocacy coalitions, evidence-based decision-making, and institutional routines demonstrates that meaningful policy evolution can—and often does—occur through quieter, more sustained processes.

2.4 Risk Governance & the precautionary principle

In the governance of external safety, especially when facing potential disasters, governments navigate complex trade-offs between economic benefits and societal protection. Risk governance refers to the processes through which governments, industries, and other stakeholders assess, manage, and communicate risks in highly uncertain environments (Renn, 2008). A key component of this process is the precautionary principle, which asserts that a lack of full scientific certainty should not delay preventive measures when there is a risk of serious or irreversible harm (Pluimers, et al, 2002). In practice, governments often face situations where low-probability but high-impact events, like industrial explosions or toxic releases, are foreseeable. Yet because of their perceived improbability, political and economic considerations sometimes outweigh precautionary actions, particularly when preventive measures are costly or disruptive (Hood, Rothstein, & Baldwin, 2002).

This balancing act reflects the inherent tension between risk toleration and risk aversion in public policy. While rational risk assessments attempt to quantify hazards and determine acceptable risk thresholds, societal perceptions and focusing events can abruptly shift these thresholds by bringing neglected risks into sharp public and political focus (Birkland, 1997). Consequently, disasters often function as catalysts for policy change, as they expose the shortcomings of previous governance strategies that underweighted precaution. Understanding how governments weigh these risks before and after focusing events is essential for analysing patterns of policy learning and change in external safety governance.

2.5 Conclusion

This theoretical framework has outlined how significant policy changes are often triggered by focusing events. Drawing on Birkland's theory and the Multiple Streams Framework, it is clear that such events can open policy windows, but their influence is highly contingent on media framing, the presence of policy entrepreneurs, and the political context. The framework shows that meaningful change is often

crisis-induced. This enables for a nuanced analysis of how and why policy evolved differently in the two external safety domains.

3. RESEARCH DESIGN AND METHODOLOGY

This chapter discussed how the research was designed and what methods were used to answer the research questions.

3.1 Comparative case study

For this research, a qualitative comparative case study was conducted between two cases (policy areas). The focus was on external safety policy around consumer fireworks storage and the transport of hazardous substances by rail. This thesis aimed to investigate whether and how focusing events were a prerequisite for policy change on the external safety policies of both topics and whether the developments in these policy areas aligned with the theory of Birkland. A comparative case study was chosen because it allowed for an in-depth exploration of similarities and differences between two specific policy domains, providing insights into the mechanisms and conditions that shaped policy change. This method was particularly suited for understanding complex, context-dependent developments across cases like those in this thesis.

3.2 Methodology

In this paragraph, the data collection methods will be discussed. Desk research and interviews and were conducted for this study.

3.2.1 Desk research

The primary source of information for this study was desk research. The focus was on collecting data on external safety policy around both topics over the past thirty years. This involved analysing news articles, policy documents from government agencies, and (inter)national laws and regulations. Documents that were analysed included, for example:

- The Dutch fireworks decree (*Het Vuurwerkbesluit*)
- The Dutch Living Environment Activities Decree (*Het Besluit activiteiten leefomgeving*)
- Regulation regarding ADR-classifications around rail transport.
- RID regulation around the transport of hazardous substances by rail.
- The Dutch act around transport of dangerous goods. (*De wet vervoer gevaarlijke stoffen*)

3.3 Operationalisation

This chapter further discusses the data collection methods and the analysis of variables for each sub-question. Furthermore, the validity and reliability of the study are discussed. Through both desk research and expert interviews, information was collected to answer the research questions.

3.3.1 Focusing events that influence external safety policy of both domains.

Mapping focusing events by policy area was the first step in this study. This was done by analysing news articles and policy documents to define what focusing events occurred within thirty years in the specified policy areas. Using these documents, the content, and the consequences regarding the focusing events were described. For this study, Birkland's (1997) definition, as mentioned in the theoretical framework, was used.

3.3.2 Development of the external safety policies of the two themes

The dependent variable in this study was the *development* of external safety policy in the transport of hazardous substances by rail and the storage of consumer fireworks. To understand how these regulations had developed, 'development' in this context was operationalized as any substantial change or evolution in the content & scope, stringency of the regulations and its enforcement over time. For example, in:

- **Content & scope:** Unpredicted events might have led policymakers to expand or specify the scope. Development may also have involved extending the regulations to cover new areas, such as additional hazardous materials, locations, or operational requirements.
- **Increasing or decreasing regulatory stringency**: Regulations may have become more or less restrictive over time, and this was assessed by examining changes in, for example: limits, safety protocols, or penalties/consequences.
- **Enforcement**: A change in the way enforcement of regulation was organized.

For example, one might observe whether the regulations have become more stringent by imposing tighter safety standards or introducing new measures for risk mitigation after significant incidents, or if they have loosened in response to industry demands or changing political priorities. On top of that, the timing of these regulation developments was also researched, so that possible relations between changes in regulation and focusing events could be found. The analysis focused on the main documents that influenced the external safety policies of both policy areas, including:

The Dutch Fireworks Decree (*Vuurwerkbesluit*), regulating fireworks storage and use.

- The Dutch Living Environment Activities Decree (*Besluit activiteiten leefomgeving*), governing hazardous substance storage and transport near residential areas.
- ADR classifications for road transport of hazardous substances.
- RID legislation on rail transport of hazardous substances.
- The Transport of Dangerous Goods Act (*Wet Vervoer gevaarlijke stoffen*), providing general regulations for the transport of hazardous goods.

It is important to note that this thesis did not focus on follow-up of investigations after incidents, but only regulatory development.

3.3.3 Explanation of differences in external safety policy by focusing events

The final and concluding sub-question of this study aimed to gain insight into the explanation of differences in the development of external safety policy areas due to the occurrence or non-occurrence of a focusing event. The information that was gathered through desk research underpinned an analysis that investigated how the occurrence or non-occurrence of focusing events contributed to the differences in external safety policy. This considered the changes that had taken place in policy. It then examined to what extent focusing events underlay these changes. This final sub-question also verified whether the theory of Birkland aligns with the role of these events in both policy areas. Desk research was used to distinguish causation from correlation regarding policy change after focusing events, by looking at whether there was explicitly referred to the focusing event in documentation about policy changes or if the policy change was recommended after the focusing event.

3.4 Validity and reliability

The validity and reliability of this study are important for the usefulness of the findings. To ensure reliability, data collection methods were conducted transparently and systematically. The sources from the desk research were carefully documented according to the APA-7 guideline, ensuring consistency and traceability of the data used.

In terms of validity, it was ensured that the data used were relevant to the research questions. Content validity was ensured by formulating clear, well-defined concepts that were closely related to the conceptualisation of the variables in the research questions.

However, the study has some limitations, for example the reliance on desk research, which could lead to gaps in the data due to the unavailability or incompleteness of public records, restricted access to some policy documents, or selective reporting in media sources. In line with that, there was a notable difference in data availability between the two policy domains. The fireworks domain, particularly the Enschede case, benefited from extensive public documentation, media reporting, and formal investigations. The rail domain, by contrast, was less well-documented and offered fewer publicly available data, especially about the follow-up after evaluation. This asymmetry in data richness may have affected the depth and balance of the comparative analysis, with more nuanced insights possible in the fireworks case than in the rail case.

Furthermore, this thesis only used publicly available documents. As a result, internal communications, draft policy proposals, or behind-the-scenes political negotiations that may have shaped the response to focusing events could not be included in the analysis. This limits construct validity, especially regarding political motivations and informal processes.

The findings from desk research are presented descriptively in Chapter 4, while Chapter 5 provides an interpretive analysis of the influence of focusing events based on both desk research.

4. DEVELOPMENT OF POLICY AND REGULATION IN THE TWO POLICY AREAS

This chapter answers the sub question:

How has external safety policy - more specifically on dealing with risks - developed in general and regarding both policy areas.

The current contextual background of both policy domains will be discussed, this is necessary to understand the context in which the focusing events occur. First will be looked at a general development of external safety policy, after which the policy area of storage of consumer fireworks in the Netherlands will be discussed. Following this, the policy area regarding the transport of hazardous substances will be explained. In both cases a distinction will be made between before and after the Environmental and Planning function as this act is made substantial changes to the organization of regulation in both policy areas. Finally, remaining challenges and ongoing discussion points will be discussed for both policy areas.

4.1 Development of general principles in Dutch external safety policy

How has external safety policy - more specifically on dealing with risks - developed in general?

Over the past three decades the Netherlands has strengthened its external safety framework, which is grounded in risk-based regulation. Since the end of 1980's the approach of the government approach emphasizes quantifying accident risks (through QRA, or *kwantitatieve risicoanalyse*). This sets quantifiable safety limits and ensures a minimum protection level for citizens. As one official review notes, since the 1980s this Dutch "classical risk approach" has focused on knowing, measuring, and calculating risks and on taking measures like setting standards to reduce the likelihood of a risk and/or the consequences (Rijksoverheid, 2018). This perspective was formally codified in the fourth National Environmental Policy Plan (*Nationaal Milieubeleidsplan*, specifically NMP4), which emphasized that external safety policy should guarantee a minimum protection level for citizens. It introduced quantitative norms such as the one-in-a-million fatality threshold for new development, thereby describing what risks are acceptable and legally anchoring an approach to managing risks that come from hazardous (transport) activities. This policy aimed not only to limit risks through spatial planning, but also to clarify responsibilities and increase transparency via national risk registration systems (VROM, 2001). Currently, national policy like the National Environmental Policy Plan has enshrined the goal that "citizens should not be exposed unnecessarily to the dangers of hazardous substances" in accidents (*Uitvoeringsbeleid externe veiligheid*, 2021). Complemented by industrial practices aligned with Dutch the tradition of a consensus-based (*polder*) governance, this has led to a safer practice.

This shift was enforced with the Bevi (*Besluit externe veiligheid inrichtingen*) of 2004, which implemented these NMP4 reforms. Bevi applies to many hazardous installations and aimed to provide the public a minimum protection level. The government explains that Bevi 'has, as elaboration of the NMP4 policy renewal (2001), the goal of offering citizens in their environment a minimum protection level against hazardous substances' (Kamerstuk 32 861, 2013). It does so by imposing quantitative safety norms on land-use plans and environmental permits. For each location with dangerous substances the place-dependent risk (*plaatsgebonden Risico*, PR in short) must not exceed 10^–6 per year. This corresponds with a one-in-a-million fatality chance, and potential group risk (*Groepsrisico*, GR in short) must be explicitly assessed and justified with advice from the regional safety regions (Kamerstuk 32 861, 2013).

In short, Bevi codified a system with two criteriums, one for an individual's risk at a given location (PR) and one for large-scale accidents (GR). Similar decrees followed for other hazards: for example, the Bevb (*Besluit externe veiligheid buisleidingen*) (Bevb) entered into force in 2011 to regulate pipelines, and separate rules cover external safety for roads, waterways, and other transport routes under the Basisnet framework (see chapter 4.2). In 2010, the Dutch Major Accident Hazards Decree (*Besluit Risico's Zware Ongevallen, or* BRZO) transposed the EU Seveso III Directive into Dutch law for major-hazard industries, reinforcing plant-level safety management. Together these measures mean that external safety is now regulated by setting quantitative risk limits for dangerous activities and transport. An expert review emphasizes that the modern policy "focuses on the most significant risks in terms of potential impact and likelihood" and uses a risk-based approach to ensure "a minimum level of safety" and uniformity across the territory (Kamerstuk 32 861, 2013).

A special challenge is the transport of dangerous goods through the densely populated Netherlands. To address this, in 2015 the government established the Basisnet (OECD, 2015). While the Basisnet was already discussed in the case description, the Basisnet is also symbolic for the development of general safety principles in the Netherlands. It defines risk budgets (*risicoplafonds*) for each major transport network (road, water, rail), and specifies where transport routes may run relative to population centres. In practice, this coordinates or balances spatial planning with the national interest that come with the logistics of hazardous substances. Under the Basisnet, new housing developments are limited in designated focus areas (*aandachtsgebieden*) where transport risk levels are high, for example near transport routes. Currently the Basisnet has transitioned into the newer and more flexible *Robuust Basisnet*, where fixed risk ceilings have been dropped. Municipalities are still flexible in deciding how dangerous transport is allowed within their territory and how is dealt with risk to the built environment near Basisnet routes. In summary, the 2015 law led to more integration regarding transport and land-use policy that balances economic and safety goals.

The most recent and far-reaching structural change regarding Dutch external safety policy and spatial planning in general is the Omgevingswet (Environment and Planning Act), adopted in 2016 and in force since 2024. This broad law merges dozens of former regulations into a unified planning-and-environment code, including external-safety rules. Under the Environment and Planning Act and its implementing environmental decrees (*omgevingsbesluiten*), external safety requirements are now embedded in spatial plans (*omgevingsplannen*) and general national rules (*omgevingsregels*). A key part of the Environment and Planning Act is that governments must consider safety as early as possible in planning, to prevent or mitigate accidents (IPLO, n.d.). In line with this, external safety retains its weight: legally binding focus areas, distances and analysis obligations remain and are converted into the new regime, preserving the quantitative PR/GR approach while streamlining application.

International developments play a large role in Dutch policy as well. The European Seveso directives that aim to control incidents with hazardous substances, provide safety measures are implemented by Dutch BRZO/Bevi rules. EU regulations on chemical classification, transport (ADR/RID), and pipeline underlie national norms. Beside obligatory regulation, international safety standards like IEC and ISO add to increased safety.

Responsibility for external safety spans different government levels. At the national level, the lead now lies with the Ministry of Infrastructure and Water Management (*IenW).* Day-to-day permitting of hazardous installations is managed by provinces and municipalities. Spatial planning approvals (*omgevingsplannen*) fall to municipalities, which must apply the PR/GR criteria and consult safety regions om these risks. In practice, each new permit or plan that might affect a risk contour is reviewed by both an environmental authority and a planning authority, often jointly setting a risk area (which was called a '*veiligheidscountour'* before the Environment and planning act) when multiple installations overlap. Thus, the system is multi-level but hierarchical: the national government sets risk norms and guidance, while provinces/municipalities implement them in land-use decisions, with oversight by safety regions and national agencies (BKL, 2025).

Dutch external safety policy has steadily evolved toward a quantitative, risk-based regime. Over thirty years, it has moved from broad precaution at the end of the last century, to quantified probabilistic limits in the 2000s, among others triggered by accidents and EU directives. The above discussed instruments bind all levels of governments in the Netherlands to strict safety criteria. At the same time, this system remains dynamic, as it is now being used under the Environment and Planning Act. Throughout, different government documents, like parliament documents and official reports over the last 25 years underscore the trends in external safety in the Netherlands.

4.2 Storage of Consumer fireworks in the Netherlands

Before discussing regulation of the past 30 years, it is important to understand the way fireworks are classified in the Netherlands. This is currently done using two different classification systems. Namely,

the F1–F4 classification (based on the EU Pyro directive and the UN/ADR classification (1.1–1.4). The F1–F4 system is product-based and determines who is allowed to use specific types of fireworks, ranging from F1, suitable for children to F4 that is, restricted to professionals. These classifications are indicated by a CE marking on the product and focus on the immediate risks during normal use (Torenvlied et al., 2023). The UN/ADR classification system is transport-oriented and reflects how fireworks behave under fire or heat conditions. Where 1.1 indicates a mass explosion hazard and 1.4 represents minor explosive risk.

ADR classes have been adopted for storage of fireworks in the Firework Decree, while they are made for transport. Torenvlied et al. (2023) highlights that both classification systems suffer from reliability issues partly because products are classified by analogy rather than through actual testing. Furthermore, research has shown that even fireworks labelled as 1.4G may exhibit behaviour like 1.1 under confinement conditions (Torenvlied, et al., 2023).

Prior to the fireworks disaster in Culemborg in 1991 (See §5.1.1, consumer and professional firework were regulated under the general hazardous substance legislation, primarily the Hazardous Substances Act and later the Environmentally Hazardous Substances Act. Storage and use were subject to environmental permitting under the Nuisance law, which later became the Environmental Management Act, which prescribed safety distances and requirements for storage facilities (Torenvlied, et al., 2023). For professional fireworks, regulation continued under these laws throughout the 1990s, with oversight responsibilities shared between national and local authorities. While regulation for storage for consumer firework changed after Culemborg, professional firework remained under this regime until after the turn of the century.

This means that rules for professional fireworks remained largely unchanged throughout the 1990s. Oversight was shared between national and local authorities. Municipalities issued environmental permits that governed storage conditions, the State Road Traffic Inspectorate (*Rijksverkeersinspectie*) was responsible for granting licenses for handling explosive substances (*bezigingsvergunningen*). (Torenvlied, et al., 2023)

4.2.1 Firework decree (1993 – 2024)

Following the disaster in Culemborg, a new legal framework was introduced in 1993 for consumer fireworks through the Firework Decree, which. Most importantly, firework storage permits under the firework decree had to include an important condition. Explosive substances had to be stored in:

(a.) suitable, and approved facilities under the Environmental Management Act.

Although this marked an administrative shift that acknowledged the need for safer storage, it did not impose new quantitative limits beyond those already specified in existing permits.

Following the Enschede fireworks disaster in 2000, which resulted in twenty-three fatalities and extensive property damage, significant amendments were made to the Fireworks Decree to enhance safety regulations further (Torenvlied et al., 2023). These changes were:

A. Much *stricter* distance requirements for the storage of *professional* fireworks, ultimately resulting in a ban on storage of professional fireworks,
B. A *relaxation* of distance requirements for the storage of *consumer* fireworks, in combination with:
C. The introduction of more *rigorous safety standards* for consumer fireworks storage. The Fireworks Decree mandates that storage facilities be equipped with comprehensive fire safety systems, including automatic sprinkler systems, fire detection systems, and evacuation alarm systems, to ensure rapid response in the event of an incident (CCV, 2023).

On top of that, classification in the Firework Decree were aligned with European classifications as a preparation to the EU Pyro directive in 2007 (Vuurwerkbesluit, 2024). These three measures were deemed sufficient for protecting both the public and emergency responders.

4.2.2 Firework storage under the environmental law (2024 -)

The Fireworks Decree stipulates specific requirements for storage facilities based on the quantity of fireworks stored. For facilities storing up to 1,000 kg of consumer fireworks, compliance with the safety provisions outlined in Annex 1 (sections A, B, and C) and adherence to the safety distances specified in Annex 3 are mandatory (Vuurwerkbesluit, 2024, Art. 2.2.1). Facilities storing more than 1,000 kg must meet additional requirements, including the implementation of enhanced fire safety measures and obtaining appropriate environmental permits (Vuurwerkbesluit, 2024, Art. 2.2.2).

Since January 1, 2024, the Omgevingswet (Environmental and Planning act) has changed Dutch environmental regulations. Under the Environment and Planning Act, the rules for storage of fireworks have largely been moved into general environmental decrees. In particular, storage of both consumer and professional fireworks is now regulated under the Living Environment Activities Decree (*Besluit activiteiten leefomgeving*, BAL) and Quality of Living Environment Decree (*Besluit kwaliteit leefomgeving*, BKL), rather than the old Firework decree. Since the Environmental law came into force, the rules for storage of fireworks are included in the Living Environment Activities Decree (Torenvlied, et al. 2023). In practice, this means that storing fireworks is treated as a listed environmentally harmful activity (*milieubelastende activiteit*) under the BAL § 3.2.10. This comes with specific thresholds and safety requirements.

Furthermore, chapter 3 and 4 of the BAL designate the storage, repackaging or processing of fireworks as a hazardous activity. Storage of fireworks becomes an activity that requires a notification or environmental permit once certain quantities are exceeded. For instance, §3.2.10 of the Bal designates

storage of more than 25 kg of consumer fireworks or 200 kg of novelty or toy fireworks (*fop-/scherts*) fireworks as an environmental activity and imposes an environmental permit (*omgevingsvergunning*) requirement above 10,000 kg of consumer fireworks. The BAL also sets out general safety provisions for such activities, largely mirroring the old Fireworks Decree (§ 4.102). These include minimum safety distances and technical precautions. For example, the BAL requires fireworks storage sites to maintain at least 8 m separation to the site boundary (for stocks up to 10,000 kg) (IPLO, n.d.). It further mandates that fireworks be stored in approved vaults or buffer storage rooms, within fire compartments, and that facilities be equipped with fire detection and sprinkler systems. In short, the BAL now contains the core operational rules for fireworks storage among which, quantities that trigger notification or permits and the associated technical requirements.

In addition to the BAL the BKL governs spatial planning and quality aspects. This includes rules regarding external safety for in environmental plans. The BKL defines explosion-sensitivity zones (*explosieaandachtsgebieden*) around fireworks storage under addendum VIII BKL. These zones set exclusion zones for vulnerable land use. For example, the BKL specifies explosion zones around any storage of high-category fireworks (F3/F4) and restricts the siting of sensitive buildings within those areas (BKL). The BKL requires municipalities to account for these distances when updating zoning plans. In practice, this means that if a fireworks storage falls within a calculated explosion radius, the local plan must limit or forbid new homes, schools, or hospitals in that buffer (BKL). Thus, external safety rules for fireworks are now managed via the general zone-based framework of the Environment and Planning Act rather than a standalone law.

Under the previous system, the Bevi governed external safety zones for hazardous facilities. Since 2024 the Bevi has been repealed and its functions absorbed into the Environment and Planning Act (Stibbe, 2023). Any existing Bevi contour maps remain under transitional provisions, but new planning and permit decisions use the BKL approach. In effect, the Environment and Planning Act replaces Bevi's contours with the new standard protection level (*basisbeschermingsniveau*) and zone rules in the environmental plan.

The previously mentioned 2002 Firework decree is the historic fireworks law. Under the Environment and Planning Act its storage provisions have effectively been moved into the BAL (Kamerstuk 28684-744). In other words, the old Firework decree still exists for aspects like sale, use and classification, but no longer contains the storage rules. Government guidance explicitly notes that the Fireworks Decree now "remains in force without storage" (FUSO, 2024), while the BAL covers those provisions. (Other related regulations – e.g. the *Regeling aanwijzing consumentenvuurwerk* and the *Regeling bedrijfsmatig ontbranden van vuurwerk* – also continue to exist alongside the Environment and Planning Act.) Thus, large-scale fireworks warehouses that previously needed a storage permit under the Firework Decree will now obtain an environmental permit under the BAL.

The former Seveso/BRZO rules for places with dangerous substances have also been folded into the new system. These facilities are called "Seveso-establishments (*-inrichtingen)*." The obligations from BRZO are now laid down mainly in the BAL (Chapter 4.2), while zoning issues like domino-attentions and risk maps fall to the BKL. For fireworks storage, this is relevant only for exceptionally large installations (if stock exceeds the high threshold). In any case, the Seveso Directive itself still applies; under the new law, BRZO's requirements (e.g. accident plans) are carried over into the Environmental and Planning act's general provisions (Van Iersel & Luchtman advocaten, 2023).

Under the Environmental and planning act, oversight of fireworks storage is primarily local. Municipalities, via their environmental services, (*omgevingsdiensten*) are the competent authority for most fireworks' storage permits and notifications (Rijksoverheid, n.d.). Specifically, a company storing up to 10,000 kg of fireworks only needs to make a notification to the municipality, whereas storing more than 10,000 kg requires an environmental permit from the municipality (Rijksoverheid, n.d.). In practice, the municipality typically delegates both permit review and inspections to its regional environmental service. Municipal authorities verify compliance with the BAL's storage rules (safety distances, construction of storage rooms, etc.) and enforce penalties for violations

Nationally, the Ministry of Infrastructure and Water Management (*IenW*) has overall responsibility for fireworks policy. The Inspectorate for the Environment and Transport (ILT) enforces regulatory compliance. ILT conducts checks on major fireworks suppliers and warehouses (e.g. verifying ADR classification, storage conditions, legality), oversees product safety and controls large imports. Furthermore, ILT also manages transport supervision, although transport rules are outside the Environmental and planning act focus.

Finally, the Safety Regions (*Veiligheidsregio's*) play a key advisory and emergency role. Under the Environmental law, safety regions retain a formal advisory right on hazardous permits (Omgevingsbesluit art. 4.33) (BrandweerBRZO, 2022). This means that when a municipality reviews a fireworks storage permit, the safety region must be consulted about the external safety implications. The safety region also manages crisis planning, as fire brigades and hazardous-material teams maintain protocols for fireworks incidents.

4.2.3 Current discussion (2025 -)

An investigation by the Dutch media company *EenVandaag* (2024) revealed that in over four hundred residential areas across the Netherlands, up to 10,000 kilograms of fireworks are legally stored, often in garden sheds or small businesses. This poses a significant danger in the event of fire or explosion. While current laws allow such storage, critics argue these do not adequately account for the risks posed in urban environments where emergency access may be limited and evacuation more complex.

This means that there is an ongoing debate about this kind of fireworks storage facilities. This situation has reignited calls from fire brigades, local governments, and safety regions for national political action. On top of that, the article notes, that there is growing consensus that a risk-based, rather than purely rule-based, approach to regulation is necessary. However, opposition from industry groups continue to slow down progress, keeping the debate alive at both local and national levels (EenVandaag, 2024).

4.3 Transport of Hazardous Substances by Rail

In the Netherlands, approximately ten percent of all train traffic consists of freight trains, and about ten percent of this freight involves the transport of hazardous substances, of which are primarily combustible gases (85%), followed by toxic gases and liquids (15%) (ProRail, 2023). Due to the transnational nature of freight traffic, the governance of hazardous materials transport by rail relies on a layered system of international treaties and national regulations that are designed to ensure safety while accommodating logistical and economic needs.

At the international level, the primary legal framework is provided by the Convention concerning International Carriage by Rail (COTIF), maintained by the Intergovernmental Organisation for International Carriage by Rail (OTIF). Appendix C of this treaty, the Regulations concerning the International Carriage of Dangerous Goods by Rail (RID), contains detailed technical requirements on classification, packaging, labelling, documentation, and vehicle standards. These harmonized rules are designed to promote consistent safety practices across member states (OTIF, n.d.; COTIF, 2023). The RID therefore plays a significant role in external safety of rail transport of hazardous substances in the Netherlands and internationally.

Domestically, the Netherlands transposes RID into national law through the Dangerous Goods Transport Act (*Wet Vervoer gevaarlijke stiffen* or *Wvgs*) and the Rail transport of dangerous goods regulation (*Regeling Vervoer over de spoorweg van gevaarlijke stoffen* or *VSG).* These provide the legal backbone for monitoring and controlling rail traffic, while granting national authorities room to impose additional safety measures tailored to local conditions, such as population density or infrastructure vulnerabilities (Rijksoverheid, n.d.).

Enforcement is primarily conducted by the Inspectorate for the Environment and Transport (ILT), which inspects carriers, equipment, and documentation. The ILT plays a significant role in ensuring compliance and supervises related risk-bearing activities, such as the storage of consumer fireworks, under broader external safety regimes (ILT, n.d.).

4.3.1 Basisnet (2015 – 2024)

The Dutch government wanted new regulations to strike a better balance between, on the one hand, the increasing transport of hazardous substances and the associated economic benefits and, on the other hand, the inherent risks to the built environment through which this transport took place. At the time, there were no fixed national routes, no upper limits for quantities per transport corridor, and limited alignment with spatial planning (Ecorys, 2023). This improved with the formal introduction of the Basisnet around 2015. The Basisnet is a national routing and risk management framework. Basisnet designated fixed rail routes for the transport of hazardous goods. It established maximum allowable volumes per segment and introduced quantitative risk thresholds to be used for land-use planning near railways. These measures aimed to prevent exposure to excessive risk in vulnerable areas such as residential zones, schools, or hospitals (Ecorys, 2023).

The Basisnet system operationalized the principle of "as low as reasonably achievable" (ALARA) by balancing economic efficiency with societal safety expectations. It reflected a technocratic approach to external safety governance, in which quantified acceptable risks (QARs) were negotiated politically and embedded into infrastructure planning. However, critics noted several shortcomings, including inflexible volume ceilings, outdated population data, and limited influence for local governments (Ecorys, 2023). Every year, the ILT publishes data regarding these volume ceilings (ILT, n.d.).

4.3.2 Environmental and Planning act (2024 -)

In response to the criticism of the Basisnet, the Dutch government integrated Basisnet into the broader Environment and Planning Act, which came into force in 2024. Under this new framework, fixed routes and risk probabilities have been replaced with "attention zones" (*aandachtsgebieden*) based on potential consequences like heat radiation or toxic gas clouds, rather than probabilistic risk estimates. This shift represents a move toward more decentralized, consequence-based risk governance, giving municipalities greater autonomy to weigh safety alongside development and mobility objectives (IPLO, n.d.).

Furthermore, carriers must obtain an ILT-issued safety certificate (*aantekening*) and employ certified dangerous-goods safety advisors, and ILT inspectors routinely audit compliance with equipment, personnel, and training standards (ILT.nl, n.d.). ILT also enforces the new routing and parking rules. Moreover, incident-reporting requirements were underscored: any derailment, leak, or safety breach must be reported to ILT immediately, enabling the inspectorate to intervene and, if needed, grant emergency exemptions for safe removal (ILT, n.d.).

The evolution from RID through Basisnet to the Environmental and Planning act reflects a broader trend in Dutch safety governance: from centralized, quantitative control toward adaptive, multi-level coordination. In this complex system, different stakeholders like the Ministry of Infrastructure, ProRail,

municipalities, safety regions, and private transport operators collaborate under uncertainty to manage the tension between public safety, efficiency, and political acceptability of incidents.

4.3.3 Current discussion (2025 -)

Despite existing regulations, the transport of hazardous substances by rail continues to generate significant debate municipalities and provinces. The national government is considering easing restrictions to allow more dangerous goods on certain rail routes, which triggers serious objections. The VNG (association of Dutch municipalities), and IPO (association of Dutch provinces) have raised serious objections. They argue that such a policy shift increases the safety risks for residents living near railway lines, especially in densely populated areas where evacuation in the event of an incident would be complex and time-critical (Nieuwsuur, 2024).

Municipalities and provinces emphasize that the current policy already places a disproportionate burden on specific regions, such as Brabant and Limburg, where large volumes of hazardous materials are transported due to limited routing options. A proposed loosening of transport norms with the intention to facilitate economic growth and relieve logistical bottlenecks has been described by local authorities as a step backwards in safety policy. They stress the need for national policymakers to prioritize risk reduction and invest in alternatives, such as underground pipelines or better distribution across the network, rather than increasing tolerances for risk in urban environments, meaning that this policy area is still subject to discussion (Nieuwsuur, 2024).

5. ANALYSIS OF EVENTS

This chapter answers the following subquestion:

What 'focusing events' took place within both policy areas.

And

To what extent can differences and similarities in the development of external safety policy in the two policy areas be explained from the theory of focusing events?

This chapter interprets the empirical findings from Chapter 4 through the lens of Birkland's focusing events theory. It analyses to what focusing events occurred in each policy area. After which, the policy measures that can be contributed to these events will be explained, hereby answering the final sub question by making a connection between changes in both policy areas and the (non-)occurrence of focusing events. First this will be discussed for the storage of fireworks, then this will be discussed for the policy area of transport of hazardous substances by rail.

5.1 Focusing events in the policy area of fireworks storage.

In this paragraph, the two important focusing events in Culemborg and Enschede will be discussed, afterwards the effect of these focusing events on the policy area will be analysed.

5.1.1 The firework disaster in Culemborg

The first significant disaster that can be designated as a focusing event is the firework disaster in Culemborg. On 14 February 1991, an explosion tore through the '*MS Vuurwerk*' fireworks facility in Culemborg. This accident resulted in two casualties. Twenty others were wounded, and buildings were damaged up to 5 km away (Mercx, 1991). The blast, estimated at a 2,000 kg TNT equivalent, shattered windows along the A2 corridor and sent concrete debris weighing up to 20 kg flying for hundreds of metres (Torenvlied et al., 2023). Investigators never pinpointed a single cause, but TNO's follow-up concluded that misclassification of fireworks and unsafe storage in interconnected bunkers had permitted a mass-explosive chain reaction (Torenvlied et al., 2023).

Despite the scale of Culemborg, the established rules on fireworks storage saw almost no substantive revision. TNO and the Fire Brigade Inspectorate issued recommendations to tighten construction requirements for storage bunkers, and to increase separation distances to residential areas (Torenvlied et al., 2023). Yet the Dutch fireworks decree remained unchanged, and no new technical standards were codified (Torenvlied et al., 2023).

The disaster exposed a fragmented oversight regime. Responsibility lay randomly across Defence (which advised on environmental permits), Justice, Interior, and the Ministry of Housing, Spatial Planning and Environment, but no single ministry took leadership (Torenvlied et al., 2023). The

interdepartmental Commission for Prevention of Hazards by Dangerous Substances (CPR) briefly placed Culemborg on its agenda in September 1991 after a closed-door release of the TNO report but by 1994 it had quietly dropped further guideline development (Torenvlied et al., 2023).

Despite the scale of the Culemborg disaster, the environmental-zoning guidelines that were used in permitting practices remained unchanged. The report of PML-TNO from 1991 shows that these distances were derived from outdated assumptions about explosion risk and were not recalibrated to reflect the possibility of mass-explosions of firework with lower classifications, especially under confinement conditions (Torenvlied et al., 2023). Enforcement of storage regulations was fragmented: municipalities remained responsible for permitting storage under the Environmental management Act (*Wet milieubeheer*). The State Road Traffic Inspectorate was responsible for permitting use of fireworks at shows. According to the report, this led to a complex set of different regimes in which inspections were often limited to paperwork and practical audits of real storage conditions were rare (Torenvlied, et al, 2023). The fireworks sector used this gap in enforcement to store much heavier fireworks than allowed. Firefighting services, although legally required to provide safety advice, often lacked the capacity or incentives to challenge storage layouts or the classification of fireworks, which contributed to persistent blind spots in the oversight of high-risk storage (Torenvlied, et al., 2023).

Thomas Birkland (1997) defines a focusing event as a sudden, harmful occurrence that concentrates public and political attention on a policy problem, creating a window for change. Culemborg undeniably meets those criteria: First, it was rare, as it was never seen before in the Netherlands. Second, it produced high consequences, and generated technical reports highlighting regulatory gaps, for example in safety distances. But, because no cohesive policy coalition emerged and political urgency decreased, the event failed to trigger substantive reform (Torenvlied, et al. 2023). The CPR's fleeting engagement and the absence of sustained media or parliamentary pressure illustrate how this event did not lead to reforms. Torenvlied et al. (2023) suggest that this was caused by a trade-off between the introduction of more stringent requirements for professional fireworks storage and relaxed requirements for consumer fireworks.

In sum, while the Culemborg explosion has elements of a textbook focusing event, it did not bring the changes necessary. The systemic fragmentation of responsibilities and weak enforcement were not able to create an opportunity for external-safety reform. Therefore, paving the way for the calamity in Enschede in 2000.

5.1.2 The firework disaster in Enschede

A focusing event that was even more impactful as event and as a catalyst for policy change, was the firework disaster of Enschede. On 13 May 2000, a fire broke out at the SE Fireworks storage on the Tollenstraat in Roombeek, Enschede. Within minutes the fire triggered a series of massive explosions. A small initial blast at about 15:35 was followed almost immediately by a far larger detonation: fifteen

ammunition bunkers exploded at the same time nearly simultaneously, sending a large shockwave across the neighbourhood (Torenvlied, et al., 2023). This explosion turned the area in an instant into something like a war zone. It destroyed and threw concrete debris hundreds of meters. This incident killed twenty-three people, including four firefighters. Roughly 950 people were injured (Torenvlied, et al., 2023). About two hundred houses were destroyed outright and 1500 more were damaged (Commissie onderzoek vuurwerkramp, 2001). The night after the disaster, ten thousand people could not sleep in their own home and roughly 1,250 residents were left homeless (Comissie onderzoek vuurwerkramp, 2001; Torenvlied, et al., 2023). Reconstruction of Roombeek neighbourhood took many years.

Within days the government launched multiple investigations for the disaster. The most important being the '*Commissie Onderzoek Vuurwerkramp*,' this team led by Oosting issued its final report in February 2001, and eight separate government agencies (*Rijksinspecties*) conducted investigations of different aspects of the disasters. The Oosting Commission found that SE Fireworks was storing far too much professional fireworks, far above safe limits. The commission concluded that Enschede's municipal government had mishandled licensing and oversight as they 'repeatedly legalized illegal storage.' They failed to enforce their own rules (Torenvlied, et al., 2023). The city's fire department was also criticized, for neglecting preventive inspection and for having inadequate information on what was stored on site (Commissie onderzoek vuurwerkramp, 2021). At the national level, the inquiries found a policy vacuum and fragmented responsibilities: Ministers and inspection agencies had long regarded consumer/professional fireworks as a low priority, ignored the earlier warning signs after the 1991 Culemborg blast, and left safety scattered across dozens of regulations (Commissie onderzoek vuurwerkramp, 2001). In sum, the investigative findings highlighted systemic problems in licensing, supervision, and coordination: every link in the safety chain had broken down. While the Oosting report was thorough, the 2023 report of Torenvlied shows a more comprehensive image of the disaster, suggesting that the Oosting Commission did not have access to all necessary information at that time. This suggests that information has been withheld after the disaster (Torenvlied, et al., 2023).

The Enschede disaster got things moving again. As in January 2002 the government implemented a new Fireworks Decree. Key changes included introducing a single "use permit" (*toepassingsvergunning*). This use permit replaced the previous split regime of national versus local licences. This had the effect that professional and consumer fireworks now fell under one permit system. The 2002 firework decree also formalized much stricter safety zones: all professional fireworks were reclassified as hazard class 1.1, requiring an 800 m exclusion radius around any site storing up to 6,000 kg (Torenvlied, et al., 2023). However, consumer fireworks were confined to 20 m from a storage building (Torenvlied, et al., 2023). This means that the government gave ground on consumer side to demand smaller distances while imposing a large buffer for professional quantities. In later years, policy makers continued to tighten fireworks policy.

By 2009 CE-marking requirements were adopted under the new European Pyro directive. This required all fireworks to meet uniform safety tests. Later in 2012 the government again revised consumer rules based on expert advice. Basic safe-distance requirements for consumer storage were reduced even further to eight meters. Minor sales between 1000 to 10 000 kg were changed from requiring a permit to a simple notification. Later in the period between 2020 and 2022 the heaviest consumer fireworks were banned. The F3 class was forbidden for public sale and later F3 and F4 classes were reclassified as professional firework. On top of that, there were also improvements made regarding oversight. A permanent independent Safety Board (*Onderzoeksraad voor de Veiligheid*, or OVV) was founded in 2005 to investigate, learn from and prevent major accidents. All leading to a much tighter regulatory regime for fireworks.

The Enschede blast clearly meets the criteria of a focusing event because it led to a breakthrough in policy inertia and triggered investigation and substantial changes in Dutch policy, also because of the focus of intense media and public attention. In the immediate wake of the disaster, policymakers could no longer ignore fireworks storage. The 'Commissie onderzoek vuurwerkramp' made clear in the concluding remarks their report: ' The committee also found a series of shortcomings in the government.' (Commissie Onderzoek Vuurwerkramp, 2001, own translation)

Politically, the disaster in Enschede lead to parliamentary hearings and resignations of city officials. It also concentrated political attention on the previously neglected risks. Institutionally, it led to new forms of oversight. Together with a large fire in Volendam, it led to the come of the OVV (Dutch national safety board) and to legislation like the 2002 Firework Decree. Socially, the disaster raised public awareness about firework safety. In short, the scale and drama of the Enschede explosion focused attention on fireworks hazards, leading to significant changes.

5.2 Policy measures after focusing events in the policy area of fireworks storage

5.2.1 Culemborg

After the Culemborg fireworks disaster, multiple Dutch authorities reviewed fireworks storage rules, but in practice the official content of the regulations changed little before the disaster in Enschede. Both investigations by PML-TNO and the Fire Brigade Inspectorate did recommend stronger measures around firework storage. The PML-TNO report recommended halting the change of transport classification to classification for other purposes like storage and the Fire Brigade Inspectorate recommended to take stock of storage practices among firework companies. Yet no new storage standards were codified. In particular, the long-standing environmental zoning guidelines under the Environmental Management Act (Nuisance law before 1993) used for permitting storage were not updated (Torenvlied, et al., 2023). The Environmental management continued to rely on outdated assumptions about explosion risk. The PML-TNO investigation after the disaster showed that, if all fireworks in the different Culemborg bunkers had been treated as Cat. 1.1 firework, the legal "safe"

separation distance would need to be 400 m, is far larger than the 64 m that was prescribed for 1.3. And while legally 400m would have been sufficient, large structural damage occurred nine hundred metres from the disaster site. Still, nothing was done to adjust the official distances (Torenvlied, et al., 2023). Despite this evidence, policy remained fixed as distance norms remained the same.

Legislatively, attempts were made to revise fireworks rules, but they did not tighten storage. Shortly after Culemborg, a new Firework Decree was drafted with the idea that it would both cover consumer and professional fireworks. Despite promises in Parliament, only the consumer segment was adopted in the 1993 Firework Decree (Torenvlied, et al., 2023). This law introduced consumer safety measures, but it did not institute new storage requirements beyond those already in the environment law (Torenvlied, et al., 2023).

The promised regulation for professional firework was not materialized after Culemborg. Thus, professionally used fireworks continued to be regulated only under the old hazardous substances law. From 1993 onward, however, the licensing system did insert one new condition for professional firework. Permits for professional fireworks began to require that explosive substances had to be kept in a suitable storage under the environmental management law, (Torenvlied, et al., 2023). This administrative change acknowledged that large fireworks stocks must be housed in fire-resistant, approved bunkers, but it did not by itself impose quantitative limits beyond those in the existing permit.

Overall, the **content & scope** of storage regulations only expanded a bit for consumer firework. Both consumer fireworks and professional fireworks remained subject to the same category definitions and licensing regimes as before. Only consumer firework was covered by the new 1993 Firework Decree for safety and market rules. Professional fireworks stayed under transportation and environmental permitting rules. No new classes of fireworks were added, and no new categorization of firework storages were made, although it had become known what the effect of large volumes of fireworks could be in enclosed storage circumstances. In practice, established fireworks importers, wholesalers or display companies could still hold large stocks under the usual environmental permit (bezigingsvergunning).

In **stringency**, also few gains were made. Since the Fireworks Decree remained the same and no new safety standards were introduced, the legal requirements for storage remained the same. Although experts recognized that lower-class firework could mass explode, the law continued to treat 1.3/1.4 fireworks as relatively low risk in storage. This means that, the stringency of separation requirements and quantity limits was unchanged through the nineties. This was in hindsight inadequate. One marginal change in 1993 was the above mentioned that fireworks held under a transport permit must reside in a Nuisance law, raising the bar slightly for construction of storage facilities. Thus, the law became no stricter on paper than it had been, despite clear evidence from Culemborg that existing rules were not sufficient.

Enforcement and oversight also remained weak and fragmented in this period. Culemborg itself revealed that no single agency had a complete view of fireworks storage. Fire permits, import permits, and environmental permits were all issued under different authorities, and no one body coordinated enforcement. Investigators noted that municipalities issued the environmental permit for storage, while the State Road Traffic Inspectorate (*Rijksverkeersinspectie* or RVI) managed fireworks transport/use permits. In practice, enforcement often meant only paperwork checks, with few physical audits of storage. For example, after Culemborg it emerged that the Labour Inspectorate normally visited a registered fireworks company only once in 24 years (Torenvlied, et al., 2023). The Fire Brigade Inspectorate likewise acknowledged it had never specifically monitored explosion risks at MS Vuurwerk, and the province had not even identified the company as a potential hazard on its emergency-planning lists (Torenvlied, et al., 2023). In short, the capacity and practice of enforcement did not appreciably strengthen in the 1990s. Fireworks firms were generally expected to self-comply with the existing rules, and regulators had no new resources or mandates to tighten scrutiny. Which promote exploitation of these gaps for example by storing heavier fireworks under lighter classifications and going undetected.

In conclusion, the period 1991–2000 saw only modest adjustments to fireworks-storage policy in the Netherlands. After the Culemborg disaster, officials acknowledged the problem but enacted no major new regulations on storage. Only incremental measures were added, and even these were poorly enforced. Based the report of Torenvlied, et al. (2023) we can conclude that Culemborg was a focusing event that went unrealized as no substantive reforms in storage policy followed, leaving the system ill-prepared for Enschede.

5.2.2 Enschede

Contrary to the disaster in Culemborg, the 2000 Enschede firework disaster did lead to major changes in the Netherlands' external safety rules for fireworks. Policy was rewritten to cover fireworks storage and use more comprehensively, to apply to both consumer and professional fireworks, and to tighten safety standards and oversight. Plenty of changes regarding content **&** scope**, s**tringency, and enforcement of the regulatory regime were all affected by Enschede. Below, each dimension will be analysed.

Content & scope: After Enschede, the Dutch government created a dedicated Fireworks Decree (*Vuurwerkbesluit*) in January 2002, introducing rules that had not existed before. Among these changes was "use/storage permit" (*toepassingsvergunning*) for all fireworks, replacing replaced the previous patchwork of national and local permits. The 2002 decree also explicitly reclassified all professional fireworks as hazard class 1.1 (high explosive potential) and imposed formal "safety zones": any site storing up to 6,000 kg of professional fireworks had to be kept at least 800 m from inhabited buildings. (For consumer fireworks, a 2002 rule confined storage to a 20 m radius from the storage building.) These

provisions were novel: before Enschede there was no unified regulatory framework for professional fireworks, nor clear distance rules for consumer storage. In short, the scope of regulated fireworks broadened, and key aspects were addressed by new rules developed after Enschede (Torenvlied, et al., 2023).

The Torenvlied report (2023) confirms that these changes were driven by Enschede, noting that professional fireworks had "no place" in Dutch policy before 2000 (Torenvlied, et al., 2023). After Enschede, authorities worked diligently to apply a "strict effect-limitation" approach to fireworks safety, proposing far-reaching bans and distance rules for all hazard subclasses (Torenvlied, et al., 2023).

The new rules applied to categories of fireworks and actors previously outside clear regulation. The single permit applied to both consumer and professional fireworks. In practical terms, this meant that any user of fireworks now needed approval for storage under the new system. In addition, new categories of fireworks were brought under stricter rules. The scope of regulation was also tightened with respect to location. The Fireworks Decree imposed distance zones around storage sites that applied nationwide. Even small businesses or event organizers fell under these rules, whereas the general hazardous substances law had been more fragmented (Torenvlied, et al., 2023). In short, all subjects working with fireworks came under a coherent set of standards. This was directly attributable to disaster in Enschede. Hereby remedying the pre-2000 policy vacuum that was described by the Oosting Commission (Commissie Onderzoek Vuurwerkramp, 2001; Torenvlied, et al., 2023).

Stringency: Overall, the regulatory regime became stricter post-Enschede, though not uniformly so. On the professional side, the government set exceptionally large safety distances. As implemented in 2002, any professional fireworks site (up to 6 ton) needed an 800 m exclusion radius (Torenvlied, et al., 2023). In the final decree, this was more stringent than what VROM had initially advised (Torenvlied, et al., 2023). All professional fireworks were classified as 1.1 (highest hazard class) (Torenvlied, et al. 2023). This marked a clear tightening relative to pre-2000 norms. But even these strict rules were later somewhat relaxed. The 2004 amendment shortened these distances for smaller stocks, as storage of less than 750 kg of professional fireworks now requires only a 400 m safety distance (Torenvlied, et al., 2023). Consumer fireworks rules on the other hand became less stringent in a few ways. While the RIVM advised 50, 100 and 200 meter safety distances for the consumer grade classifications, the government opted for 20 meters for all classifications, which was in 2012 reduced even further to 8 m in 2012 (Torenvlied, et al., 2023). In combination with a change from a required permit to a notification, this made storage provisions looser for. In summary, the firework decree of 2002 made professional storage considerably more stringer, but less for consumer fireworks.

Enschede also prompted a change of **enforcement**. Notably, the reallocation of responsibilities also affected enforcement. While some shifts were also a result of broader reorganizations within national inspectorates, others directly addressed the previously unclear division of tasks, particularly concerning

the handling and use of professional fireworks. This led eventually to a more integrated approach where inspection services were assigned broader responsibilities. However, this integration also introduced challenges, including the emergence of dual roles that could compromise the independence of supervision, notably observed in the examination and certification processes for professional fireworks training (Torenvlied, et al., 2023). However, some recommendations were only partially implemented. While the previous between local and national permitting has been closed, a complex permitting systems remains as many actors are involved (Torenvlied et al., 2023).

Recent studies have raised concerns about the adequacy of these measures. Research conducted by the University of Twente indicates that certain packaging methods, such as mesh packaging intended to reduce explosive potential, may not effectively mitigate risks and could contribute to mass explosive reactions (Torenvlied et al., 2023). In response, the Dutch government announced in October 2024 the prohibition of mesh packaging for fireworks storage, citing safety concerns (Rijksoverheid, 2024).

5.2.3 Conclusion

Applying Birkland's framework, we examine how the fireworks storage events fit the theory. Birkland (1997) emphasizes that a focusing event is a sudden, rare, and harmful event that often inflicts death, injury, and/or damage. It is known quickly to officials and the public. The explosion in Enschede clearly satisfied these conditions. It was unexpected, killed dozens of people, and destroyed entire neighbourhoods. Based on the investigations that followed, we can conclude that the shock of Enschede has sped up national policy formation on firework storage. In policy-stream terms, Enschede opened a window: proposals for risk inventories and tighter safety zones, which had been stalled or incremental, were suddenly implementable as the urgent problem was obvious. The event also had a clear link to policy failure. Investigations showed that Enschede's storage facilities had violated storage limits, and that government oversight was insufficient. This reinforced the idea that pre-existing rules had failed to prevent the explosion. This justified new measures even more.

The 1991 Culemborg explosion however, had a much smaller effect, partly because of its location. It met criteria of being sudden and harmful, as two people died. Despite the impact, it attracted limited media attention. Birkland would predict what the findings confirm, namely that that Culemborg's focusing effect was weak. It failed to follow through on lessons that were learned after investigations. In fact, no substantial changes were passed until after Enschede. In Birkland's terms, Culemborg revealed vulnerabilities, but without sufficient public outrage, it did not produce a policy change.

Once the Enschede disaster occurred, however, multiple streams converged. The problem stream (a demand for safety) was acutely active, and the policy stream, while still challenged by conflict after Culemborg, contained prepared solutions (stricter firework rules) based on investigations after Culemborg in previous years. This focusing event achieved agenda-setting by media attention and

available political will. The result was a shift in fireworks policy to new strict legislation and guidelines. Enschede produced a policy window.

In sum, the fireworks domain shows how powerful focusing events can generate rapid agenda-setting and policy learning when conditions are right. The Enschede and Culemborg disasters provided stark examples of why policy was failing and therefore created both the opportunity and political cause for change. Enschede in particular meets Birkland's criteria almost perfectly, and indeed it produced concrete reforms. However, even here we see that without sustained public pressure, the policy response was weakened by other forces.

Mechanisms	**Explanation**	**Culemborg**	**Enschede**
Visibility	Media coverage and political attention after a focusing event increase public and policymaker awareness of previously latent or low-salience issues.	Culemborg received limited media attention and mostly remained a local issue, reducing its salience nationally.	Enschede received widespread, (inter) national media attention, sharply increasing awareness of fireworks storage risks.
Public support	A focusing event can galvanize public concern and increase support for policy change by making risks and vulnerabilities more tangible.	Public concern was limited and short-lived, with little sustained pressure for national policy change.	The public reaction was strong, creating overwhelming support for thorough investigation and policy reform.
Pressure on policymakers	Heightened visibility and public concern generate political pressure, making it more difficult for policymakers to ignore or delay action.	Policymakers acknowledged the issue but did not feel significant pressure to act, leading to delay and minimal reform.	Policymakers were under immense pressure to respond quickly and decisively, resulting in accelerated regulatory action.
Opportunity for policy entrepreneurs	The increased attention creates a policy window that enables entrepreneurs to couple solutions to the problem and advocate for change.	The policy window closed without change. Although some actors tried to advance solutions, political disagreement blocked momentum.	Policy entrepreneurs effectively seized the window opened by Enschede to promote long-standing proposals and frame the issue as urgent.

Table 2 Birkland's framework applied to the fireworks storage domain

5.3 Focusing events in the policy area of transport of hazardous materials by rail

The influence of focusing events on regulations regarding dealing with risks associated with the transport of hazardous materials by rail

5.3.1 The Amersfoort Acryl Nitrile Leak

On 20 August 2002, a parked freight train at Amersfoort station developed a leak in one of its tank wagons. The damaged wagon contained about 80,000 L of acrylonitrile, a highly toxic, flammable, and carcinogenic liquid (RvTV, 2004). By 11:03 the leak was discovered and roughly 600 L of acrylonitrile had escaped (RvTV, 2004). Immediately emergency measures were taken. The area was cordoned (initially 100 m, later 500 m radius), nearby offices were evacuated, rail traffic through Amersfoort was halted, and the overhead power was cut. These measures, imposed from about noon until 19:00, effectively shut down Amersfoort and severed train services between the Randstad and the north/east provinces (RvTV, 2004). Although most of the spilled acrylonitrile evaporated, some entered the soil. Luckily in only a minor quantity. This release of a dangerous chemical at an urban rail hub posed public safety and transport-disruption risks. This triggered a large-scale evacuation and transport standstill.

This incident was investigated by the Dutch Transport safety council (De Raad voor de Transportveiligheid, or RvTV) that was founded in 1999 with the aim to break down sectoral barriers in transport safety (Van Vollenhoven, 2024). While they investigated the issue thoroughly, their independence was doubted, as their then president called it a monstrosity (Van Vollenhoven, 2024). They used a systems/chain approach, which focused on all links in the transport chain rather than just emergency response (RvTV, 2004). In the first phase RvTV examined the tank wagon itself and determined the leak's cause. Which they reported directly to the Minister of I&W (RvTV, 2004). Next, RvTV reviewed the loading procedures and all applicable regulations for rail transport of hazardous goods, checking whether they had been followed and whether they were adequate (RvTV, 2004). Throughout, the inquiry analysed how the different actors, among which operators, terminal operators, rail carriers, regulators viewed and carried out their safety responsibilities (RvTV, 2004). The RvTV report found serious safety-culture and regulatory gaps. Their most shocking find: the train had been left overnight on an Amersfoort yard with no on-site supervision or guard. Which they deemed unacceptable, given the danger of the cargo. Technical shortcomings were also found. The investigation concluded that the approval of the wagon type and periodic inspections were insufficient. On top of that, during filling no reasonable check on the tank's tightness was ever required. In short, these inspections had failed, and the filler's procedures did not ensure the valve seals were sound (RvTV, 2004). More fundamentally, RvTV criticized the RID regulatory regime as they relied solely on compliance with prescriptive rules, with little built-in chain responsibility. The RvTV concluded that the RID works in a way that each party may trust that every other party follows the rules. This means that no single entity has oversight of the entire transport chain. RvTV emphasized the lack of an integral duty of care across

all levels of management, which goes far beyond mere checklist compliance. In practice, they found, companies and inspectors did just the bare minimum that is required by regulation. They did not account for unnormal risks or system interactions. Government oversight was also deemed marginal. the specialized Corps of Dangerous Goods Inspectors had been abolished years earlier, leaving general IVW inspectors with a wide portfolio and limited focus. The RvTV concluded that the incident exposed fundamental gaps in the safety regime (RvTV, 2004).

The Amersfoort leak prompted several policy responses that were in line with the findings of the RvTV. One immediate focus was on parking and routing of hazardous trains. The RvTV had recommended amending the VSG so that loaded dangerous-goods trains are only held in locations with negligible risk for the public (RvTV, 2004). In practice, the Ministry of Infrastructure and Water asked ProRail in 2007 to identify safe "escape" or holding yards for troubled hazardous trains (ProRail, 2007). Later guidelines now direct that gas- and liquid-goods trains avoid stopping in urban stations. On top of that municipalities have been allowed to prohibit parking in dense areas (under environmental permit conditions) (ProRail, 2007). These changes make layovers in city centres effectively impossible. On technical standards, many of RvTV's recommendations were later adopted into law or practice. The Dutch was VSG updated to require tank-wagons carrying toxic or flammable liquids to have redundant safety barriers on their valves and pressure relief devices (RvTV, 2004). These two independent sealing layers ensure that if one valve fails the other still contains the liquid, just like the RvTV advised (RvTV, 2004).

At the industry level, chain accountability was increasingly stressed after 2002. The chemical sector and regulators launched programs (notably the "*Veiligheid Voorop*" safety initiative) to embed risk management across the full transport chain. For example, the Dutch Chemical Industry association (VNCI) was pressed to instructs its members to monitor the entire shipment chain for risks (RvTV, 2004). Regulators likewise demand formal risk analyses covering suppliers, carriers, and infrastructure: as a recent ILT report notes, operators are expected to write non-risky operating conditions into contracts and verify adherence (ILT, 2021). In short, the notion that every stakeholder must do what they can to prevent accidents along the chain has gained traction (ILT, 2021).

The Amersfoort incident qualifies as a classic focusing event in the policy area of transport of hazardous substances by rail. It led to large media attention and thorough investigations by exposing the real consequences of latent gaps in rail-safety norms. The investigation led to concrete reforms at both regulatory and industry levels. As a result, unmonitored parking of dangerous cargo is no longer allowed, and the entire supply chain is now more explicitly held accountable. In this way the Amersfoort incident had momentum that triggered technical and reappraisal of the governance of rail-risk.

5.3.2 Train Collision at Tilburg

On 6 March 2015, a Dutch passenger train rear-ended a stationary freight train at Tilburg West port. According to the OVV (2016), the rear car of the freight train, a tank wagon, contained about fifty tonnes of butadiene, a flammable and explosive gas (OVV, 2016). The collision breached this tank. Fortunately, no passengers were seriously injured, but several of them suffered minor wounds and a few police officers experienced gas inhalation effects (OVV, 2016). The released butadiene posed fire, explosion, and toxic-inhalation risks to the public. The OVV noted that the leaked gas could have led to much more serious harm under slightly different circumstances (OVV, 2016)

The Dutch Safety Board investigated the accident with a specific focus on rail transport of dangerous goods (OVV, 2016). It reconstructed the sequence. First, the freight train had been delayed and was routed into a short siding for a crew change. Due to a mis-declared train length, the rear of the train was too close to a turnout, forcing the main signal to stay at red. The passenger train driver did not notice the red signal and passed it. Critically, the Tilburg siding was not covered by ATB-vv (an automatic braking system), so the passenger train did not brake until impact (OVV, 2016). The old Mat'64 passenger train that was involved had no anticlimbing buffers, so the front of the train climbed onto the tank wagon. That tank wagon lacked an energy-absorbing over-buffering system as these devices are only required for tankers carrying very toxic gases, not butadiene (OVV, 2016). Fortunately, only the last wagon leaked. The investigators noted that two non-hazardous wagons in the consist could have been placed last to prevent a toxic release, but this was not legally required (OVV, 2016).

The OVV identified several systemic issues. It found that involved rail companies had made logistic and economic decisions that undermined existing safety measures. For example, routing the train into a short siding for convenience and failing to fully verify its length compromised safety. This reflected little risk awareness in both rail operators and the operators that commissioned commissioning the transport. The OVV emphasized that chemical operators share responsibility for rail safety even off-site (OVV, 2016). In the OVV-report, the Board recommended that rail operators avoid operational practices (unscheduled stops, wrong siding entry) that create unnecessary risk. It also urged the NS to retire older trainsets on lines carrying hazardous goods, and it called on regulators to require all tank wagons to have crash-absorbing buffers and never to load hazardous substances in the last car (OVV, 2016).

The Tilburg collision prompted multiple safety responses in the hazardous-materials rail sector. Chemical companies and carriers on this specific Chemelot–Rotterdam line initiated joint safety analyses. By 2018, different operators and DB Cargo produced a comprehensive risk analysis for their rail transports, updating operational practices and contractual clauses to avoid high-risk decisions (ILT, 2021). In practice, several companies began fitting or ordering new tank wagons with crash buffers, head shields and GPS tracking systems by 2021 (ILT). These physical measures create extra barriers to prevent leaks in collisions.

Furthermore, NS withdrew all Mat'64 trains by late 2015, eliminating the bufferless vehicle type involved (ILT, 2017). The chemical-safety programme 'Veiligheid voorop' formally integrated chain responsibility, which required operators to include safety conditions in rail carriage contracts (OVV, 2016). At that time, at the regulatory level, State Secretary Sharon Dijksma of infrastructure and environment responded that the government would push for the OVV's recommendations to be adopted in international law (RID) (Kamerstuk 30 373, 2016). In parliamentary letters, the Ministry confirmed it was pursuing amendments to ban hazardous substances in the last wagon and mandate buffers on all tank wagons (Kamerstuk 30 373, 2016). By 2018–2019 some operators committed voluntarily to these measures: for example, Chemelot companies decided that new tank cars would come standard with overrun protection (ILT, 2021).

Despite causing limited harm, the Tilburg accident functioned as a classic focusing event. It again exposed latent weaknesses in this policy area, triggering broad policy attention. The OVV report itself underlined that even a minor release illustrates what the consequences could have been from negligence (ILT, 2016)

In response, the issue was rapidly brought to politics. The Dutch parliament debated the findings, the ministry reported on follow-up plans, and industry stakeholders convened new safety collaborations. The incident shifted attention from abstract rules to real-world implementation gaps in hazard transport. It also prompted structural change as organizations revised operational practices and invested in safer equipment, and regulators undertook concrete rulemaking efforts to address the flaws this incident highlighted. In sum, the Tilburg collision concentrated political and administrative focus on rail chemical safety, leading to reforms.

5.4 Policy measures after focusing events in the policy area of transport of hazardous substances

5.4.1 Amersfoort

The acrylonitrile spill at Amersfoort in 2002 exposed critical gaps in the Dutch policy area of transport of hazardous substances. The Dutch transport safety council concluded in 2004 that a tanker with roughly 80 tons acrylonitrile had been parked overnight without supervision. The carriage lacked sufficient inspections and had a leaking valve (RvTV, 2004). The incident generated national media attention and was treated as a focusing event, catalysing regulatory reforms in hazardous rail transport. In sum, unmonitored parking of dangerous trains was effectively outlawed and rules regarding, inspection of train carriages and valves in particular were tightened. The following outlines how policy evolved in three dimensions.

After Amersfoort, new rules expanded the **scope** of regulation to cover train routing, parking, and chain responsibility. Most immediately, the RvTV recommended (and the government pursued) an amendment to the Dutch regulation on transport of dangerous substances by rail (*VSG*) so that loaded

hazardous trains may only be parked in places where there is little to no risks to the environment (RvTV, 2004). In practice, the Ministry of Infrastructure and water (*IenW*) in 2007 instructed ProRail to designate safe holding yards for trouble trains, and issued guidelines that gas- and liquid-cargo trains must avoid unscheduled stops in urban stations (RvTV, 2004).

In parallel, the chain of responsibility was widened. The Dutch chemical industry association (VNCI) and regulators adopted the RvTV's call for "chain accountability" (*ketenverantwoordelijkheid*). VNCI was formally advised to ensure members monitor the entire logistics chain of hazardous shipments, but it is difficult to find whether this has been followed up (RvTV, 2004) In short, the **content** of regulation has changed but it is unclear whether chain accountability has been improved.

Apart from routing and chain issues, the regulated materials, and operations themselves saw an increase in **stringency**. The Amersfoort investigation led to stricter technical controls on tank wagon design and filling procedures. Internationally, the Netherlands pressed for RID amendments so that tank wagons must have two independent safety barriers on valves and pressure-relief devices (RvTV, 2004). This double-sealing requirement was promptly written into the Dutch VSG, but it is unclear whether this has been implemented into the RID. At the same time, filling stations and consignors were required to document and perform valve-tightness checks after loading; for example, the Vopak terminal modified its procedures to issue clear fill-instructions and verify post-fill valve integrity (RvTV, 2004). All these measured increased **stringency** in procedure.

Furthermore, parked dangerous trains must now meet far tougher conditions. As noted, the amended VSG and later ProRail guidance mean trains carrying hazardous flammable or toxic liquids cannot be left unattended in urban or residential areas, and must be routed to low-risk sidings. Stopping such trains in large stations is avoided entirely, and even brief stops (crew changes, technical delays) must occur only at pre-approved yards. This is a far more restrictive parking regime than before 2002, when no explicit prohibition on unsupervised stands existed.

Institutional **enforcement** of hazardous-rail transport was also changed. Although the 2004 investigation had critiqued oversight as "marginal", policy reforms have since clarified enforcement roles. While after 2003, rail transport companies must have an expert on the transport of hazardous substances that supervises enforcement of these rules, this measure is not directly related to the Amersfoort incident, as it was added as an amendment of Dutch regulation to conform with the RID.

In summary, the 2002 Amersfoort acrylonitrile leak did prompt the Netherlands to broaden and tighten its rail-transport safety regime. Regulations were expanded to cover routing and urban parking of hazardous trains, and chain-responsibility was pressed by the RvTV, but it is unclear whether and how

this was formalized. However, technical standards and operational constraints were made more stringent. Therefore, there are clear policy changes that reflect the RvTV/Amersfoort findings.

5.4.2 Tilburg

While the direct consequences were limited, this incident did serve as a critical focusing event. It drew, attention to systemic vulnerabilities within Dutch rail safety. Because of this, OVV started an investigation to identify safety lessons. The incident and investigation prompted a re-evaluation of operational practices, an increased emphasis on chain responsibility among all stakeholders, and calls for stricter international and national technical standards for transport trains, reflecting a significant learning trajectory in this policy area. The follow-up of the recommendations of the OVV were monitored by the Inspectorate for traffic and water management (RvTV, 2004).

Regarding **scope,** the Tilburg incident directly influenced the expansion and specification of policies and regulations concerning hazardous rail transport. Firstly, The State Secretary for Infrastructure and Environment, committed to advocating for two key amendments to the international RID. They proposed two changes regarding the prohibition of the placement of hazardous substances in the last wagon of a train and they mandated over-buffering protection for all tank wagons, including those transporting non-toxic hazardous substances, with the aim to prevent direct tank breaches in rear-end collisions (OVV, 2015). Given that amendments to the RID can take years, the State Secretary sought to establish these recommendations for the Dutch context through voluntary cooperation with carriers and companies in the chemical industry (Tweede Kamer, 2016).

Regarding **stringency**, the Tilburg incident led to increases in safety standards, reflecting a heightened focus on preventing future incidents. Firstly, the OVV recommended that companies responsible for operational control of rail transport, should not take (last minute) operational decisions regarding the control of trains with dangerous substances that could decrease safety or lead to extra risks (OVV, 2015) (ILT, 2019). In their monitoring report, the ILT (2019) concludes that both DB Cargo and ProRail, together responsible for operational control, followed this (both in different ways).

Secondly, the OVV recommended improving chain responsibility among the Dutch chemical industry involved in the transport of hazardous substances by rail. Specifically, these companies were asked to avoid making risk-increasing operational decision, to formalize this in their transport contracts and to monitor this. Practically, they perform this by forbidding operational changes 1 hour before transport. The ILT stopped monitoring in 2019 as this recommendation was sufficiently implemented by de concerned chemical companies.

There are two points to made regarding **enforcement** related follow-up after Tilburg. Firstly, the organization of follow-up. Monitoring of OVV Recommendations was formalized by ILT. This inspectorate was tasked with assessing the follow-up of OVV. This formalized monitoring process

enhanced enforcement by ensuring that lessons learned from the Tilburg incident translate into concrete actions and sustained improvements.

While the follow-up by ILT and cooperation of different parties show risk awareness, the NS shows differently. While the Dutch Railways (NS), did decide to withdraw all Mat'64 trains in 2016 (OVV, 2015) and thereby addressing the OVV's recommendation, the NS knew the issues with the Mat'64 for almost a decade. To be precise, the Mat'64 model is an older design from 1964, and it lacked modern crash absorbers and a track clearer, resulting in poor crash compatibility and a higher chance of derailment (OVV, 2015). After an incident in Coevorden in 2007, an investigation of the ministry of Infrastructure and Water already concluded that the Mat'64 has a higher risk of derailment and recommended the NS to add these safety measures (NU.nl, 2008). To make matters worse, 21 days after the incident in Tilburg, another derailment with the Mat'64 happened in Teuge (Omroep Gelderland, 2015). A Quick scan of the ILT in august 2015 following both incidents showed that since 1981, the Mat'64 was involved in almost 40% of all derailments on Dutch railways. While the ministry of Infrastructure and Water reported the issues with the Mat'64, they were at the same time responsible for authorisation the use of this train (Omroep Gelderland, 2015).

In **summary,** while the Tilburg incident did serve as a significant catalyst for policy learning in the transport of hazardous substances by rail. Prompting more proactive and risk-aware approach on the transport of hazardous substances side, the NS neglected the advice of equipment modernization.

On top of that, there is an ongoing debate regarding national government proposals to ease restrictions on certain rail routes, which has triggered serious objections from municipalities and provinces. This highlights a continuous tension between economic growth and logistical efficiency on one hand, and public safety concerns on the other.

5.4.3 Conclusion

In the domain of transport of hazardous substances, focusing events have been present but with less impact than in the firework domain. The Amersfoort acrylonitrile leak in 2002 was sudden and required evacuation, but it caused no fatalities or injuries. The Tilburg collision in 2015 was sudden and involved a large quantity of flammable gas, yet again it resulted in no injuries. Both events received attention in industry media and provoked government reports, but neither generated a widespread public crisis image. According to Birkland's scheme, they partially meet the criteria as both incidents were rare and had a harmful potential, but they lacked significantly on scale and public awareness when it compares to Enschede.

These potential disastrous events did raise some attention. For example, OVV investigations were made, and their recommendations were followed up. This shows that the problem stream was activated at least within the sector. It also demonstrates that policy entrepreneurs used the accident to demand action. But

the limited effect of these events could be because they did not clearly reveal a policy failure in the same way that Enschede (and Culemborg) did, as the consequences were so much smaller.

In Birkland's terms, the event did not conclusively expose a weak regulatory regime; it looked like an accident at the operational level. In practice, post-Tilburg policies emphasized remedial actions within the status quo. This was done by updating safety protocols, more stringent inspections, and improved monitoring, rather than structural reform of the transport network. The OVV's own recommendations echoed this. It argued that chemistry firms must integrate rail safety into their processes and make explicit agreements with carriers. These suggestions imply internal organizational changes rather than a large legislative overhaul. From an MSF perspective, the streams did not fully align. The problem stream (risk of urban transport) was always present but typically low on the agenda. The 2015 event briefly elevated it, but the policy stream had few ready alternatives beyond existing trade-offs, and the politics stream lacked the intensity to push through anything dramatic. As a result, the window that opened closed again without major policy punctuations.

Thus, focusing events in the policy area of transport of hazardous substances by rail had weaker focal power. They were sudden and potentially harmful, but the limited damage and technical causes decreased their agenda impact. In Birkland's terms, the rail events were not focusing in the fullest sense, as they fell short on impact and public shock. Hence, while the fireworks sector saw a clear event-driven policy acceleration, the rail sector evolved more gradually, confirming that focusing events need a critical mass of features to matter, but also that incremental changes can occur without focusing events within the policy area.

Mechanism	**Explanation**	**Amersfoort**	**Tilburg**
Visibility	Media coverage and political attention after a focusing event increase public and policymaker awareness of previously latent or low-salience issues.	Visibility was limited. While professionals and local officials noted the incident, it did gain national media attention., but that faded quickly.	The incident received some media coverage, but not at a scale that elevated it to a widely known national concern.
Public Support	A focusing event can galvanize public concern and increase support for policy change by making risks and vulnerabilities more tangible.	Public concern remained localized and did not build into a broader demand for change.	While the release of hazardous gas raised local concern, the absence of casualties limited public mobilization or pressure.
Pressure on Policymakers	Heightened visibility and public concern generate political pressure, making it more difficult for policymakers to ignore or delay action.	Policymakers acknowledged the event but treated it as a technical incident, resulting in limited follow-up beyond operational checks.	Pressure came primarily from local and provincial governments, but national policymakers only improved existing policy incrementally.
Opportunity for Entrepreneurs	The increased attention creates a policy window that enables entrepreneurs to couple solutions to the problem and advocate for change.	The event did not open a strong policy window; there was little momentum or public attention to support entrepreneur-led change.	Provincial actors attempted to use the incident to push for stricter routing policies, but the window closed without significant action.

Table 3 Birkland's framework applied to the rail domain

6. CONCLUSION & DISCUSSION

This study was set out to explain how focusing events have shaped Dutch external safety policy in two policy areas using the main research question:

To what extent can differences and similarities in the development of external safety policy in the two policy areas be explained from the theory of focusing events?

Both policy areas of consumer fireworks storage and hazardous materials transport by rail were analysed to assess whether Birkland's focusing-event theory accounts for the similarities and differences that were observed. The analysis shows that focusing events are indeed a useful lens as catastrophic fireworks incidents have catalysed policy attention, whereas rail transport accidents have had more muted effects. In the fireworks domain, two major disasters (Culemborg 1991 and Enschede 2000) exemplify Birkland's criteria for focusing events, they were sudden, harmful, and widely reported. Especially Enschede correlated with bursts of regulatory activity. The policy area of transport of hazardous substances by rail has seen serious and sudden accidents as well but this resulted no casualties. While these events did draw media attention and official investigation, they lacked the overwhelming impact to trigger broad reforms. These differences in policy evolution between the two sectors can be largely explained by the impact of the focusing events. In this chapter the findings will be integrated with the theory of Birkland's focusing events, which will be critically reflected. On top of that further research possibilities will be discussed.

6.1 Theoretical Implications and discussion

The comparative results in this thesis confirm several aspects of Birkland's focusing-event theory and its integration with broader policy frameworks. First, we see that Birkland's criteria indeed help explain which events carried weight, and which did not. The Enschede disaster stands out as an event that fully met these criteria: it was sudden, caused extensive casualties, and was known to all relevant actors within hours. In contrast, the rail accidents were sudden but neither as harmful nor as widely noted. While the potential harm was enormous it never materialized to its full potential and was therefore less salient to the public. This asymmetry aligns with theory as only events with all the right ingredients propelled onto the national stage and triggered substantial action.

Second, the findings illustrate the mechanisms of agenda-setting and framing. According to Kingdon's Multiple Streams Framework (MSF), focusing events act as a catalyst that open policy windows by merging the problem, policy, and politics streams. In Enschede, this coupling occurred. The problem was framed as unsafe fireworks in residential areas, linking it to prior calls for change after Culemborg. Policy entrepreneurs used this frame to push concrete proposals for change. By contrast, in the rail case the coupling was weaker. While Amersfoort and Tilburg did reinforce an already recognized the

problem of urban transport routes it did not come with new and dramatic dimensions. In the light of the Multiple Streams Framework, the focusing events in regarding the transport of hazardous substances simply heightened awareness of an ongoing issue, rather than introducing a new problem definition or unlocking new policy alternatives.

Third, the framing of each event also mattered. Birkland and others emphasize that the way actors interpret an event shapes the outcome. In the fireworks domain, Enschede could not be framed in any other way than as a clear failure of regulation, spatial planning, and enforcement, which made policy change the only logical remedy. That framing successfully narrowed the range of acceptable solutions and dominated the debate. In contrast, the framing of rail incidents such as those in Amersfoort and Tilburg was far less prominent, largely due to limited media attention. While investigations did uncover underlying issues, such as insufficient inspection of tank car valves and a lack of coordinated chain responsibility, these problems were perceived as less threatening than the mass explosivity risks associated with fireworks storage in densely populated areas. As a result, the framing of these rail incidents lacked the sense of urgency and systemic failure that characterised Enschede. The limited media amplification meant that public and political pressure to pursue sweeping reforms remained weak, and the events were primarily treated as technical incidents requiring procedural adjustments rather than as crises demanding regulatory overhaul. This contrast illustrates how both media salience and perceived risk magnitude influenced the framing of events, which in turn shaped the extent of the policy response.

Fourth, the findings suggest that Birkland's mechanisms, (visibility. public support, and pressure on policymakers) tend to reinforce each other. In the Enschede case, their combined presence amplified the policy impact, whereas in the rail cases, their partial or isolated presence failed to trigger a full-scale change.

Sixth, is the broad generalisability of Birkland's focusing events theory. His framework relies on abstract and flexible concepts like agenda setting, policy learning, and triggering events. This allows the theory to be applied across diverse policy domains and contexts. This enables diverse use of the theory to analyse a wide range of crises.

The results reinforce Birkland's idea that focusing events do not guarantee substantive, and lasting change. The literature notes that media and public attention often spike after disasters but can fade unless a problem is repeatedly highlighted or actionable policies exist. In the case, fireworks events initially produced intense action but over time some momentum was lost. Especially after Culemborg, where bureaucratical conflict caused a standstill. This outcome supports the idea from Kingdon, that learning from disasters requires deliberate follow-through, and action from policy entrepreneurs which propose preexisting solutions. Where such follow-up occurred, learning was more profound.

Building on the lingering fireworks crisis, the findings of this thesis align with the critique by DeLeo et al. (2021), who argue that focusing event theory is limited in explaining crises. While both the

Culemborg and Enschede disasters meet Birkland's criteria for focusing events, the broader systemic crisis of unsafe fireworks storage remained largely unrecognized until the Enschede disaster. This suggests that the theory is well-suited to explain discrete events that trigger attention and reform, but not the lingering crises that precedes them. In this case, the crisis was only made visible in hindsight, when Enschede reframed the earlier signs (including Culemborg) as precursors to policy failure. As such, while focusing events do not explain the emergence of a lingering crisis, they can catalyse its resolution by creating a moment of concentrated attention that enables policymakers to confront long-standing structural vulnerabilities.

Finally, this thesis contributes to the ongoing debate about the applicability and limits of focusing event theory. The fireworks case demonstrates that while Birkland's framework is well-suited to analysing high-impact, visible shocks like Enschede, it is less equipped to capture the evolution of lingering crises, such as the broader, decades-long policy failure around fireworks storage. In this case, the structural vulnerabilities, as exposed in Culemborg, did not initially trigger substantial change. Only when the later Enschede disaster showed those earlier signs, the underlying crisis gained full recognition. While focusing event theory might not be able to explain lingering issues, the theory remains valuable in explaining how attention can be mobilised after a triggering event, and how such moments may catalyse the resolution of lingering issues.

In sum, this thesis confirms that focusing events, particularly when interpreted through the lenses of the Multiple Streams Framework, offer a compelling explanation for why policy change unfolds rapidly in one domain and not in another. The fireworks case closely aligns with the theory's expectation, while in contrast, the rail domain illustrates the theory's boundaries. These so called potential focusing event, that (almost) fit the definition, can have significantly less influence. This leads to policy change that follows a slower, more technocratic path. This contrast shows that focusing events are best understood as catalysts rather than determinants of change. They open windows of opportunity, but whether those windows are used depends on factors like the presence and will of policy entrepreneurs and bureaucratic constraints. This aligns with Kingdon's model. This insight strengthens the theoretical literature and provides a more nuanced understanding of how, when, and why societies respond to risk.

6.2 Limitations of Focusing-Event Theory

The policy area of transport of hazardous substances by rail lacked a singular disaster, and policymakers treated repeated close calls as evidence of a lingering issue rather than the final straw. Thus, focusing events theory may overlook how the accumulation of multiple small events and non-event indicators contribute to change. Future studies should therefore complement event analysis with attention to these subtler drivers.

The case of hazardous substances transport by rail illustrates a key limitation of focusing event theory: Also, potential focusing event can lead to policy change. Policymakers responded to a pattern of

repeated near-misses and accumulating risk indicators. This is a dynamic that the original formulation of Birkland's (1998) theory does not fully capture. As DeLeo et al. (2021) have argued, focusing event theory is less effective in explaining prolonged or evolving crises, where no single focusing event dominates the agenda but instead a gradual buildup of concern drives attention and reform. In the Dutch rail transport context, this meant that policy learning, rather than a sudden focusing event, shaped the trajectory of change. This finding supports recent critiques that the theory may overstate the explanatory power of discrete shocks while understating the role of problem indicators, institutional feedback. For example, as the Basisnet evolves without large fatal accidents. Future research should therefore consider how chains of minor incidents and escalating signals function as agenda-setting mechanisms in their own right.

Another limitation concerns the predictive value of focusing event theory. Birkland's theory is primarily used retrospectively, to explain why policy change occurred after an event. This thesis confirms its strength. However, its value as a predictive tool remains limited. While it offers general expectations about how shocking events might cause change, it cannot specify in advance which events will receive sufficient media framing, political attention, or policy entrepreneur activity to open a policy window. For example, the Culemborg disaster met several theoretical criteria of a focusing event but failed to produce systemic change. Only in hindsight does it become clear why one event triggered reform and the other did not. Future research should therefore combine focusing event theory with political and institutional diagnostics if it seeks to anticipate policy shifts in real time.

6.3 Limitations of this thesis

This thesis centres on focusing events theory that emphasizes these events as key drivers of policy change. As such, the analysis uses these events and does not fully explore other important influences on policy development, like ongoing regulatory learning, policy feedback mechanisms, or international factors and other gradual processes.

The research was conducted within a constrained timeframe, which affected the width of the analysis. As a result, choices had to be made about which cases to include. If the timespan were longer, cases from different policy areas could be analysed to gain an even more comprehensive understanding about the role of focusing events in Dutch external safety policy. Furthermore, this research did not allow opportunities for stakeholder interviews.

Although the Dutch Safety Board (OVV) publishes accessible and extensive final reports, the long-term policy uptake and implementation of its recommendations—particularly in the rail domain—remain poorly publicly documented. This introduces uncertainty in the analysis of whether and how these reports influenced actual regulatory or operational change. Without internal government documentation or interviews with involved policymakers, it is difficult to evaluate the causal pathways between OVV findings and policy evolution.

The reliance on publicly available information, particularly from government and affiliated institutions, introduces a potential bias in both content and framing. Official documents tend to emphasize formal responses and may downplay internal tensions, failed policy proposals, or political resistance. The absence of alternative viewpoints limits the ability to detect informal dynamics. This selective visibility could result in an overly institutionalized or sanitized portrayal of the policy process, especially in sectors with high technical complexity and political sensitivity.

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During the preparation of this work, I used ChatGPT and DeepL to find and analyse sources and to format, translate, check, and revise text. After using this tool/service, I thoroughly reviewed and edited the content as needed, taking full responsibility for the final outcome.

7. Appendix

Planning

activity / week	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Ethics committee approval															
Mobility online form															
Results Firework															
Theory & Methodology															
Results Rail															
Conclusion / discussion															
First draft thesis															
Revising first draft															
Greenlight															
Request Colloquium															
Colloquium															

= Deadlines

= Activities