The Governance of Fire Safety

Using Networks, Markets, Hierarchy? ….Or a form of Anarchy?

A study focusing on the current Dutch governance of fire safety, using a theoretical framework consisting of traditional hierarchical governance, market governance and network governance to make recommendations for improving the current administrative process in the fire safety domain.

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"Er moest een belangrijke taak worden verricht en het was aan iedereen gevraagd dat te doen…

Wie-dan-ook had het ook kunnen doen, maar niemand deed het…

Iemand werd daar boos over, omdat het de taak was van iedereen…

Iedereen dacht dat wie-dan-ook het wel zou doen,

maar niemand realiseerde zich dat iedereen het niet zou doen…

Uiteindelijk gaf iedereen iemand de schuld terwijl niemand wie-dan-ook gevraagd had…"

"There was an important job to be done, and it was anyone asked to do so…

Everybody could have done it, but nobody did…

Somebody was angry about this situation, because it was the duty and responsibility of everyone…

Everyone thought that anyone would have done it,

but nobody realized that everybody would not do it…

Finally, everybody blamed somebody, while anyone asked anybody"

- J.M. van der Werf -

I. Preface

This report is written as a master thesis for the master track 'Public Safety' at the University of Twente. This track is a part of the master 'Public Administration' of the School of Management and Government. Governing safety in its broadest sense requires specific knowledge and understanding about managerial skills, administrative processes and policy analysis, just to name a few. This master has therefore been a valuable addition to my current curriculum. With a happy and satisfied feeling I look back on the experiences I have perceived during my study at the University of Twente. My word of thanks therefore starts to all the professors and fellow students of making this study route to a successful, pleasant and very educative period in my life.

The choice for this research was partly realized due to multiple conversations I had with employees of the Dutch Institute for Safety (NIFV). Despite the fact that they only played a steering role in the beginning of this research, they have given me the input to go deeper into the Dutch governance of fire safety. First of all, I would like to thank drs. Karin Groenewegen for giving me the relevant contact persons in the NIFV organization. Besides, a word of thank for Mr. ir. Rijk van den Dikkenberg and Mr. dr. ir. Jos Post for the exploratory conversation for this research and for the referral to Mr. ir. Msc. Rene Hagen for further guidance throughout this research. In this regard also a word of thank to Rene, due to his extensive knowledge and reputable background, he directed my research to an interesting direction. In this way my gratitude your efforts during the start of this research.

In addition to the commission of the NIFV, the University of Twente has provided a very pleasant and valuable guiding role throughout this research. A special word of thanks to Mrs. Dr. Marsha de Vries for her pleasant guidance and cooperation, not forgetting her valuable act as a first reader of this research. Also the guiding role of Mr. dr. Guus Meershoek is really appreciated, and his act as a second reader of this research. Partly due to your guidance, this research has resulted in a successful report and a valuable and successful ending of my study career.

I would further like to express a special word of gratitude to a number of contacts from local authorities and consultancies. With their efforts it has been possible to go deeper in the governance of fire safety. Even though case studies pointed out to be unachievable, they gave me valuable connections and further information about this research topic. In this regard, a word of thanks to Ruud van Herpen of the advising agency Niemann, Johan Seij of the municipality Winterswijk and Arjan Frericks as a specialist risk management of the municipality Oost-Gelre.

Last but not least a special word of thanks for all the persons in my private life for their help, support and belief during my entire study period. In particular lots of gratitude for my parents for facilitating and supporting me in all possible ways. The completion of this study provides me a valuable degree on the work and efforts I have delivered the last six years, and will be even more valuable for my future career.

Enschede, April 2013

Ninja Klapwijk

II. Voorwoord

Voor u ligt het rapport dat het eindresultaat is van mijn masterstudie 'Public Safety' aan de Universiteit Twente. Deze master die gegeven wordt aan de Universiteit in Twente valt onder de studierichting 'Public Administration', in het Nederlands beter bekend als bestuurskunde. Aangezien het coördineren en besturen van veiligheid in de breedste zin van het woord veel bestuurskundige kennis vergt heeft deze masteropleiding een waarde aanvulling gegeven in mijn curriculum. Met een tevreden en voldaan gevoel kijk ik dan ook terug op de ervaringen die ik gedurende deze studieperiode heb op gedaan bij de Universiteit Twente. Mijn dank gaat dan ook uit naar alle docenten en medestudenten, mede dankzij deze personen heb ik mijn studieperiode tot een succesvolle en plezierige afronding weten te brengen.

De keuze voor dit onderzoek is mede tot stand gekomen dankzij de medewerking van het Nederlands Instituut voor de Fysieke Veiligheid. Ondanks het feit dat zij slechts een initiërende rol hebben gespeeld in het onderzoek hebben zij mij de input gegeven om dieper in te gaan op het bestuur van brandveiligheid in de Nederlandse context. Ten eerste zou ik graag drs. Karin Groenewegen willen bedanken voor het refereren naar relevante contacten binnen het NIFV. Daarnaast zou ik graag de heer dr. ir. Jos Post en de heer ing. Rijk van den Dikkenberg van het NIFV willen bedanken voor het verkennende gesprek op dit onderzoek en het doorverwijzen naar de heer ir. MSc. Rene Hagen voor een verdere begeleiding gedurende dit onderzoek. Rene Hagen heeft gedurende de opstart van dit onderzoek een belangrijke sturende richting gehad in de problematiek. Mede gezien de gerenommeerde achtergrond en zijn uitgebreide kennis in het domein van de brandveiligheid heeft hij een zeer belangrijke bijdrage geleverd tijdens de start van dit onderzoek. Via deze weg dan ook mijn waardering voor jullie input gedurende dit traject.

Naast de begeleiding op het NIFV heeft de Universiteit Twente ook een zeer waardevolle begeleiding en input kunnen geven gedurende dit onderzoekstraject. Ten eerste wil ik mevrouw dr. Marsha de Vries willen bedanken voor de prettige en zeer waardevolle begeleiding en het optreden als eerste lezer van dit onderzoek. Ten tweede wil ik ook de heer dr. Guus Meershoek bedanken voor zijn begeleiding en het optreden als tweede lezer van dit onderzoek. Mede dankzij jullie begeleiding is dit onderzoek succesvol verlopen en tot een positief einde gekomen.

Ook een aantal contactpersonen van lokale overheden en adviesbureaus wil ik graag bedanken voor hun input gedurende dit onderzoek. Ook al hebben bepaalde mogelijkheden niet geresulteerd in succesvolle casestudies, het toereiken van mogelijkheden om op diverse locaties interviews te houden is zeer op prijs gesteld. Vanuit dit perspectief een speciaal dankwoord aan Ruud van Herpen van het onderzoeksbureau Niemann, aan Johan Seij van de gemeente Winterswijk en Arjan Frericks als vakspecialist risicobeheersing van de gemeente Oost-Gelre.

Tot slot een dankwoord aan alle personen in mijn privésfeer voor hun steun en toeverlaat tijdens mijn gehele studietraject. Met name een speciaal dankwoord aan mijn ouders voor het verlenen van alle mogelijke ondersteuning voor het doorlopen van een zeer prettig studietraject dat mij een zeer waardevolle aanvulling zal geven gedurende mijn gehele toekomstige carrière. Een prachtige stempel op het geleverde werk, een stempel voor een nog mooiere toekomst en het werk dat geleverd zal gaan worden.

Enschede, April 2013

Ninja Klapwijk

III. Summary:

The governance of fire safety is complex due to the required specific technical knowledge and expertise. This is already the case while using a prescriptive based approach like Bouwbesluit 2012 in contemporary buildings and becomes even more complex while using a performance based approach in complex buildings, also known as fire safety engineering. Implementing fire safety in buildings therefore requires knowledge, expertise and responsibilities of both public as private actors, and therefore has an integral character. The current Dutch governance of fire safety can thus be seen as a form of governance better known as public-private partnerships. One of the most important threat in this occasion is that public-private partnerships might result in blurred responsibilities and accountabilities, where actors tend to designate responsibilities and accountabilities to each other, while trivializing their owns. The current situation therefore results in a governance mode which can be seen as an 'anarchy'. In other words, the governance of fire safety is disordered due to a semi-hierarchical and semi-horizontal organization without central allocated responsibilities and accountabilities. From a juridical point of view these responsibilities and accountabilities are clearly formulated, but due to the integral character in the governance of fire safety, the allocation of responsibilities are not always straightforward. Besides, formal responsibilities are not communicated transparently among all the stakeholders which are being observed in the governance of fire safety.

In response to these observations, the Commission Dekker (2008) followed with the recommendation to delegate the responsibilities and accountabilities to the private sector where possible. This research demonstrates that there is an ambiguous attitude of the market towards further privatizing the Dutch governance of fire safety, and that this attitude can be explained from both a pragmatic as an ideological perspective. Core values of public and private organizations differentiate significantly from each other, and strategic visions or core businesses of the private domain are often focused on financial interests, which as a consequence might result in opportunistic behavior. Many research has demonstrated that forms of contracts and trust can favor further privatization, but do not state whether and how privatization can replace the responsibilities of the public sector in order to serve the overall public good, in this regard the overall public safety. There are thus significant threats associated with further privatizing the Dutch governance of fire safety, and governmental superintendence as an independent authoritative assessment therefore seems to remain a desired form of administrative supervision that prevents these threats from occurring. The current Dutch governance of fire safety using public-private partnerships still allows significant improvements to be made, but from the perspective of this research it seems inevitable that governmental superintendence has to be safeguarded and to prevent a total privatization to occur.

In order to improve the current governance structure, a scientific schematic framework has been presented that can be used in directing potential changes of the contemporary governance of fire safety. This schematic framework elaborates on the assumption that governmental inference is being maintained. In order to further explore possibilities for further privatization, three broad measures and corresponding tools are being presented on how potential privatization in the governance of fire safety can be achieved. When further privatization is desired, individuals should be aware about the threats and caveats about further privatization. This research provides a valuable insight in this subject, and is therefore a valuable reference in directing potential changes in the governance of fire safety. The answer on the question how the governance of fire safety has to be amended is not straightforward, and budget cuts and ideological or political visions often force these changes to be made. The presented scientific schematic framework helps to direct potential changes in this regard. When strengthening allocations of tasks, responsibilities and accountabilities, we actually may conclude that the current Dutch governance of fire safety performs well compared to other European countries, and that an optimization of the current situation will result in an even more satisfactory governance mode.

IV. Samenvatting:

Het besturen van brandveiligheid is complex door de specifiek benodigde kennis en expertise. Dit is reeds het geval bij het toepassen van Bouwbesluit 2012 in standaard gebouwen en wordt zelfs specifieker wanneer er gebruik gemaakt wordt van een gelijkwaardige benadering bij complexe gebouwtypen, beter bekend als Fire Safety Engineering. Het implementeren van een goed beleid van brandveiligheid in gebouwen vergt hierdoor input en verantwoordelijkheden vanuit diverse disciplines en heeft hierdoor een integraal karakter. Het huidige bestuur van brandveiligheid kan dan ook getypeerd worden als een vorm van bestuur waarbij intensief gebruik gemaakt wordt van publiek-private samenwerking. Een van de belangrijkste problemen die dit integrale karakter met zich meebrengt is dat verantwoordelijkheden en aansprakelijkheden minder duidelijk worden. De huidige situatie kan hierdoor getypeerd worden als een 'anarchie', een onordelijke situatie door een combinatie van een semi-hiërarchische en semi-horizontale vorm van bestuur zonder centraal toegewezen verantwoordelijkheden en aansprakelijkheden waarin iemand de leiding neemt. Vanuit een juridisch oogpunt zijn deze aspecten duidelijk geformuleerd, maar door het integrale karakter is de toebedeling van verantwoordelijkheden en aansprakelijkheden in de praktijk echter niet altijd duidelijk onder betrokken actoren en worden ze ook niet transparant gecommuniceerd.

De Commissie dekker kwam in 2008 met het voorstel om de taken en verantwoordelijkheden met betrekking tot brandveiligheid naar de private sector te delegeren waar mogelijk. Dit onderzoek laat zien dat er in de markt een tweeledige houding is naar een verdere privatisering van het bestuur van brandveiligheid. Dit onderzoek laat zien dat deze tweedeling verklaard kan worden aan de hand van zowel pragmatische als ideologische perspectieven. Kernwaarden van publieke en private organisaties verschillen significant van elkaar, en strategische visies in de private sector zijn vaak afgesteld op economisch belang, welke vervolgens weer kunnen leiden tot opportunistisch gedrag. Diverse onderzoeken tonen aan dat aspecten als het vertrouwen in de markt en het gebruiken van duidelijke contracten zouden kunnen leiden tot verdere privatisering. Echter laten deze onderzoeken niet zien in hoeverre dergelijke veranderingen een bijdrage leveren in het algemeen belang, in dit onderzoek beter te verstaan als de algemene de publieke veiligheid en meer specifiek het niveau van brandveiligheid. Er zijn dus significante bedreigingen die kunnen ontstaan wanneer het Nederlandse bestuur van brandveiligheid verder geprivatiseerd wordt. Vanuit dit perspectief blijft bestuurlijk toezicht gewenst als een extra onafhankelijk en gezaghebbend oordeel dat voorkomt dat dergelijke financiële belangen domineren over het algemeen belang. Het huidige bestuur van brandveiligheid met publiek-private samenwerking kan echter nog significant verbeterd worden, maar uit het perspectief van dit onderzoek lijkt het onvermijdelijk dat bestuurlijk toezicht gewaarborgd moet blijven en te voorkomen dat een totale privatisering gaat plaatsvinden.

Dit onderzoek presenteert een schematisch overzicht dat gebruikt kan worden om de huidige situatie te verbeteren en dat gebruikt kan worden om sturing te geven aan toekomstige veranderingen in het Nederlandse bestuur van brandveiligheid. Daarnaast presenteert dit onderzoek drie brede maatregelen met bijbehorende instrumenten om verdere mogelijkheden voor privatisering van de zorg voor brandveiligheid te overzien. Wanneer een dergelijke privatisering gewenst blijkt te zijn, dan dient men zich bewust te zijn van de mogelijke bedreigingen die kunnen ontstaan bij een verdere privatisering. Het antwoord op de centrale vraag hoe het Nederlandse bestuur van brandveiligheid veranderd dient te worden is niet vanzelfsprekend, en dergelijke veranderingen zijn vaak onderhevig aan zowel ideologische visies als politieke achtergronden als bezuinigingen, centralisatie of decentralisatie. Het schematisch overzicht helpt om sturing te geven aan dergelijke veranderingen en geeft een inzicht aan de relevante aspecten die hierbij afgewogen dienen te worden. Wanneer aspecten als taakverdeling, verantwoordelijkheden en aansprakelijkheden duidelijk worden gedefinieerd en gecommuniceerd, dan kunnen we wellicht concluderen dat het Nederlandse bestuur van brandveiligheid het nog niet eens zo slecht doet in vergelijking met andere Europese landen. Een optimalisatie van de huidige situatie kan dan resulteren in een nog meer tevredenstellende vorm van bestuur.

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1. Introduction

Fires in buildings can result in different catastrophic consequences. The most obvious and direct consequences are the physical injuries or fatalities due to a fire and the direct physical damage to properties. More indirect consequences are the emotional consequences, financial consequences and potential loss of sales and market share. Fire prevention or fire safety in buildings therefore has one of the top priorities in the design of buildings. Many fires have shown that social disruption is an obvious result when fires occur in both regular as complex buildings resulting in multiple fatalities. On other words, due to the potential risks of fires in buildings, fire safety should be governed structurally in order to enhance control in every occasion.

Since the Netherlands has grown to one of the most dense countries of Europe, more and more huge and complex buildings are being constructed in many cities to cope with spatial problems. In line with the increasing amount of complex building designs, approaches to both structural, organizational and installation technical ways to ensure an adequate level of fire safety in buildings tend to become more complex. Due to this increasing complexity, building codes are changing from prescriptive- to performance based building approaches, which can be observed in many countries across the world, including the Netherlands and other European countries. The description of the prescriptive based approach is self-explanatory, it prescribes specifically what to do or which measures to apply in a building with regard to structural, organizational an installation technical ways to improve fire safety. Performance based codes on the other hand prescribe the required objective that has to be accomplished, and allows the designer of a building to apply any desired approach or measure to achieve this objective properly. In other words, performance based approaches leaves the means of achieving the mandatory level of fire safety that is prescribed to the designer of that building. This enables designers to find new and innovative solutions to fire safety in complex buildings when prescriptive approaches are not possible or desired.

The Dutch fire safety legislation prescribes its conventional prescriptive fire safety codes in 'Bouwbesluit 2012'. Practical experiences have shown that these prescriptive fire safety codes are not applicable to certain huge and complex buildings containing different uses. The application of the conventional fire safety codes in complex buildings may therefore not facilitate designers of buildings to come up with new and innovative designs which are often desired in spatial planning. From this point of view, Bouwbesluit 2012 describes in article 1.3 that the provisions in this legislation do not have to be fulfilled when the building or its use deviates from the application of these provisions. The counter-pending requirement is that the building is designed in such a way, that an equivalent level of safety, health protection, usability, energy efficiency and environmental protection is acquired as contemplated in these provisions (NIFV, 2011). From this point of view it is obvious that Bouwbesluit 2012 is based upon prescriptive requirements, but also allows performance based approaches to reach an equivalent level of fire safety in buildings. The more flexible performance based approach allows for more functional and innovative designing projects. One of the most widely used and accepted performance based approach to acquire an equivalent level of fire safety is 'Fire Safety Engineering'. This procedure has already proven its efficiency in other European countries as the United Kingdom and Sweden, and made its appearance in other European countries (Foliente, 2000; Kobes, 2006; Hagen, 2007; Benichou, 2001).

> *'Fire safety engineering can provide an alternative approach to fire safety. It may be the only practical way to achieve a satisfactory standard of fire safety in some large and complex buildings containing different uses. Fire safety engineering may also be suitable to solving a problem with an aspect of the building design which otherwise follows the provisions of the national regulatory on fire safety.'* (TSO, 2006)

The most important and challenging aspect in the governance of fire safety with the performance based approach or fire safety engineering is the problem of blurred responsibilities and the loss of central accountability when buildings turn out to be constructed incorrectly, insufficient installations are engineered, or when the organization with regard to fire safety in that building points out to be deficient. Transparency and clarity of the aspects responsibility and accountability are of great importance when considering these issues. Multiple recent accidents in the Netherlands have resulted in serious conclusions that governments or users have not taken sufficient responsibilities regarding fire safety or similar at various stages surrounding the issued license. This can be observed at the Café fire in Volendam in 2001, the fire in the detention center of Schiphol-East in 2005 and the fire in a chemical concern in Moerdijk in 2011. Due to similar historical accidents and the resulting conclusions in accident reports in combination with extraordinary media attention, local governments might tend to be more reticent of providing licenses with complex approaches that deviate from standard prescriptive nature. These observations raise the question whether the current Dutch governance of fire safety might actually be a kind of an anarchy[1]. Because of the traditional hierarchical government modes, local governments are held directly accountable for their issued licenses in the fire safety domain, even though the user of a building or the private sector has the final responsibility for fire safety in a building. Besides, due to the required technological knowledge, fire safety consultants are especially having a large share in the performance based approach and the consideration of an equivalent level of fire safety, and local governments might rely on their knowledge and expertise. As a consequence, the final responsibility of the design can be dedicated to multiple stakeholders. This results in blurred or mutual responsibilities, and accountability as a consequence becomes obsolete.

Governments are also facing administrative burdens due to the increasing amount of centralization of local governments to regional governments. Due to the increasing amount of highly specific laws, regulations and approaches, governments are entering complex technological domains requiring high levels of knowledge and expertise. This might hamper the governance of fire safety in complex buildings when performance based approaches are being issued. It is frequently stated that local governments have limited levels of knowledge and expertise in this regard, and in combination with traditional defined hierarchical forms of responsibility and accountability, the governance of fire safety in complex buildings might become an extraordinary administrative charge. Due to the required specific technological knowledge and expertise for the performance based approach, the question raises whether local governments might face tough decision making problems when processes deviate from the traditional prescriptive approaches. In line, the question raises whether the governance of fire safety should remain a task of the public sector or should be delegated to the private sector due to the several considerations mentioned above. One of the most obvious recommendation in this regard has been stated by the Commission Dekker: with regard to fire safety in buildings, ‘Treat necessary matters public, anything that can be outsourced, private’ (FVB, 2008). In order to delegate the responsibility and accountability entirely to the private sector, further research has to be done under which conditions prescriptive and performance based approaches can be treated accordingly and which forms of governance can already be observed in contemporary building projects. The literature describes globally three modes of governance with their own threats and benefits: traditional hierarchy, market governance and network governance. Each specific form of governance has its own benefits and threats which need to be considered. This research aims to examine which (mixed) governance structures are being used in current prescriptive- and performance based approaches to fire safety in buildings and to analyze whether the threats and benefits of the divergent modes of governance might occur.

[1] **Anarchy:** arises from ancient Greek "An," meaning without and "Archos" meaning leader. Hence, confusion or disorder, in general. (Urban Dictionary, 2012)

The analysis of the governance structures in the fire safety domain gives more opportunities to motivate why the remarkable observations in the governance of fire safety resulting from recent accident investigations actually occur, and to oversee other problems from a scientific theoretical perspective. Potential threats that might occur by changing the governance structure might also be prevented by visualizing the threats and benefits of divergent governance modes. In order to do this, the administrative process[2] will be analyzed when the prescriptive based approach enshrined in Bouwbesluit 2012 is applied in regular buildings. In line, an analysis will be made of the administrative process when the performance based approach or fire safety engineering will be applied in complex buildings. Based on this analysis and the comparison, problems in the current governance of fire safety can be observed and additional grounded recommendations can be made whether the governance of fire safety is/should actually be a concern for the public sector or should/can be delegated to the private sector and which preconditions have to be taken into account.

This research might lead to a clarification of the opinions and attitudes of different actors towards the current state of affairs in the governance of the Dutch fire safety, both for the prescriptive approach as the performance based approach. This will lead to clarification whether responsibilities and accountabilities are clear among the actors involved in administrative processes, and whether they belong in the public or the private sector. This consideration is of great importance to enhance the effectiveness and efficiency of the Dutch governance of fire safety. In other words, to what extend and how should the governance of fire safety has to be amended to achieve an effective and efficient form of governance in the fire safety domain? This is the central question in this research, and will be analyzed using four sub-questions:

1.1 Research Question

To what extent and how should the governance of fire safety be amended to achieve an effective and efficient form of governance in the fire safety domain?

1.2 Sub-Questions

1. How is the governance of fire safety enshrined in the contemporary way of designing fire safety in buildings using Bouwbesluit 2012?
2. What are the contemporary problems in the governance of designing fire safety in buildings using Bouwbesluit 2012?
3. What changes in the governance of fire safety in complex buildings when the fire safety engineering approach is applied?
4. What are the problems in the governance of fire safety in complex buildings when the fire safety engineering approach is being used?

[2] **Administrative process:** administrative processes are simply part of the whole network of processes that constitute our government, and that those processes are normative, meaning that they reflect our fundamental values and stated goals for 'state action' (Mashaw, 1994).

1.3 Research Methodology

To provide a better overview of the current state of affairs in the Dutch governance of fire safety, a general theoretical background of fire safety will be provided to give an introduction to this topic. This theoretical background therefore has a descriptive function including an elaboration of the Dutch fire safety legislation and the history thereof. This gives an opportunity to distil and visualize the involved actors in the governance of fire safety and to formulate current tasks, responsibilities and accountabilities of the actors that are being observed in the fire safety domain. The theoretical background also provides an opportunity to define current problems in the governance of fire safety in the Dutch context, based upon recent recognized publications on either scientific basis or publications of (semi-) governmental organizations. This elaboration gives a possibility to explore the four research questions: How is the governance of fire safety enshrined in the contemporary way of designing fire safety in buildings using Bouwbesluit 2012 and what are the contemporary problems in the governance of designing fire safety in buildings using Bouwbesluit 2012? The second step is to describe the changes in the governance of fire safety in complex buildings when the fire safety engineering approach is being applied and which problems occur in the governance of fire safety with the fire safety engineering approach. Some statistics will be used to oversee which kind of buildings result in most annual fatalities.

After the theoretical background, a theoretical framework will be provided to give an elaboration of the different modes of governance that are being observed in modern societies. This theoretical framework is based upon scientific literature that describes the often observed shifts from traditional hierarchical government towards other modes of governance as market governance and network governance involving both public as private organizations. The threats and benefits of these shifts in governance are discussed from a scientific theoretical perspective. This theoretical framework can be used to analyze whether the threats and benefits from a theoretical perspective actually occur in the Dutch governance of fire safety. Based on this assessment, valuable recommendations can be made which matters should be taken into account and whether or how the governance of fire safety has to be amended while using the prescriptive based approach or the performance based approach. The assumption of the Commission Dekker, where the responsibilities with regard to fire safety should be outsourced to the private domain where possible, can be described from the perspective of this theoretical framework. Based on this additional exploration, recommendations can be made whether this amendment in the governance of fire safety is actually desirable or not. These findings from the theoretical framework will be described and discussed in the results from this research.

Initially, this research and the subsequent theoretical framework was designed to use two case studies to highlight possible threats and benefits in the governance of fire safety due to the shifts from prescriptive based approaches to performance based approaches. The comparison between these two distinct administrative processes would have given an opportunity to oversee possible positive and negative side effects of the two distinct fire safety regimes and the governance modes that are being used in these situations. The case studies should focus on various stages of the licensing process, like license application, authorization, building inspection and in the end enforcement. Interviews with the actors involved in this process would have to reveal whether the findings from the theoretical framework can be observed in the Dutch governance of fire safety. The theoretical framework then provides opportunities to explain which governance structure can be observed and why this structure is being used. In line, current and potential threats and benefits distilled from the theoretical framework can be tested in practice to analyze whether or not they actually occur in the Dutch governance of fire safety, and which potential amendments can be recommended to improve the Dutch governance of fire safety. After several attempts, it turned out that there were limited possibilities to perform these case studies in the Dutch fire safety domain. The approached individuals were fairly reticent in providing contact information of the multiple stakeholders that were involved in the process and were also often not willing to provide extended information about their fire safety approaches

Due to the inability to use case studies, the research methodology has changed to an exploratory research using a regular survey. Using this research methodology, multiple stakeholders that are involved in the Dutch governance of fire safety can be approached with an anonymous online survey consisting of questions which are as far as possible elaborated from the theoretical framework. This surveys covers the same purposes as the planned case-studies. Amendments in the governance of fire safety can be proposed to the respondents to get a better insight in the desires and attitudes towards potential changes in the governance of fire safety. This research methodology thus allows to assess whether the divergent actors actually support the argument of the Commission Dekker to delegate the responsibilities to the private domain where possible, and to use a market approach instead of a traditional hierarchical approach. The surveys further provide opportunities to compare the experiences of the respondents when they deal with the prescriptive based approaches and performance based approaches. In line with the findings from the theoretical framework, this empirical data can support or reject a potential change in the governance of fire safety.

Shortly summarized, the first phase of this research uses a descriptive approach to describe the currently used approaches in the governance of fire safety, the legislative framework and the actors being involved. The second phase of this research contains descriptive, explanatory and exploratory purposes. The descriptive part describes the contemporary problems while using Bouwbesluit 2012 and fire safety engineering. The explanatory part then explains why these problems might occur by discussing divergent governance modes from a scientific theoretical perspective. The exploratory part then has the aim to analyze whether these problems occur, and to visualize the desires and attitudes of stakeholders towards potential changes in the governance of fire safety by describing the results from a survey. Based on these findings, a schematic framework will be established which can serve as a guideline for potential changes in the governance of fire safety, including other recommendations to improve the governance of fire safety. Table 1 presents an overview of the research methodology being used throughout this research to answer the central research question and corresponding sub-questions.

Table 1. Research methodology throughout this research.

	Sub-question	Goal	Case Selection	Data Collection	Data Analysis
Phase 1	*How is the governance of fire safety enshrined in the contemporary way of designing fire safety in buildings using Bouwbesluit 2012?*	**Descriptive**	N.A.	Literature Policies	To describe the affairs in the governance of fire safety by using Bouwbesluit 2012
	What changes in the governance of fire safety in complex buildings when the fire safety engineering approach is applied?	**Descriptive**	N.A.	Literature Policies	To describe the affairs in the governance of fire safety by using Fire Safety Engineering
Phase 2	*What are the contemporary problems in the governance of designing fire safety in buildings using Bouwbesluit 2012?*	**Descriptive**	N.A.	Literature	To describe the contemporary problems with Bouwbesluit 2012
		Exploratory	Stakeholders in the governance of fire safety	Surveys	Analyzing whether problems occur and exploring additional problems in the governance
		Explanatory	N.A	Literature	Explaining why problems occur in the governance
	What are the problems in the governance of fire safety in complex buildings when the fire safety engineering approach is being used?	**Descriptive**	N.A.	Literature	To describe the contemporary problems with FSE
		Exploratory	Stakeholders in the governance of fire safety	Surveys	Analyzing whether problems occur and exploring additional problems in the governance of fire safety
		Explanatory	N.A.	Literature	Explaining why problems occur in the governance
Phase 3	**To what extent and how should the governance of fire safety be amended to achieve an effective and efficient form of governance in the fire safety domain?**	**Exploratory**	Stakeholders in the governance of fire safety	Surveys	Analyzing attitudes of the market towards potential changes in the governance
		Descriptive	N.A.	Literature	To describe which potential amendments are eligible in the governance of fire safety

2. Background

2.1 Fire Safety

The literature provides a broad conceptualization of the concept fire safety. From the perspective of the former fire safety legislation summarized in Bouwbesluit 2003, Overveld mentioned that fire safety and its provisions have the aim to limit the chance that people get injured as a consequence of a fire and to give the fire brigade the possibility to effectively extinguish a fire (Overveld, 2008). This definition implies that the fire safety legislation in Bouwbesluit 2012 has a deterministic point of view towards fire safety. The provisions have the aim to limit potential consequences resulting from a fire when assuming that a fire has already started. Other authors give a broader conceptualization of fire safety. One of the most comprehensive definition of fire safety, which is in line with the formulations of the prescriptive requirements in Bouwbesluit 2012, is given by Kobes (2008). She argues that fire safety has the aim to prevent a fire, to limit the development of fire and smoke, to gain opportunities to be able to quickly and safely escape from a building, and in the end to effectively extinguish a fire (Kobes, 2008). This definition also includes preventative measures which limits the chance of a fire to occur. The latter conceptualization of fire safety implies that there are four major purposes of the fire safety legislation in buildings. First of all, a probabilistic approach to fire safety has the aim to *prevent* an extensive fire from occurring. From the deterministic point of view, there are provisions to *limit the development* of fire and smoke. The literature provides a great amount of studies concerning fire-proof materials and other measures which can be applied in the construction of a building. An example is the relative radiate heat transfer from different materials being used in buildings, see for example (Sacadura, 2005). Empirical knowledge can provide valuable information to make better considerations of used materials in a building, and this empirical knowledge is often labeled as fire safety science (Kobes, 2008). The provisions increasing *self-reliance* are relating to the structural lay-out which increases possibilities for quick evacuations, and are often adapted to the use of that building. Last, there are provisions which increase opportunities for effective *repression* of a fire. The format of the prescriptive requirements which are formulated in Bouwbesluit 2012 contain the same variables as described above, see (NIFV, 2011). A simplified representation of Bouwbesluit 2012 is given in figure 1.

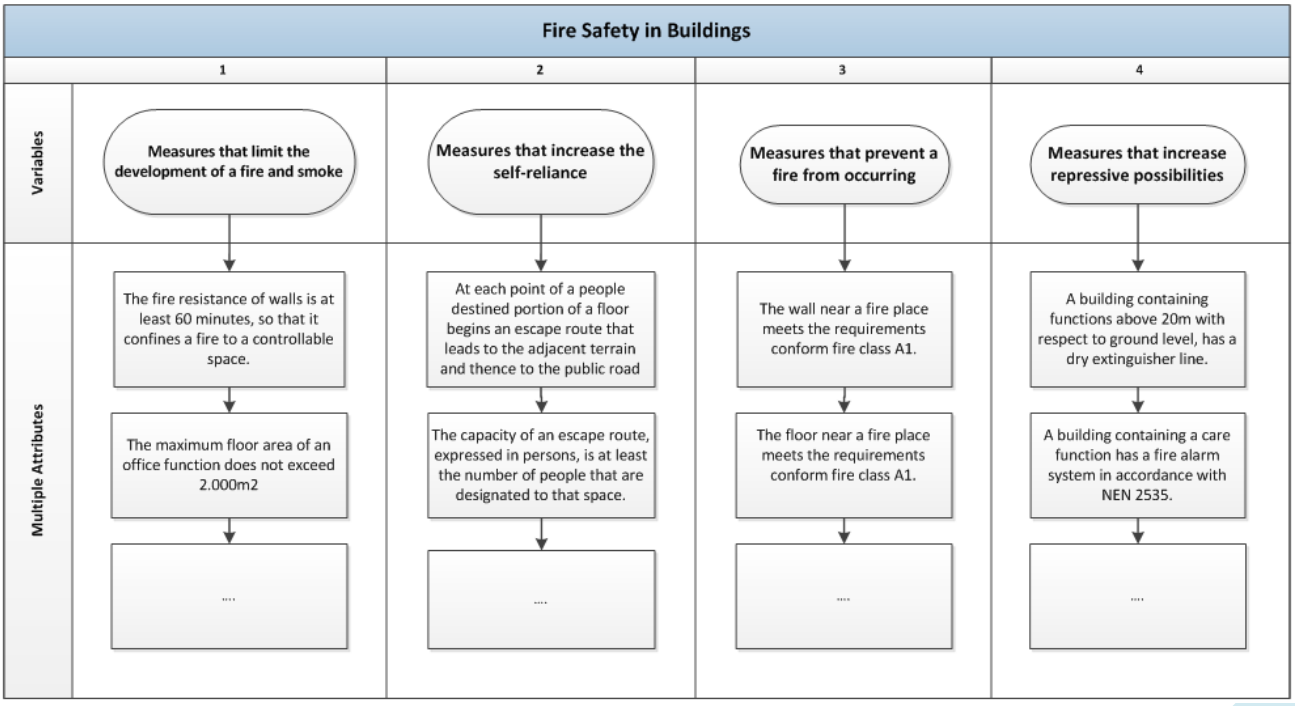
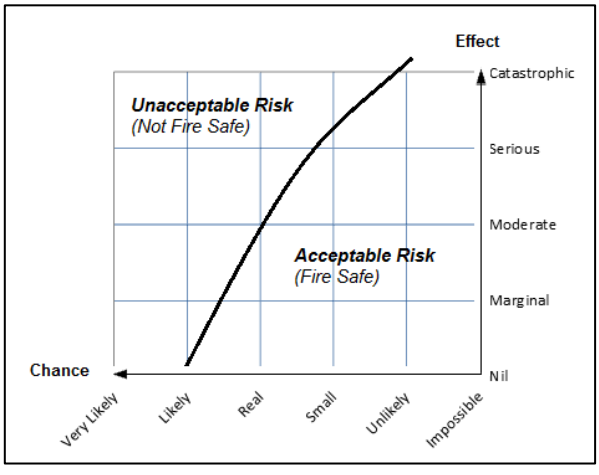


Figure 1. A simplified representation of Bouwbesluit 2012 with core variables and multiple attributes.

There are two main approaches to guarantee fire safety in buildings, the probabilistic way and the deterministic way. The Dutch prescriptive based approach, Bouwbesluit 2012, argues from a deterministic perspective which prescribes measures based on the assumption that a fire actually breaks out (NIFV, 2011; Overveld, 2008; Hagen, 2007). The prescriptive requirements in Bouwbesluit 2012 give a minimum level of measures that have to be taken in order to warrant fire safety in buildings, which includes preventative measures, measures that limit the development of a fire, measures that increase the self-reliance and measures that increase possibilities on the repressive side. The amount of preventative measures in Bouwbesluit is however minimized to nearly none, and only focusses on fire places. The prescribed technical measures often have NEN-norms, CE-marks and other quality declarations based on extensive fire test or accepted norms. Bouwbesluit 2012 can therefore be labeled as a deterministic approach using prescriptive requirements to limit possible consequences due to a fire. When the prescriptive requirements are fulfilled, an acceptable level of fire safety is achieved.

The probabilistic way considers risk boundaries to judge whether or not an acceptable level of fire safety is acquired. Many practical situations have shown that a large amount of the prescriptive requirements cannot be implemented due to new and innovative designs. The designer of a building then needs to deviate from the prescriptive requirement in question and show by other means that an equivalent level of fire safety is being acquired. The performance base approach then uses a probabilistic way to demonstrate equivalency in fire safety, based on a comparison of the risks using the prescriptive requirement and de risks of the measures that are being applied with the performance based requirements. Probabilistic approaches and risk boundaries are often applied in the industry, where data concerning risk-analysis is very reliable. Methods that are used are Hazop, FMEA, Fault tree analysis and Event-Tree analysis, see for example (Khan, 1998). When the probabilistic way is applied, risks can be defined as the product of a chance of a fire to occur combined with the possible effects as a consequence. Others sometimes combine other attributes like exposure frequency to increase significance. By using this consideration, a total risk can be quantified, resulting in more reliable objective levels of fire safety. Risks are therefore used in many domains to define boundaries which risks are morally acceptable. This is also the fundamental of fire safety engineering. This equation is illustrated in figure 2.



∑ (Chance x Effect) ≤ Morally Acceptable Risk

Figure 2. Risk matrix for fire safety in buildings.

2.2 Fire safety legislation: historical background

The most ancient and repeated form of documented safety code for buildings is the Hammurabi Code, which originates from approximately 1950-1910 BC (Foliente, 2000). Article 229 of this building code stated: '[…] if the house he has built falls in and kills a householder, that builder shall be slain.' This requirement is the first documented performance requirement for buildings. The king addressed structural safety in buildings in terms of goals, but not in means how to construct a building. The Romans also used this architectural philosophy as was stated in Vitruvius' (1960) translation of the ten books of architecture.

The first signs of fire safety legislation in the Netherlands can be observed from the Middle Ages. At this time, the fire safety rules were primary formulated to prevent big city fires, since there were no means for effective repression of a fire (Hagen, 2007). The succeeding centuries were also characterized by local fire safety regulations, which were quite different from each other. The introduction of the first solid law was the Dutch 'Woningwet', which took place around the end of the 19th century and the start of the 20th century. The introduction of the first 'Woningwet' had the goal to give governments possibilities to give buildings a declaration of 'uninhabitable', and to pose additional measures to increase the quality and levels of fire safety (Berg, 2007). The introduction of the first 'Brandweerwet 1952', later updated to brandweerwet 1982 resulted in a statutory obligation for municipalities to consider fire safety in buildings, resulting in responsibilities for the fire brigade and local governments. The local Mayor and aldermen in this regard had a statutory obligation to consider fire safety in buildings. The fifties and sixties were as a consequence characterized by the introduction of rather diverging formal municipal building codes. These codes were mainly functional requirements, which means that these requirements have a specific goal which were formulated for standard housing. These state of affairs have led to major differences among municipalities and their fire safety requirements.

During the seventies, the existing functional requirements were translated to a set of more specific 'prescriptive requirements'. This development has led to a more uniform set of fire safety requirements among municipalities, but the administrative support for the executive role was insufficient to structurally embed the prescriptive requirements in the municipal policies. Compliance to these prescriptive requirements was thus insufficient and had led to a rather failing the introductory of this system. The renewal of the Woningwet in 1991 has led to the first Bouwbesluit 1991, including an users license. The users license might require additional measures by order of the fire brigade based on the risks by which a building is being used. After a period of decentralization, the fire safety legislation was again centralized to the national level. This Bouwbesluit 1991 has been changed in the following decades, resulting in Bouwbesluit 2003 and subsequently the current Bouwbesluit 2012.

2.3 Dutch legal framework for fire safety

The Dutch legal framework for fire safety finds its roots in the law 'Woningwet'. The content of the law contains no fire safety provisions, it establishes a legal basis framework which requires the implementation of fire safety in the design of buildings. Based upon this law, elaborations like 'Bouwbesluit 2012' and other local general by-laws concerning fire safety have been formulated. These laws and regulations primarily apply to the design and the use of a building. The former users license is now an integral part of Bouwbesluit 2012. Structural fire safety engineering is therefore guaranteed due to the obligation in in the Dutch Woningwet. The construction paragraph in the 'Woningwet' describes issues from the construction, changes, technical conditions and the terms of use for buildings. It prohibits to construct buildings without or notwithstanding to a building permission, and thus demands to assess the design with national standards. Another important issue that the Woningwet addresses is the obligation of the local mayor and councilors to guarantee administrative supervision on the compliance to the regulations that are resulting from this legal framework, like the prescriptive approach Bouwbesluit 2012 en the possibility for performance based approach named fire safety engineering. The Woningwet thus constitutes the legal framework for ensuring fire safety in buildings and the administrative supervision on this process.

By introducing the 'Wet Algemene Bepalingen Omgevingsrecht (WABO)', the organization and the functions of municipalities, provinces and other authorities changed. The WABO combines 25 disciplines that concern the physical environment. These include the rules for construction and demolition of buildings, local laws, environmental issues, and issues with regard to nature and heritage. All these aspects are combined in one service, the 'Omgevingsdienst' or Environmental Service. The goal for this centralization to one regional service was to aggregate knowledge, expertise and vigor of authorities with regard to issuing licenses, monitoring and enforcement. With regard to fire safety, the Environmental Service is responsible for granting permits from an integral character. The Service therefore issues and combines issues from the 'Woningwet', 'Wet milieubeheer', 'Activiteitenbesluit', 'Wet ruimtelijke ordening', and 'Bouwbesluit 2012'.

The format of the Dutch fire safety legislation can be summarized according to figure 3. First of all, there is a goal or objective. In this context the goal is to acquire a building that has a morally acceptable level of fire safety. The Dutch Woningwet gives the legal obligation to consider this. To achieve this, different prescriptive requirements are developed to cover multiple dimensions of fire safety, like aspects of fire repression, fire control, flight opportunities and other preventative forms of engineering. When these prescriptive requirements are not applicable in certain situations, it is possible to achieve an equivalent level of fire safety by other means, i.e. the performance based approach.

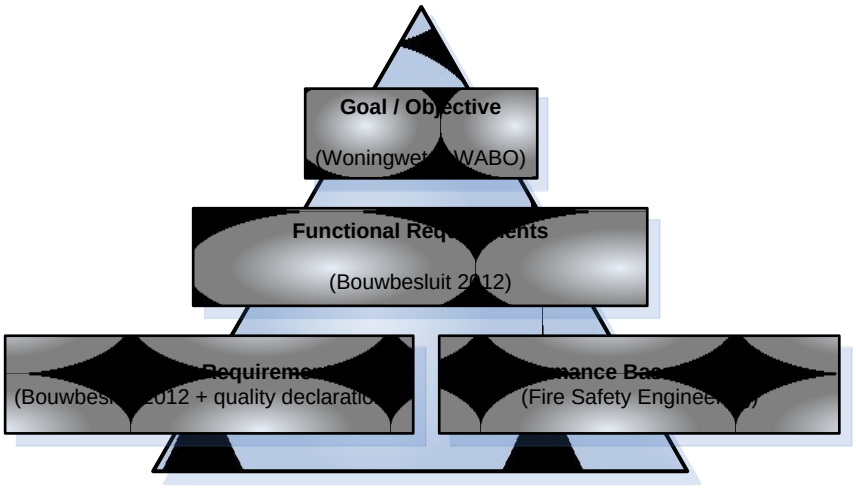


Figure 3. Schematic overview of the Dutch fire safety legislation.

2.4 Bouwbesluit 2012

As mentioned in the previous section, the Dutch government has grounded its fire safety legislation in the law called 'Woningwet' (Rijksoverheid, 2011). According to this law, there is one fire safety policy called Bouwbesluit 2012 that contains provisions to which all buildings structures initially must comply. Bouwbesluit 2012 contains provisions for the construction, renovation, demolition of buildings and the condition and usage of buildings (NIFV, 2011). The former users license and some of the municipal building regulations are also included in Bouwbesluit 2012 and are no longer a separate component in the legislation. The aim to unite the past diversity of regulations in one fire safety regime in Bouwbesluit 2012 is to increase the cohesion within the building regulations, to decrease the regulatory burden and to increase the accessibility for the multiple actors involved in fire safety. The main differences between the new Bouwbesluit 2012 and the former ones are the more simplified stated fire safety provisions. Previous experiences have shown that the abstract formulation, the complicated referral structure and the legal language were the main problems in Bouwbesluit 1993 en 2003. This hampered a straightforward approach to fire safety.

Bouwbesluit 2012 has been formulated to prevent social and environmental situations that are not desirable in the context of safety, health, usability and environmental concerns. It has the aim to provide a minimum mandatory level that has to be fulfilled. Bouwbesluit 2012 makes a distinction in the minimum mandatory level between three types of buildings. The highest level of fire safety is imposed on new buildings to prevent a major catch-up. The second level of fire safety, which is lower, is applied to buildings which are used for a time period of no longer than five years. The reason that these buildings require a lower level of fire safety primary relies on economic investments in temporary buildings. The third, and lowest level of fire safety is the level to which existing buildings have to fulfill. The elaborations of the provisions in Bouwbesluit 2012 are the functional requirements and the associated prescriptive requirements. An example from Bouwbesluit 2012 is the functional requirement in article 2.56; 'a structure should be designed in such a way, that the occurrence of a fire hazard is reduced as much as possible'. An example of the associated prescriptive requirement can be found in article 2.59; 'the outlet for smoke should be resistant to fire, as is stated in NEN 6062 (NIFV, 2011). When the prescriptive based requirements are fulfilled, the functional requirements are as a consequence of a satisfactory level. Fire safety science is one the fundamentals for formulating prescriptive requirements. Fire safety science uses chemical and physical characteristics of fire, human behavior during a fire, knowledge about the development of fire, the repression and evacuation (Kobes, 2006). The basic format of bouwbesluit 2012 is also visualized in figure 1 on page 13.

With regard to these complex and technological prescriptions, Hagen (2007) mentions justly that fire safety cannot be reached by inventing more and more technical rules. The goals of the prescriptions have to be clear among all the actors involved and in the end be achieved to reach an adequate level of fire safety. Former technical formulations of prescriptive requirements resulted in a rigid view of applying them, without thinking about their goal or meaning to fire safety. In order to prevent this, the provisions mentioned in Bouwbesluit 2012 may not limit the exercise of personal responsibilities to such an extent that is socially or morally necessary. Article 1.3 in Bouwbesluit 2012 is one example were the government provides space for another approach, provided that an equivalent level of fire safety is achieved as described in the provision. In the end it is the municipality who checks whether or not these the design an equivalent level of fire safety compared to Bouwbesluit 2012, but the final responsibility remains at the owner of that building. Bouwbesluit 2012 has the basic claim that the client, the designer, the constructor and the owner or user of a building have the responsibility for the quality, the use and the conservation of the level of fire safety in a building.

2.5 Fire Safety Engineering

The previous section showed that the Dutch fire safety legislation primarily relies on functional requirements and prescriptive-based requirements, and offers opportunities to follow a performance based approach also known as fire safety engineering. Although prescriptive codes like the ones in Bouwbesluit 2012 are having the advantage of a straightforward evaluation whether or not the mandatory level of fire safety is fulfilled, they have some negative implications which are often observed with prescriptive regulations. The rigid prescriptive fire safety codes often cannot be applied to contemporary large and complex buildings. Prescriptive regulations provide very little flexibility for innovative solutions in unusual situations. Partly due to this argument, many countries tend to give an opportunity to a more performance based approach for fire safety, where target-regulatory is being used instead of formulating strict means. Article 1.3 of the Dutch Bouwbesluit 2012 gives this possibility to reach an equivalent level of fire safety by other means than elaborated in the prescriptive requirements. Many European countries have been going through such a transition prom a prescriptive based approach to solely or allowing a performance based approach.

Gibson (1982, p.4) emphasizes that 'the performance based approach is […] the practice of thinking and working in terms of *ends* rather than *means* (Gibson, 1982). A prescriptive approach 'describes an acceptable solution, while a performance based approach describes the required performance' (Foliente, 2000). Performance based approaches concern with what a building or a building product *is required to do*, and not *prescribing how* it is to be constructed.' This implies that the rigid form of prescriptive requirements can be circumvented by a performance based approach, which increases both innovation in fire safety science as innovative building structures, see figure 4. This solution is comparable to other legislative changes, where shifts are being made from prescriptive nature towards target regulations. Prescriptive based approaches are thus often being labeled as barriers to innovation in the building domain. Due to the increasing amount of prescriptive requirements, freedom for own interpretation becomes less. Fire safety engineering thus results in a more dynamic approach, enabling a more efficient approach allowing to consider cost-effectiveness of certain measures weighed against risks instead of rigidly following the prescribed measures. One potential pitfall is that fire safety engineering might result in loss of solid foundations, see figure 1.

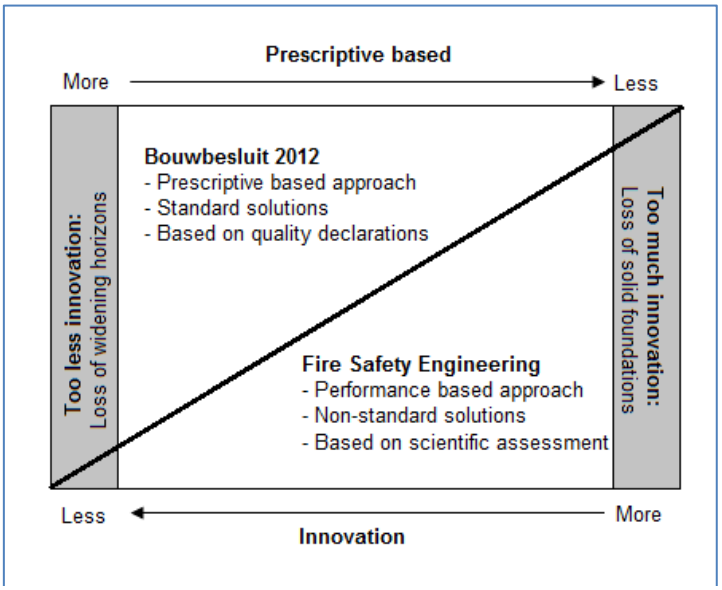


Figure 4. Comparison of fire safety engineering and Bouwbesluit 2012 in terms of innovation. Based on (Blyth, 2001).

Fire safety engineering is applied in order to save lives, protect properties or heritage, to quantify hazards of fire and to evaluate the level of protective and preventative measures to limit the risks and effects of a potential fire (Kobes, 2006). Some see fire safety science just like the prescriptive requirements as a fundamental for fire safety engineering to demonstrate that other solutions perform equivalent as compared to the prescriptive requirement, but in practice we more frequently observe risk approaches to demonstrate equivalency. It is often argued that rigidly following prescriptive requirements not only hampers the innovation of design solutions, but also obstructs product innovation. A rigid set of prescriptive measures are obviously advantageous to apply due to their recognized prestige, but also obstruct product innovation and other design solutions which increase the level of fire safety in buildings. Performance based approaches and fire safety science as an alternative approach therefore widens horizons to more practical designing solutions which can be applied to multiple situations. This might result in more efficiency and also increases possibilities to concern cost-effectiveness of certain measures.

There are different approaches possible when fire safety engineering is being applied (Kobes, 2006). The first approach searches for an equal level of fire safety with measures which are grounded in the existing fire safety regulations. In this case, additional measures can provide an equal level of fire safety when some fire safety measures grounded in the fire safety regulations cannot be applied. The second approach is more deterministic. Fire safety is then assessed by a worst-case scenario, for example by using calculations to determine how long it takes before the smoke in a building becomes life-threatening. Based on this calculation it can be determined whether current situations give enough possibilities for an effective evacuation or if any additional measures are required. Foliente (2000) describes two basic ways to do these calculations; verification can be done through actual testing in practice or by calculation by a certain model. Practical testing can be done like performing fire tests on a product. Calculating with a product can be done by computational models or mathematical models, like computational fluid dynamics (Kent, 1997). There is also a possibility to combine these two approaches, i.e. a combination of testing and calculations. Scientific research has already resulted in more potentially useful tools in this quantification process, see for example (Benichou, 2001). The third approach is probabilistic. This means limiting the chance of the development of an unwanted event, and is thus based on a statistical approach whether or not the measure is performing equivalent to the other. By using these principles, objective risk calculations are often being made to demonstrate an equivalent level of fire safety, but the biggest challenge that remains is the subjective interpretation of the Authority with regard to equivalency.

There are thus multiple arguments for preferring performance based approaches over prescriptive based approaches. Lundin (2005) mentions different arguments why the Swedish government had decided to introduce the performance based approach in their legislation. Their first stated advantage of performance over prescriptive based approaches is the possibility to come up with new and *innovative design solutions* that meet a satisfactory level of fire safety combined with a possibility to *concern cost-effectiveness*. Performance based approaches also allow designers to think about establishing clear *fire safety objectives* and possible means to achieve these objectives, instead of rigidly following prescriptive requirements. When *new knowledge* about fire safety is available, often due to fire safety science, it can be applied immediately instead of having to change the fire safety legislation in terms of prescriptive requirements. This also supports a more scientific approach in the fire safety legislation. Besides, the often argued complexity of existing prescriptive requirements, because of the technical and juridical language, can be circumvented by following performance based approach. Last, performance based approaches provide better opportunities for potential European harmonization of fire safety legislation, i.e. performance based approach gives a possibility for *deregulation.*

2.6 Actors involved in the governance of fire safety

Traditional prescriptive based approaches contain less actors in the decision making process than performance based approaches. Since the prescriptive based approaches are quite straightforward, they often require less expertise which has to be consulted. Even though traditional approaches already contain many actors, more actors can be observed using the performance based approach to fire safety. The actors can be subdivided on the demand side and the supply side. The importance of the different actors which are observed in the network of fire safety differ substantially from each other. Bakens *et al.,* (2005) give a draft overview of the actors involved in the fire safety network, see table 2**.** This table gives a general overview of the actors involved and their relative importance with regard to hastening and widening the adoption of the concept fire safety engineering, and these stakeholders are thus involved directly or indirectly in the governance of fire safety. The most obvious actors in the Dutch fire safety domain, distilled from the legislation, will be discussed in the following sections to provide more information about their relevance in the fire safety domain.

Table 2. Possible actors involved in the Dutch fire safety domain Foliente and their importance with regard to hastening and widening the adoption of the concept FSE (Bakens, 2005).	
Actors	**Importance**
The State	
Policy makers	
Regulators (Spatial planning, building and occupational health & safety)	High
Building officials	
Builders / Contractors & Sub-contractors	
Architects & designers	
Engineering professionals	
Advising agencies	
Project managers	
Insurance companies	
Educators	
Researchers	
Product manufacturers	
Investors and financiers	
Developers	
Owners and occupiers	Low
Owners and users	
Software or IT professionals	

2.6.1 The State

The state has the main responsibility for providing the legislative fire safety framework. This legislative framework more or less delegates tasks and responsibilities to lower levels, varying from public till private levels. The state has the responsibility to formulate and develop laws and regulations concerning fire safety and to supervise whether delegates give sufficient substance to these laws and regulations. The state therefore reviews the legislative and executive side of the fire safety domain. These responsibilities are often delegated to other ministries, like the ministry of VROM. The VROM-inspection performs inter-administrative supervision on municipalities, and judges whether or not they perform their statutory duties with regard to environmental aspects, spatial planning and housing adequately. The inspection screens every municipality once in a four year cycle to determine the performance on these divergent tasks, like the formulation of local policies, formulating action programs and the implementation and follow-up of tasks and duties. Regarding fire safety, the inspection assesses the way building permits are being issued, supervised and possibly enforced by local governments, which strengthens the administrative checks and balances on a national scale.

The state also delegates specific tasks with regard fire safety to the Inspectie Openbare Orde en Veilighied (IOOV). The inspection OOV, or the inspection of Public Order and Safety, has the main responsibility to conduct inspection on the responsibilities and task-performance of the provinces, municipalities or other governmental bodies in the context of prevention, limitation and repression of fires and other safety issues. Besides, the inspectorate is responsible for conducting investigations in occasion of a fire, accident or disaster. Obviously, they are taking into account the responsibilities of the Dutch Safety Board with regard to their statutory obligation to perform accident investigations on a national scale. The inspection investigates the adequacy of the regional and local fire safety administration, as the licensing procedures in the municipalities. The inspection has the aim to improve the quality of the administrative processes and therefore has an informative and guiding role for improvement.

2.6.2 Regional governments and safety regions

With respect to the cross-border impact of major accidents and disasters, activities concerning fire safety are also governed by regional governments which are designed in safety regions. Safety regions are, according to the Wvr (Wet veiligheidsregio's, or Law Safety Regions), primary responsible for all the safety issues in their region and they supervise municipalities in their administrative processes. The law requires municipalities to cooperate together regionally, and are therefore partly responsible for the organizational control of the safety region. By joining forces and knowledge on regional scale, better proactive plans can be achieved to prevent major accidents and disasters. Safety regions formulate general safety policies for their region. Safety regions are according to article 16 Wvr. once in a four year cycle obligated to formulate an integral safety plan according to the tasks and duties of the safety region, which includes fire safety (Veiligheidsregio's, 2012).

Safety regions and their corresponding regional fire brigades also have a statutory obligated advising role in the technical context of licensing. The advisory role of the safety region is grounded in article 10 of the Wvr, 'the board of the safety region has to advise the competent authority about the risks of fires, disasters and crises by or pursuant to the law designated cases and in cases which are defined in the policy.' Municipalities can consult regional fire brigades when additional knowledge is required during the licensing process. Often, specific advice about fire safety is delegated by the safety region to the regional fire brigade. Article 25 of the Wvr guarantees this advisory function, regional fire brigades have to 'advise governments and other organizations in the field of fire prevention, firefighting and prevention, reduction and control of accidents involving dangerous substances (Wet Veiligheidsregio's, 2012).Other duties that the board of the safety region have in the context of fire safety are to identify the risks of fires, to advice the Authority on these risks and the repressive sides of these risks. Safety regions and regional governments are therefore accountable to the general safety management in their region.

2.6.3 Municipalities

Local municipalities can be held responsible for managing the local fire brigade and for issuing divergent licenses within their municipalities. With regard to the licensing process, the Woningwet prescribes that the local mayor and councilors have the duty for administrative supervision on the compliance with the laws and regulations. Local governments have the authority to provide licenses and to withdraw these in case of deficiencies. The authority has the duty to supervise whether or not the submitted project proposal complies with national and local fire safety laws and regulations, and can be assisted by the regional fire brigade to ask for advice in case of any clarities. The local mayor and councilors have the responsibility to supervise this entire licensing process, that consists of an initiative, issuing the license, supervising the construction, and monitoring plus eventually enforcing transgressions. The supervision during the construction of a building is also known as 'primary supervision'. Other governmental bodies like the IOOV perform 'secondary supervision' on this aspect to ensure that the primary supervision is being performed as intended.

When municipalities provide a building license that conflicts with the national fire safety regulations, the building can be constructed by the designer without formally transgressing the fire safety regulations. The local mayor and councilors are then accountable to the fact that they provided a building license that conflicts with national fire safety regulations. This review is also called the 'preventive assessment' of the proposal. Jurisprudence has shown however, that local governments are rarely being held accountable for negligence. When licenses are provided righteous, so corresponding with the national fire safety regulations, the designer and in the end the owner of a building becomes responsible that the level of fire safety is being guaranteed that corresponds to the license that is being provided.

2.6.4 Private organizations

Many of the previous discussed actors in the fire safety domain are public organizations, but there are also many private organizations with concerns in the governance of fire safety. There are for example many advising agencies as fire safety consultants and architects, contractors, insurance companies, scientists, networks and users of buildings in the fire safety domain. This makes fire safety a multidisciplinary approach where multiple interests are represented. Many of these private organizations do not require further elaborations, and a general picture of the formal responsibilities can be visualized, see figure 5 below.

2.6.5 An overview of the stakeholders in the Dutch governance of fire safety

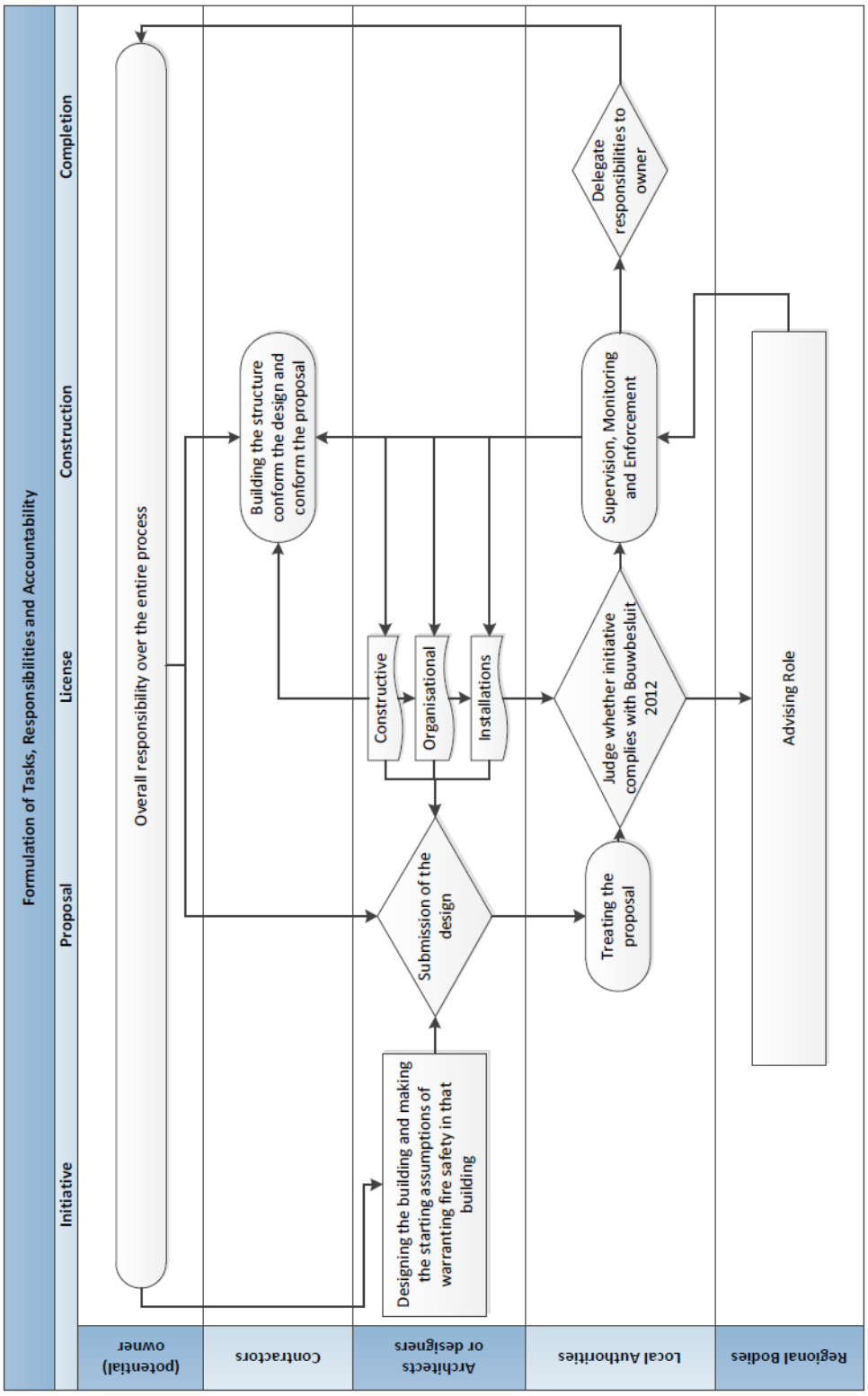


Figure 5. Formal responsibilities among stakeholders during the various stages in a licensing process.

2.7 Legal liabilities

The corpus is one of the fundamentals for legal liabilities, and thus accountabilities and responsibilities in the fire safety domain. Without liabilities for actors involved in the building process, the final building quality and also fire safety in those buildings will decrease in course of time when compared to the current situation. The current situation has therefore grounded the liabilities in multiple laws and corpuses. Figure 5 gives an overview of the current liabilities with regard to fire safety in the Dutch fire safety domain. This figure, and the following elaborations from legal liabilities are moderated versions from an existing report (Helsloot, 2012). According to art. 6:174 of the 'Burgerlijk Wetboek', further BW, the private domain has the liability when third parties suffer from damages due to construction errors. This article demonstrates that the owner can in principle be held liable for these errors. This article makes no distinction between accidents due to constructional errors or due to improper use; the owner is a priori liable for the consequences of all the accidents in that building, except in situations of unaccountable susceptible, when the owner would have known the danger, and yet could have done anything to prevent it (Helsloot, 2012). Below the relevant phrase from this article which delegates the main responsibilities and accountabilities to the private domain:

> *'The owner of a building, that does not meet the prescribed requirement in given circumstances, and therefore poses danger to persons or property, is, where the danger materializes, liable, except if liability under the previous section would have been unjustified, when the danger at the time of occurrence has been recognized'.* **(Art. 6:174 BW)**

In response to the situation which arose after the café fire in Volendam, where consequences were mainly caused by Christmas decorations, the Dutch building law or Woningwet included a duty of care for implementing all the relevant fire safety precautions, even when they are not included in national laws and regulations. Article 1a of the Woningwet creates this obligation to take appropriate measures, even if they are not directly stated in the building regulations. This article provides the need to overcome many conceivable situations in an unambiguous article, and thus results in a complete private responsibility with regard to all the issues covering fire safety. Besides, this article contributes to the pursuit of deregulation and simplification of the building regulations. In combination with the previous article, the new situation makes the duty of care with regard to fire safety for the owner to an entire liability. The following phrase of this article below:

> *'The owner of a building, stand, open yard or terrain, or those who are authorized by other means to take precautions, are having a duty of care to prevent danger to safety or health due to the condition of the building, that stand, open yard or terrain'.* **(Woningwet, Art. 1a, lid 1)**

According to the phrases mentioned above, there is a clear cut formulation of liabilities for the owner of a building. In principle, the owner is liable for all the fire safety issues in her building, and there seems to be a central responsibility and accountability with regard to fire safety. The practice is different however, since there are also possibilities to recover liabilities on other stakeholders which neglected their contractual obligations. The claimant then has to demonstrate that the damage is causally related to the culpability of the stakeholder. This possibility is grounded in article 6:171 BW:

> *If a not subordinate stakeholder performs operations on behalf of another stakeholder, that stakeholder is also liable to third parties for a ground fault in this work.* **(Art. 6:171 BW)**

The liability in this occasion is based on a contractual obligation. The claimant has the challenge to demonstrate that the damage is causally related to the culpability and faults of that stakeholder. This is grounded in art. 6:74 of the BW. The main stakeholder, who outsources work to subcontractors, is according to article 6.76 BW still liable for the faults made by its subcontractors. There are multiple exclusion rules to the ones mentioned here, but they will not be discussed in detail here, since this section will depict a general overview of liabilities.

> *'Every breach of a contractual obligation results in the obligation of the debtor to compensate the damage by the claimant, unless the shortcomings cannot be causally related to the shortcomings on the side of the debtor'.* **(Art. 6:74 BW)**

> *'When the debtor in the execution of a contractual obligation outsources work to subcontractors, he is also liable for their behavior as he is for his for its own actions'.* **(Art. 6:76 BW)**

In cases where performance based approaches are being used, advising agencies often have a large share in the decisions for structural, installation technical or organizational fire safety. These consultancies directly report their advice and fire safety design to the client. This advice as a consequence becomes a guidance for contractors in their operations. Obviously, the previous elaborated liabilities from chapter 6 BW are also applied in these situations (Helsloot, 2012).

Further, there is only a global framework determined in the law which prescribes liability relationships between client and consultants in the construction sector. This relation is therefore often referred as a weak form of regulated liabilities, and often results in intensive trials. In these situations, similar causally relationships have to be demonstrated that the damage is causally related to the advice of the consultancy. This results in a complex discussion about causality and culpability (Helsloot, 2012).

Public liabilities are also regulated by law, but are inferior with regard to private liabilities. The only way for owners to hold (local)- governments accountable for the damage is by unlawfully granting a building permission or neglected building supervision. This is similar for other stakeholders, like main contractors. With regard to the licensing process, it has to be demonstrated that the license has been issued unlawful. Even in this situation it is not directly the case that (local)- governments are liable for the damage. The damage also has to be causally related to the unlawful act or negligence of (local)- governments. This situation makes it hard and unlikely to hold governments liable for the consequences of fires. Jurisprudence has shown that the local mayor and alderman are obligated to enforce transgressions of the fire safety prescriptions, but they cannot be held accountable for every transgression. Only when the Authority has defaulted to enforce transgressions they knew of, they are designated as negligent, but this is rarely observed in practice. The discussed liabilities consist the general public and private liabilities in the governance of fire safety, and an overview of this situation is depictured in figure 6 on the next page.

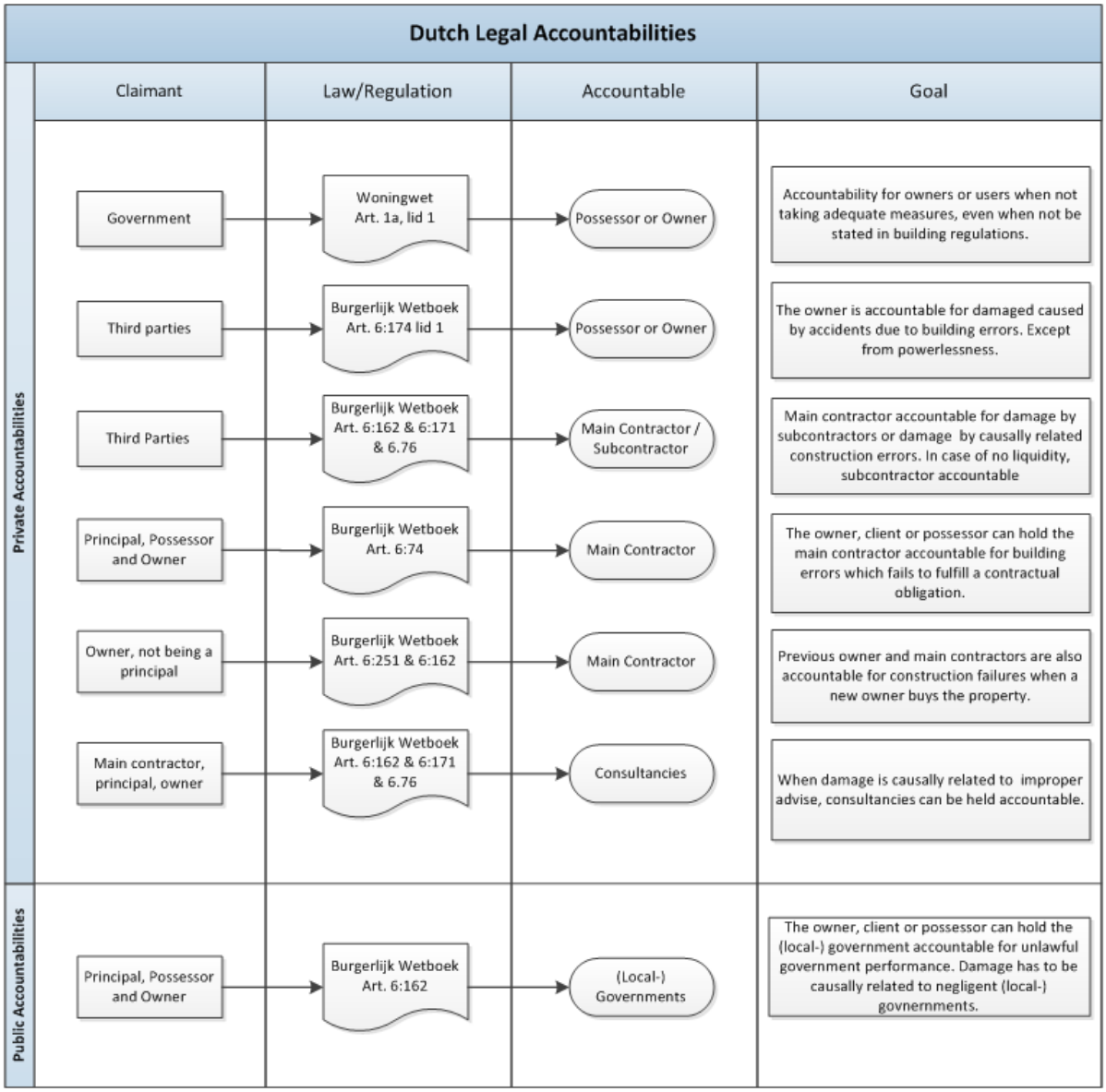


Figure 6. Public and private liabilities in the governance of fire safety.

2.8 Dutch Fire Statistics

2.8.1 The Netherlands compared to the EU

The Netherlands has relatively low numbers of deaths due to a fire compared to other countries, see table 3. In the Netherlands, there are annually 0.68 fire deaths per 100.000 inhabitants. This is partly due to the fact that fires primary occur in residential buildings with low numbers of occupants as the following section demonstrates. Besides, other countries often face different spatial planning, with more complex buildings containing higher levels of occupants resulting in more deaths due to a fire. Other variables as different life styles, professionalism of the fire brigade and divergent laws and regulations also causally influence the total amount of fire deaths among countries. To get a better insight into the quantity of fires in buildings in the Netherlands, additional data from the CBS [3] will be analyzed and discussed in the following paragraph. The data provides an opportunity to split the fires in different housing functions, and to see where the governance of fire safety might need more attention in order to prevent potential loss of lives and resulting social disruption. Fire statistics also might provide more insight in which buildings result in most annual fatalities, which might have a relationship with the approach, prescriptive or performance based, being used.

Table 3. Fire deaths in the EU per 100.000 inhabitants (Association, 2005)

Country	Fire deaths per 100.000 inhabitants	Severity
Hungary	2,06	
Finland	1,77	High
USA	1,74	
Japan	1,73	
Ireland	1,63	
Greece	1,59	
Sweden	1,50	
Denmark	1,46	
Norway	1,36	
Belgium	1,35	
Austria	1,31	
Poland	1,28	
Canada	1,25	
UK	1,06	
Czech Republic	1,06	
New Zealand	0,95	
France	0,95	
Slovenia	0,93	
Germany	0,74	
Netherlands	**0,68**	
Italy	0,68	
Australia	0,63	
Spain	0,61	Low
Switzerland	0,56	
Singapore	0,12	

[3] Central Statistical Office in the Netherlands

2.8.2 Indoor Fires

The Dutch CBS makes a distinction between indoor fires and outdoor fires. Data concerning indoor fires in the Netherlands are of special interest to make assumptions about the adequacy of the Dutch fire safety legislation and the governance thereof. The CBS conceptualized indoor fires as fires inside a house or directly against a house. Indoor fires are being subdivided into small, large and medium-large fires. The CBS further conceptualizes large and medium large indoor fires as such, when primary deployed units of the fire brigade need reinforcement of at least one other unit of the fire brigade. When this is not necessary, indoor fires are being classified as a small indoor fire (CBS, 2010). Table 4 makes a distinction between small and large indoor fires in the Netherlands, where medium-large fires are referred as being large fires. The number of small indoor fires is relatively stable over the years, whereas the number of large indoor fires seems to be increasing over the years. There are many variables that affect these numbers, but the publications by the CBS (2010) shows that 57% of these indoor fires occurs in standard residential buildings. The main causes of these fires were malfunction of electronic equipment or misuse thereof. The total damage due to fire in 2010 was at least 535 million euros.

Table 4. Indoor Fires in the Netherlands (CBS, 2010)

Year	Total	Fire Deaths	Small fire	Large fire
1995	13600	82	12300	1300
2000	13900	60	12400	1500
2005	13100	67	11200	1900
2008	14400	97	11800	2600
2009	15400	57	12900	2500
2010	15300	65	12600	2700

2.8.3 Fire deaths in Residential Buildings

There are multiple types of residential buildings which are summarized in table 5. There is an increasing dark number in the amount of fire deaths in residential buildings, because there are an increasing number of buildings that cannot be classified according to the categorization in the survey of the CBS. The data of 2009 is not available, because there was not enough input to provide accurate data. Even though, these data provide a good insight in the number of deaths in residential buildings compared to other (complex) buildings. It is obvious that the total number of fire deaths in residential buildings is high compared to other buildings. Fires in residential buildings are responsible for more than 50% of the fire deaths in the Netherlands. Many deaths in these types of housing are due to the fact that people spend most of their time in these housing, especially during the night when people are not wakeful.

Table 5. Fire Deaths in Residential Buildings (CBS, 2010)

Type of building	1995	2000	2005	2008	2009	2010
Mansion	7	5	4	10	NA	7
Porch Flat	4	4	2	3	NA	3
Porch House	1	3	6	-	NA	-
Duplex House	2	-	-	1	NA	1
Detached House	8	3	3	8	NA	4
Terraced House	16	21	3	17	NA	14
Gallery Flat	1	1	3	5	NA	5
High-rise Flat	1	1	2	2	NA	1
Villa	2	-	2	-	NA	-
Total	**42**	**38**	**25**	**46**	NA	**35**

2.8.4 Comparing the statistics with fire safety approaches

The presented data clearly indicate that the majority of the fires and the resulting fatalities occur in standard terraced housing. It is obvious that these buildings constitute the majority of the buildings in the Netherlands, and that their functions include overnighting of divergent individuals with divergent levels of independence. The data further do not really give an insight in the question whether the different approaches have a negative effect on the level of fire safety in buildings, which as a consequence might result in more annual fatalities. The standard prescriptive approach is being used in the buildings that result in most annual fatalities, but this does not automatically mean that this approach malfunctions. Often, other causes as electronic malfunction or human errors like misuse of devices contribute to many fires. It is therefore likely that frequency of fires will increase over the years, just like the increasing numbers of inhabitants in the Netherlands as the increasing number of buildings which are being constructed. It is in this regard important that the awareness concerning multiple aspects of fire safety among the citizens increases.

2.9 Problems in the fire safety domain

The increasing number of fire safety regulations in the fire safety domain has brought some major consequences. It is often argued that the prescriptive fire safety codes in the former Bouwbesluit 2003 were formulated to abstract, the referral structure was too complicated and the legal language was too hard to interpret (Hagen, 2007). The latter resulted in a growing amount of advising agencies that entered the fire safety domain. The former hierarchical structure, where the municipalities accompanied by the regional fire brigade had the main responsibilities regarding fire safety, has been replaced by a market structure including more actors. As a consequence, actors in the fire safety domain explained and applied the fire safety provisions according to their own interpretation, resulting in different approaches to fire safety. From this point of view, Szigeti *et al.* (2005) emphasize that there are two languages in the fire safety domain. There are requirements on the demand side, and there is a capability to fulfill that demand and perform as required on the supply side (Szigeti, 2005). The languages on the demand side and the supply side are different, and it is important that these differences are being recognized to prevent entanglement in the fire safety legislation.

Another consequence of the growing amount of prescriptive fire safety codes was that actors strictly followed the rules without thinking about their goals or values to fire safety. Satisfying or complying with the prescriptions in Bouwbesluit was the primary goal, without actually thinking about a rational approach to achieve a satisfactory level of fire safety in buildings. The result of the increasing amount of fire safety regulations was a growing uncertainty how to actually deal with these provisions. The growing amount of fire safety requirements has also resulted in a loss of substantive expertise of government bodies in this respect, and regional governments are more frequently consulted. In the private domain, it is due to the increasing complexity explicable why many advising agencies entered the fire safety domain for assisting technical advice. This observation is confirmed by further analyzing the recommendations of the Commission Dekker (2008), where it is stated that 'the current building regulations and government supervision is being experienced by involved stakeholders as complex and not transparent' (Helsloot, 2012).

Major fires like the café fire in Volendam, the fire in the detention center of Schiphol-East, have brought confronting conclusions to the current state of affairs in the governance of fire safety. The Commission 'Onderzoek Cafebrand Nieuwjaarsnacht' stated that both the user as local governments showed insufficient responsibilities about fire safety in that building. The accident report of the Dutch Safety Board concerning the fire in the detention center of Schiphol-East indicated that all the actors that were involved in the fire safety domain did not take sufficient responsibilities, and were relying on the knowledge and expertise of others. The overall compliance to the fire safety regulations was neglected because of the shared responsibilities (OVV, 2006). Below three phrases from each individual accident report.

Café Fire Volendam

'The emerging picture is not comfortable. An owner who gives no indication of clearly understanding his responsibilities towards the safety of his guests. Besides, he tends to neglect the Authority. A local government who performs his core responsibilities , monitoring and enforcement, not in accordance as regulated…' (Nieuwjaarsnacht, 2001)

Detention Center: Schiphol-East

'The report shows the extent to which the relevant public authorities have completed their responsibilities. Unfortunately, the Council reached the conclusion that they have performed their task insufficiently. The involved authorities were not very critical with regard to their responsibilities and their implementation.' (OVV, 2006, p.7)

Fire Chemical Concern Moerdijk

'The inspectorate comes to the conclusion that initially the municipality Moerdijk and later the safety region Mid- and West-Brabant have failed in the preparation of the risks in their region. They have given insufficient substance to their tasks and responsibilities in this regard.' (Veiligheid, 2012)

Because of the integral character of processes which concern fire safety, multiple stakeholders are being observed. The stakeholders are all mutual dependent from each other, which in the end will result to a final outcome. This integrality and mutual dependency will as a consequence result in shared responsibilities, it is hard to pinpoint who is actually accountable for the decisions or actions that were neglected at a specific stage Many actors tend to designate responsibilities to others, and often mitigating their owns. It can be stated that public organizations lost the autonomous decision making in the fire safety domain, the primacy for the concern of fire safety is fragmented and results in public-private partnerships. It is not only the complex structure of the fire safety legislation that thwarts the executive side of the fire safety legislation, also the culture in terms of awareness of responsibilities is a prerequisite for a successful implementation. The commission Dekker also observed this finding, and has recommended that the main responsibilities has to be deposit at the owner, designers and the builders of a building. In other words, delegate the responsibilities towards the private sector where possible (FVB, 2008).

Historical observations have shown that public organizations tend to be reactive in case of providing resources to specific public organizations, often as a result of extraordinary media-attention. Many political questions rise after major fires have occurred that resulted in social disruption. Examples are the already mentioned café fire in Volendam, the fire in the detention center of Schiphol-East, but also a recent fire in a chemical concern in Moerdijk resulted in questions which gained a high priority on the political agenda. All these examples show that suddenly more attention is given to, in this case, deficiencies in the governance of fire safety. Multiple observations can be observed in this regard, like strengthened monitoring and enforcement on objects containing higher risks. Performance of governments are being considered in the accident reports and as a consequence, local governments might tend to become more preventive in terms of assessing new licenses which temporary increases administrative burdens and required resources in governmental organizations. This increased attention is often a temporary expressed public concern. Ministerial responsibility is an obvious rationale behind these observations. There is often a sudden fuss and increased attention, which then fades away on the long term. This observation is also conceptualized as a 'moral panic'. Goode and Ben-Yehuda (1994) define moral panic by, at least, five crucial elements or criteria. Each element or criteria represents a different aspect of a moral panic: (I) *concern* "..there must be a heightened level of concern over the behavior (or supposed behavior) of a certain group or category and the consequences that that behavior presumably causes for the rest of the society" (II) *hostility* "there must be an increased level of hostility toward the category of people seen as engaging in the threatening behavior"

(III) *consensus* "there must be a certain minimal measure of agreement in the society as a whole or in designated segments of the society that the threat is real, serious, and caused by the wrongdoing of group members and their behavior".(IV) *disproportionality* "the attention accorded a given issue or phenomenon is disproportional of the concrete or objective threat it poses", (V) *volatility* "They erupt fairly suddenly and, nearly as suddenly, they subside" and "….whether it has a long-term impact or not, the degree of fear, hostility, and concern generated during a moral panic tends to be fairly limited temporally…" (Goode, 1994) The authors thus pose the question whether moral panics cause social instability or if it is a phenomenon that is fading away in the long run. This is where the concept of volatility is being observed, it depends upon the subject-matter and upon the media if moral panics are being institutionalized or if they fade away. Often, the scope of the media is being labeled as disproportional, i.e. hot issues are subject to significantly more media attention than other daily affairs. Disproportionality can then cause an institutionalization of values and beliefs. Goode and Ben- Yehuda (1994) pose different consequences when moral panics are being institutionalized. Moral panics can result in new laws, interest groups, governmental institutions, organizations and even shifts in norms and values. Even when we deal with issues that seem to be nil at first glance, they can lead to shifts in both formal and informal norms and values. On the other hand, these shifts can also fade away on the long term.

This finding is being confirmed in Hagen his book: '*Het Kerkje van Spaarnwoude'.* Hagen mentions a concept which can be defined as 'governmental amnesia' (Hagen, 2007). This relates to the observation that provided resources are often being skimped on the long term, because their priority is lost out of sight. It is, in particular, of great importance that these issues are not resulting in budget cuts in resources provided to this domain. When concerns are being raised after accidents, eye-openers must be institutionalized and not fade away on the long term due to financial reasons. Even due to some recent accidents in the Netherlands, the inspectorate of the ministry of VROM highlights that governments are currently still confronted with the following problems in the fire safety domain (Inspectie, 2008);

1) Limited capacity for monitoring and enforcement
2) Insufficient trained personnel at local governments
3) Limited or no supervision on building sites
4) Insufficient enforcement when violations are actually detected
5) Designers and builders who abolish their own quality control and rely in government control

One of the other problems highlighted by the Ministry of Interior concerns the equivalent approach to fire safety, based upon article 1.3 of Bouwbesluit 2012 (BZK, 2009). In theory, the Dutch fire safety regulations permit alternative approaches to the fire safety regime mentioned in Bouwbesluit 2012, as long as an equivalent level of fire safety can be demonstrated (VROM, 2001). When architects decide to not follow the guidelines, such as the prescriptive fire safety codes mentioned in Bouwbesluit 2012, it is evidenced that the final design does not comply with the fire safety regulations. From this point, it is the responsibility of the architect to demonstrate by other means that de final design of a building does satisfy a sufficient level of fire safety, equivalent to the level of fire safety acquired with the formal prescriptive requirements. In practice, the demonstration of equivalency points out to be very difficult, since there is not yet an objective measurement tool to determine this equivalency, and a subjective interpretation remains to be decisive. Prescriptive criteria are straightforward for designers to honor and in line easily to enforce for third parties. This is however not straightforward when the performance based approach is being used. Kobes mentions a consequence in this regard, where it is stated that there might be a lot of (power) struggle between the designer of the building and the local enforcer of the fire safety codes when opted for equivalent solutions.

In line, Gibson (1982, p.4) emphasizes that 'the performance based approach is […] the practice of thinking and working in terms of *ends* rather than *means*. This phrase also highlights that the ends or the goals are of main importance. The problem with regulations that have aims without clear means is uncertainty, it is not clear how to give substance to these formulated goals. Even though the principle of performance based approaches are to make an own interpretation and approach to fire safety, it might result in ends which cannot reach consensus among the multiple stakeholders which are being involved in the governance of fire safety. Prescriptive approaches on the contrary give specific institutionalized means in terms of NEN-norms en quality declarations to fulfill the goals that are stated in Bouwbesluit 2012. With these means it is very obvious that consensus can be reached without any problems. Without institutionalized foundations that have reached consensus, like fire safety engineering, it might be hard for local governments to approve a submission that is often based on high scientific knowledge and is hard to interpret.. Even though local governments might ask advise for these interpretations by the regional fire brigade, they are still held accountable for the final decision being made. This is one of the reasons why local authorities currently are being centralized to regional organizations called 'Omgevingsdiensten'. This in order to increase and cluster levels of knowledge and expertise to central regional divisions.

Topics that might hinder the implementation of the performance based approach in the Dutch fire safety legislation might be considered upon practical experiences of other countries. Australia for example is one of the leading countries in changing from a prescriptive to a performance based approach. The practical implementation of the performance based approach in Australia was mainly hindered by the lack of understanding, the available relevant information and appropriate tools and methods on the four topics listed below. These aspects should be kept in mind for a successful application of fire safety engineering in the fire safety domain. For long-term developments, four aims have been developed in Australia (Foliente, 2000):

1. Establishing a basic framework; include performance indicators, clarification of terms and definitions
2. Establishing performance criteria; for attributes that lack these criteria
3. Developing a guide; for methods of establishing adequate performance
4. Establishing clear performance models; to achieve targets

Fire safety in buildings is guaranteed by four dimensions in Bouwbesluit 2012, preventative measures, measures that limit the development of fire, measures that increase the self-reliance of individuals and measures that increase possibilities for repression, see figure 7. Fire safety can be seen as a chain containing four links which are very closely interrelated. This chain is very important, when one link in the chain cannot be obtained, serious consequences might arise for one dimension of the fire safety in buildings. This understanding requires that fire safety professionals are trained sufficiently to make an adequate risk assessment when one link in the chain becomes in recess. It is in this regard that the goals of fire safety prescriptions visualized in figure 7 are clear, and that these core variables are fulfilled in every occasion. This requires sufficient levels of knowledge and expertise.

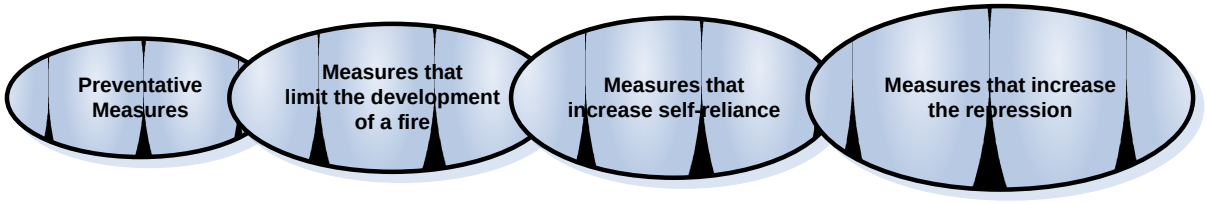


Figure 7. The links in the chain of fire safety are highly interrelated.

As stated above, the application of the prescriptive requirements in Bouwbesluit 2012 already requires an adequate level of knowledge and experience of fire safety, and this increases while using the fire safety engineering approach. Section 3.7 discussed the formal liabilities in case of deficiencies. It became clear that the primary responsibility with regard to fire safety is in principle always grounded in the private sector, where the owner or the user of that building has the core responsibility. It might be questionable whether these levels of knowledge and expertise with regard to fire safety can be demanded from them. In order to increase consciousness, governments might need to organize more national campaigns. The fire statistics discussed in section 3.8 already revealed that the majority of the fires and also the majority of the annual fatalities occur in contemporary terraced housing. Besides, the majority of the causes are related to human errors or deficiencies in electrical equipment. Grounding the core responsibility with regard to fire safety in the private sector might be unavoidable, but these responsibilities cannot always be worn satisfactory due to unawareness of certain deficiencies. The basis thus requires a first predicate, that indicates that the design during the completion phase complies with national fire safety standards.

After this stage, that the private sector needs to maintain this level of fire safety which has been handed over. In order to acquire such a predicate, fire safety consultants should also provide a quality declaration in this regard. In a previous study in Hong Kong, 78% of the designers of a building stated that they endorse that fire safety consultants should be formally registered. This implies that the designers have the opinion that professionals in the field of fire safety should be statutorily liable to their work (Lo, 1999). The legitimacy of fire safety should be a statutory basis to ensure that an adequate level of fire safety is achieved after the completion. The Netherlands warrants this statutory basis in the 'Woningwet', 'Brandweerwet', 'Wet Milieubeheer' and the new 'WABO'. This makes fire safety in buildings enforceable. On the contrary, there is not yet an accreditation training for fire safety engineers which makes them statutory liable to their job. In case of poor performance of fire safety consultants, their accreditation can be withdrawn.

Continuing the discussion with regard to responsibilities and accountabilities, section 3.7 revealed that local governments have limited accountabilities when their assessment turns out to be inadequate. Three issues have to be demonstrated in this regard; (i) causality; there is a clear correlation between the stated cause and effect. (ii) unlawfulness; the effect is caused by a transgression of the law or not fulfilling an established and formulated task (iii) relativity; the prescriptions have to protect the economic interests of the client and have to be proportional. With regard to the licensing process, it has to be demonstrated that the license has been issued unlawful. Even in this situation it is not directly the case that (local)- governments are liable for the damage. The damage also has to be causally related to the unlawful act or negligence of (local)- governments. This situation makes it hard and unlikely to hold governments liable for the consequences of fires. The practice as a consequence shows that governments are rarely held accountable for their shortcomings.

2.10 Conclusion Section 2

The background discussed in this chapter provides an opportunity to give a first partial answer the sub-questions which are being formulated in this research; (i) how is the governance of fire safety enshrined in the contemporary way of designing fire safety in buildings using Bouwbesluit 2012? (ii) What are the contemporary problems in the governance of designing fire safety in buildings using Bouwbesluit 2012? (iii) What changes in the governance of fire safety in complex buildings when the fire safety engineering approach is applied? (iv) What are the problems in the governance of fire safety in complex buildings when the fire safety engineering approach is being used? This section discussed a general background regarding the governance of fire safety, including issues like legislation, the prescriptive and performance based approaches being used in the Netherlands and the actors involved including their liabilities. This information gives a valuable insight in eventual problems in the governance of fire safety by using both approaches. Last, some statistics with regard to annual fires in buildings and fatalities have been presented which are being compared to other European countries. It turned out that the Netherlands has relative low annual fatalities due to fires in buildings compared to other European countries. This section ended by discussing some contemporary problems which can be distilled out of these paragraphs, allowing us to visualize the general problems in the governance that occur with both the prescriptive as the performance based approach.

By using Bouwbesluit 2012, the governance of fire safety seems to be quite convenient. Due to the prescriptive requirements, or by prescribing the means to fulfill with national standards, it is straightforward what to comply with and how to assess compliance. The most negative side effect of the prescriptive based approach is that it hampers innovation of the design being used and it might hamper innovation regarding approaches and means that might be useful in the governance of fire safety. This changes when the fire safety engineering approach is being used, by demonstrating equivalency it is possible to demonstrate by other means that a sufficient level of fire safety is being acquired. This approach thus formulates goals, and gives the designer the possibility to use means by its own discretion. This approach results in a situation that gives more opportunities to come up with innovative design solutions and allows designers to give an own interpretation how comply with national standards. It seems to be a challenge for local governments to assess whether an equivalent level of fire safety is acquired, since there is not an objective measurement tool that can be used to demonstrate equivalency. The performance based approach can thus be seen as a complex approach in the governance of fire safety. In combination with disproportional media representation of major fires, local governments might become more reticent in providing licenses when the performance based approach is being used. This is the most significant observation in the contemporary problems between two distinct approaches, but there are also some general problems which can be observed by both the approaches. The most significant observation in this regard is that the aspects monitoring and enforcement are not always being performed well. This might be a consequence due to insufficient capacity or due to the limited levels of knowledge that are being observed at local governments. Besides, jurisprudence has shown that local governments have limited accountabilities in case of negligence, and this might have significant consequences for the quality of the governance of fire safety. Due to limited accountabilities, local governments might be cutting corners.

These observations are being considered in the next chapters of this research, where they are being discussed from a scientific theoretical perspective. This theoretical framework will allow us to explain which mode of governance is currently being observed in the governance of fire safety. Theories regarding hierarchies, networks and markets will be used to give more insight why certain threats in the governance of fire safety actually occur and how they can be prevented. Besides, potential benefits of hybrid governance modes might give more insight in potential changes that can improve the governance of fire safety. The last section of this research further analyzes these findings by using surveys in the market to make recommendations for improving the current situation. Potential amendments can be proposed, and attitudes regarding these changes might be useful to support and to direct potential changes in the governance of fire safety.

3. Theoretical framework

3.1 Governance modes in the fire safety domain

One of the most significant developments in contemporary societies are the shifts from traditional state-based governing mechanisms towards new arrangements of governance. Governance refers to the phenomenon that many public functions are delegated to actors other than classical governmental institutions (NWO, 2004). Other authors state that governance refers to 'self-organizing, inter organizational networks' (R.A.W. Rhodes, 1996). Governance modes thus rely on processes where markets or networks are primarily being used, and where government restraints as far as possible. Shifts in governance can be observed in two dimensions, vertically across levels of local, national and transnational levels and horizontally from public to (semi-) private actors (Kersbergen & Waarden, 2004). The most relevant shift in this research is the horizontal shift in the governance of fire safety, where tasks will be delegated to the private sector. This shift is very obvious, since the performance based approach in the Dutch fire safety legislation has already provided an unprecedented opportunity for industry stakeholders to engage in the governance of fire safety. Besides, the performance based approach results in both private as public responsibilities with regard to fire safety. The last decennium is therefore also being characterized by shifts from traditional hierarchical modes of governance towards market modes of governance and network governance, but even combinations of these governance modes are frequently being observed. Networks and markets complement hierarchies as 'governing structures for authoritatively allocating resources and exercising control and coordination' (Rhodes, 1996).

Shifts in governance also have multiple consequences for the governance of fire safety, since various public, non-governmental and private actors enter the decision making domain. Overall, shifts in governance raise questions concerning the loci of power, responsibilities, accountability and the democratic legitimacy of actions and decisions being made (Kersbergen, 2004). This theoretical framework of the governance of fire safety describes and elaborates on these kinds of possible threats and benefits, which may result from shifts in the governance of fire safety. The purpose of this theoretical framework is mainly descriptive, but also allows us to analyze some of these remarkable issues in practice by in an in depth survey. This allows us to analyze whether or not the distilled threats and benefits of these divergent governance modes actually occur in the Dutch governance of fire safety. Besides, valuable recommendations can be made whether and how the current governance of fire safety has to be amended to improve the current situation.

3.2 Characteristics of hierarchy, networks and market governance

There has been a long academic discussion about the differences and similarities about markets, networks and hierarchies, see for example (Thorelli, 1986) & (Powell, 1990). The basic similarity is that all three modes of governance use relations to produce an outcome. One of the basic differences between hierarchy, networks and markets are the structures and the loci of power. Networks for example are explicitly conceptualized as pluricentric modes of governance involving a wide variety of actors, in contrast to markets which use more multicentric approaches. Traditional hierarchical forms of government use more unicentric approaches with a public mandate (R.A.W. Rhodes, 2010). Figure 8 gives a more clarifying image of this conceptualization. Starting from the bottom, niches in the society form a market where resources can be observed and consulted. This is a multicentric situation. Based on more specific issues, like fire safety, networks tend to form with specific regimes giving a more specific boundary to the resource in question. Resources then combine in pluricentral forms. On the top, a hierarchy can result out of the niches and the networks which are observed at the lower levels, dominant over markets and networks. This is the third unicentric form. As can be seen in the figure, the loci of power, but also issues as accountability, responsibility and legitimacy becomes more clear at the top of the figure, i.e. at the hierarchical form. Even though, mixtures or hybrids of these three modes of governance can always be observed due to interdependencies. No single actor, nor public or private, has all the knowledge and information required to solve complex, dynamic and diversified problems (Kooiman, 1999).

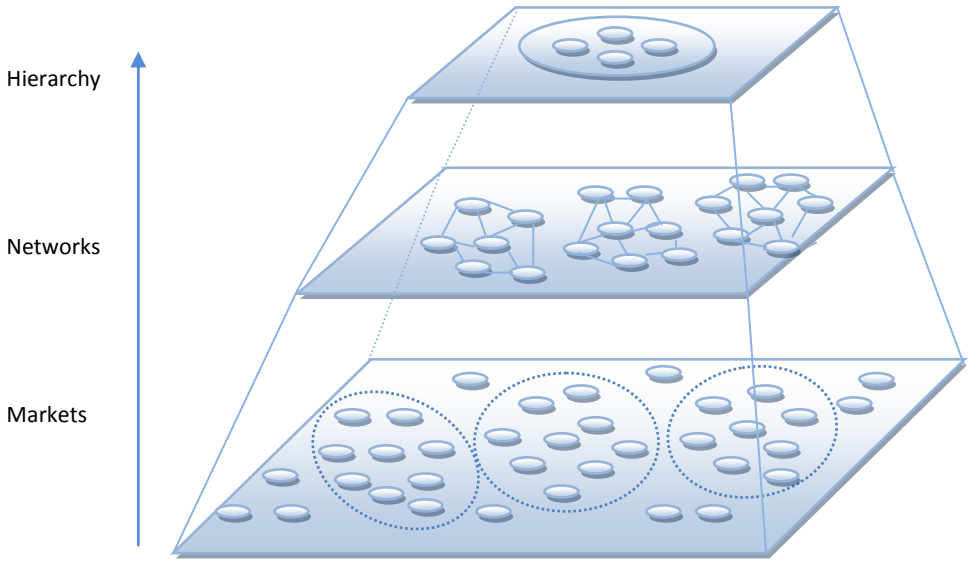


Figure 8. This landscape represents hierarchy, networks and markets (Verbong, 2010).

3.2.1 Hierarchy

The most familiar and traditional form of governance is the hierarchical government, where governments have the *authority and power* to the public, and are also directly *responsible* and *accountable* for their actions (Powell, 1990 & Keast *et al.,* 2006). Governments and local governments are being elected, which increases the democratic legitimacy of the decisions being made. Rules in terms of *formal laws* are guidelines which political actors have to be taken into account during daily matters. Governments use *formal contracts* to delegate specific functions to lower governments, but are in the end *accountable* for the actions of the delegates. It is thus close to consensus that hierarchical modes of governance increase the accountability, responsibility and democratic legitimacy of the actions and decisions being made by politicians (Kersbergen, 2004). From a business point of view, a similar conceptualization of hierarchies is possible based on the literature of coercive power, where companies compete with other actors to seek superiority by dominating the power balance between the two companies (Ritter, 2007). Based on this domination, hierarchical structures tend to form resulting in *dependencies* and mutual responsibilities and accountabilities.

Traditional hierarchical forms are also being observed in the fire safety domain. Using the prescriptive approach, grounded in Bouwbesluit 2012, local governments have the mandate to issue the building license in accordance with previously discussed national laws and regulations. Local governments can be held accountable for issuing licenses that are not in accordance with these national laws and regulations. Besides, local governments can be held accountable of they are not monitoring and enforcing transgressions with regard to fire safety. This task is quite straightforward using the prescriptive based approach. It is clear what and how to assess a design with specific prescriptions in Bouwbesluit 20012. Using the performance based approach however, this assessment becomes more obscure due to the required levels of knowledge and expertise. Based on this observation, shifts might occur from traditional hierarchical forms of government towards network and market modes of governance. Local governments might rely on the advisory function of the regional fire brigade, or simply take the rather complex advise of fire safety consultants. Due to these interdependencies, questions might arise whether hierarchical forms of governance are still desirable.

The most obvious recommendation results from the Commission Dekker: ' treat necessary matter public, anything that can be outsourced private' (Dekker, 2008). Even though hierarchical modes of government at first glance enhance central authority, responsibility, accountability and legitimacy, governments might face tough decision making problems when they are entering complex domains requiring high levels of technical knowledge and expertise. Hoppe for example mentions that there are four general problem structures which result in divergent governance problems (Hoppe, 2010). The traditional governance of fire safety, using the prescriptive based approach, gives a situation that can be divided in the bottom right problem structure of figure 9 below. This is a structured problem, the prescriptions in Bouwbesluit 2012 are close to agreement on norms and values at stake and close to certainty on required and available knowledge. Structured problems are in this regard very suitable for traditional hierarchical governance modes. However, if the regulatory of fire safety will be a performance based approach, goals are the basis assumptions that have to be fulfilled. With regard to figure 9, this situation leads to a situation where decisions or outcomes might be far from certainty on required and available knowledge, and results in situations which are far or not close to agreement. This results in unstructured problems, and as a consequence also results in problems in the governance of these issues. Practical experiences have shown that these situations are more eligible to other or hybrid forms of governance, where markets and networks are being uses which involve more actors. These forms of governance are being discussed in the following paragraphs.

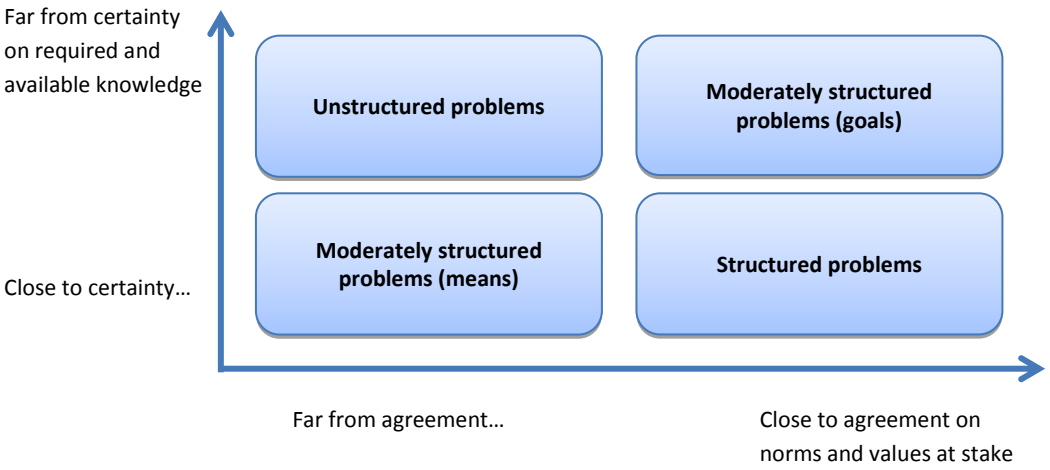


Figure 9. Four problem structures (Hoppe, 2011)

3.2.2 Networks

Network governance is a mode of governance that has developed rapidly over the last twenty years to overcome many barriers which are being observed in traditional governance forms. This form of government thus received a lot of scientific attention in recent decades, resulting in different definitions by different authors. Jones *et al.* (2009) provide an overview of those definitions and combine these to one comprehensive definition of network governance: 'Network governance involves a select, persistent an structured set of autonomous firms engaged in creating products or services based on implicit and open-ended contracts to adapt to environmental contingencies and to coordinate and safeguard exchanges. These contracts are socially, not legally, binding' (C. Jones, Hesterly, W.S., Borgatti, S.P., 2009). From this definition we can distinguish the different elements of network governance.

First of all, the network members are a *select group* of autonomous firms which exchange or cooperate with each other and rarely with others. The actors in the network *persistently* cooperate together over time, therefore network governance can be seen as a long term dynamic process. The exchanges in the network are *structured,* which indicates that they are patterned and that they reflect division of labor in that network, they are not random nor uniform. All the actors or organizations in the network are in potential legally independent from each other, which means that they are *autonomous firms.* Last, the *implicit and open-ended contracts* imply that there may be some formal contracts between the actors in the network, but that they do not define formal contracts among all the actors and the procedures that are applied within that specific network.

Provan & Kenis (2007) distinguish three forms of network governance (Kenis, 2007). The *participant network* is characterized by different organizations which cooperate together in a collective manner. The decisions and coordination of the network activities are made by the participants within that network, but they do not have a separate governance entity. This participant form of network is often observed at the lower level of interest groups. The second form of network governance is the *leader-organization* governed form of network, with more vertical top-down characteristics. All actors in the network share a common goal, which causes a certain level of shared interest resulting in coordination and interaction among the actors involved. In this form of leader-governed networks, all activities and decisions are made by one specific actor of that network. Therefore, it is important that the legitimacy and efficiency of the leader is being accepted. This organizational leader also provides the facilities and administrative assistance for the network to develop and maintain. The third form of network governance is the *network administrative organization* (NAO). This form is being characterized by a separate entity which manages and coordinates the activities that are being performed within that network. The NAO can therefore be seen as the governing body of a network, it is not an actor that is active in the primary processes of that network. Often the network administrative organizations are public organizations and the members are private firms.

The network form of governance is especially useful when we cope with complex and unstructured problems. As Hoppe (2011) describes, unstructured problems are far from certainty on required and available knowledge and overall far from agreement. This situation can also be seen when the performance based approach is being used. Networks tend to form based on individuals or organizations with shared interest, in this regard fire safety. These networks can have multiple goals. The most obvious one is lobbying which solutions are most eligible for demonstrating equivalency with the functional requirements in Bouwbesluit 2012. The most common form of network governance in the Netherlands is the leader-organization governed form of network, where government or semi-governmental organizations provide a common goal and legislative framework and also has the superintendence over fire safety in buildings. Local governments have the authority over the entire process, and are decisive in the end. Beside the leader-organized governance mode, other networks can also be observed in the governance of fire safety. There are for example various national fire safety conferences. Besides, the participant form of network governance can also be observed in the fire safety domain, there are multiple symposia of interest groups and fire safety congresses. These forms of network governance involve different actors, both from the public- as the private sphere. A European example of network governance in the fire safety domain is the PeBBu[4]. This network has been founded as a thematic network for the 'Stimulation and pro-active facilitation of international dissemination and implementation of Performance Based Building in building and construction practice' (PeBBu, 2010). This network aims to combine the fragmented knowledge in the domain of performance based building. This includes policy makers, actors from the building industry and regulatory communities.

[4] Performance Based Building, see http://www.pebbu.nl/

3.2.3 Markets

The third mode of governance that is frequently observed in modern societies is market governance. Market governance is sometimes seen as forms of privatization, defined as 'the act of reducing the role of government or increasing the role of the private institutions of society in satisfying people's needs; it means relying more on the private sector and less on government' (Savas, 1999). The theory of market governance is based on multiple disciplines, like economic history, institutional economics, economic sociology, comparative political economy and labor relations and labor economics (Kersbergen & Waarden, 2004). The most distinctive characteristic of markets is that *transactions* are being made among private stakeholders on the demand side and independent private competitors on the supply side to acquire a specific product or outcome. The product or outcome that is demanded can be either specific or general, which has significant consequences for the power of the involved stakeholder. In cases of a general demand, the *power* of the consulted actor is relatively low compared to other modes of governance, since competition is high. When an actor provides products or outcomes that does not fulfill the demands of the stakeholder, he or she will approach another competitor to fulfill its objectives. In cases of high c*ompetition*, actors might be *purchasable* to attain a transaction, because actors are supposed to behave opportunistically in order to optimize price in every single transaction (Ritter, 2007). The *responsibility* is due to competition mainly focused to the client. When products or outcomes are scarce and competition is low, the power of the consultant is relatively high. In these cases, other competitors will appear soon due to the theory of the free market. This process is a continuous circle, and in the end the power of actors on the supply side will become less over time.

The transaction cost theory (TCT) is a basic fundamental in explaining why markets are being used. Based on three dimensions, known as frequency, specificity and uncertainty, transactions are being considered to be made with contracts, hierarchies and hybrid forms (Groenewegen, 2004). The basic assumption is that hierarchies provide the most efficient form in coordinating transactions when uncertainty, frequency and specificity are high. Central aspects in market governance and their transactions are *transparenc*y. Prices indicate scarcity, and are therefore known by the market. Markets are therefore labeled as *flexible*, actors can immediately make changes and rollback when these changes are not resulting satisfactory. Due to this flexibility, markets are seen as mechanisms of selection (Groenewegen, 2004). The most efficient actors in the market with the highest reputation remain as a consequence of the phenomenon '*survival of the fittest'*. Due to these observations, *reputation and integrity* are core values in markets. When reputation disappears due to multiple possible causes, actors will be forced out of business. Markets are often being used to increase efficiency and to get rid of typical hierarchical forms of governance, which are often labeled as bureaucratic.

Characteristics of markets can also be observed in the governance of fire safety. The increasing demand for specific technical knowledge and expertise about fire safety resulted in the appearance of private advising agencies. This was already the case for the technical application of the prescriptive requirements in Bouwbesluit 2003 and even more with the possibility to use a performance based approach to reach an equivalent level of fire safety by other means. Designers of buildings consulted these advising agencies to provide a substantiated report that can be used for the license application at local governments. This report has to provide an independent and objective judgment whether or not a sufficient level of fire safety is acquired with the chosen means. Besides, advising agencies can recommend additional measures to comply with national fire safety standards. The current discussion, based on the recommendation of the Commission Dekker, is to delegate the entire responsibility in its entire to the private domain. The rationale behind this assumption is that the market already has extensive knowledge and expertise is these domains, and that a total delegations is straightforward to overcome some issues which have been observed in recent accident reports. This delegation towards to market, according to the commission, only requires trust and assigned responsibilities (Bouwkwaliteit, 2012; FVB, 2008).

3.3 Reasons for shifts in governance

The literature describes different pros and cons of entering the different modes or hybrid forms of governance. This section describes the factors that play an essential role in the consideration whether or not to invest in networks or markets instead of hierarchical forms of governance. From the literature, a valuable oversight can be distilled to visualize the attributes belonging to variables for each specific governance mode. This oversight is given in table 6 below. Even though table 6 is not always covering the entire picture, it gives a valuable insight in the reasons why governance modes are being considered. In general, Jones et al. (1997) mention that considerations have to be made which governance form is most efficient in adapting, coordinating and safeguarding exchanges (C. Jones, Hesterly,. W.S., Borgatti, S.P., 1997). Public and private organizations are often willing to safeguard their investments and the resulting outcomes. The context of the specific situation is therefore an important factor. Provan & Kenis (2007) give an example where network forms of governance are especially appropriate to develop activities in the context of complex situations with incomplete, contradictory and changing visions and requirements (Kenis, 2007). A dynamic context like the Dutch fire safety domain also contains the characteristics as described by Provan & Kenis, and this might be an explanation why shifts in governance occur. Jones et al. (1997) mention three more relevant factors that could play a role in deciding whether or not to invest in networks or markets: asset-specificity, task complexity and frequency of exchanges. High levels of *asset-specificity* results in required cooperation, dependency, proximity and more frequently repeated exchanges. *Task complexity* means that multiple actors, often possessing highly specific knowledge, are necessary to complete a product, service or outcome. Asset specificity and task complexity therefore results in networks or clustered markets. Networks offer a great possibility to combine resources and knowledge to create solutions in complex situations. Markets provide possibilities to make considerations where knowledge can be consulted among competitors. A third factor that plays a role in deciding whether or not to invest networks or markets is *frequency*, which concerns how often exchanges occur. When frequency is high, hierarchies and networks are dominant over markets, since transaction costs are lower on the long term.

Table 6. Overview of the governance modes being discussed (Powell, 1990), (Keast, 2006) & (Ritter, 2007)

Variables	Market	Hierarchy	Network
Structural arrangements	Private	Public	Collective / communal
Accountability	Integrity, private	Public accountability	Mutual accountability
Responsibility	To the client	To the public	Among each other
Legitimacy	Low	High	Medium
Relationship	Transactions	Authority	Trust
Outcome focus	Efficiency	Certainty	Flexibility
Means of communication	Prices	Power	Relational / Mutual agreement
Degree of flexibility	High	Low	Medium
Issue complexity	Intermediate complexity	Routine matters	Complex Issues
Conflict Resolution	Haggling	Administrative approval	Reputational concerns
Commitment among parties	Low	Medium to high	Medium to high
Climate	Precision / suspicion	Formal, bureaucratic	Open-ended, mutual benefits
Preferences of choices	Independent	Dependent	Interdependent
Exchange	Non-repetitive	Routine	Repetitive
Focus	Disinterested	Vested interest	Personal Interest
Knowledge management	Contract	Policies	Conventions
Opportunistic behavior	High	Low	Low
Power for individual actor	Low	High for superior	Low
Time frame	Short	Long	Long
Interaction	Anonymous	Personal	Personal
Trust in	Contracts	Rules	Actors

3.4 Threats and benefits networks and markets

This section elaborates on the findings of paragraph 5.3, and mentions some potential benefits and threats that might be expected by using divergent governance modes. These threats and benefits are distilled of a limited amount of literature, it cannot be excluded that other threats and benefits might occur as well. Even though, the selected literature provides some essential clearance about the most general and obvious threats and benefits of network and market governance when compared to traditional hierarchical government. The first benefits of networks and markets are already mentioned in the previous sections, where Jones et al. (1997) mention three factors that should give some clearance about whether or not to invest in network governance. Provan (2005) gives an additional basic benefit of networks and markets. He argues that by working together, or taking the advantage of knowledge and resources of all the organizations in the network, more can be achieved than when organizations or actors are working solely (Provan, 2005). In other words, network governance gives the benefit that it provides opportunities to reach specific goals that would otherwise not be feasible. Consultation in the market provides the same possibility to obtain knowledge, but this is more often characterized by more intensive transactions. This finding is also in line with other often cited benefits of network governance, for example *binding knowledge* and sources to gain *effectiveness and efficiency* and to solve *multi-complex problems*. In line, the book 'The wisdom of the crowd' demonstrates that the aggregation of information and knowledge in groups often result in decisions that are better than any single member of the group could have made solely (Surowiecki, 2004). Four elements are necessary in to from such a wisdom; diversity, independence, decentralization and aggregation. *Diversity* means that each individual should have its own private information or interpretation, even if it is an eccentric interpretation of the known facts. *Independence* means that the opinions of the individuals are not determined of those around them. *Decentralization* requires individuals to specialize on the topic in question and to draw on local knowledge. Last, *aggregation* is being used to turn private judgments into a collective decision based on consensus. Especially with public organizations, which are often labeled as bureaucratic, networks and markets can give possibilities to increase efficiency and effectiveness. The legitimacy of networks and markets is therefore often based upon *output legitimacy*, where legitimacy is acquired by successfully solving problems that require collective actions (Scharpf, 1999).

In terms of *innovation,* networks and markets can also be beneficial. Provan and Kenis (2007) highlight that goal consensus is often interpreted as desirable, but they also argue that some degree of conflict can improve innovation (Kenis, 2007). Goal consensus therefore depends on the kind of network and the market situation. In participant networks, goal consensus is desired to be high in order to keep the actors committed. In leader organization networks and network administrative organizations, a moderate goal consensus can be enough to gain satisfactory results. When goal consensus cannot be reached, networks offer the possibility to break the current relationships and to start a new network that consists of other actors. This gives organizations the possibility to respond rapidly to environmental uncertainties and to other threats that will be mentioned later in this section. It should be noted that it is sometimes stated that networks tend to be less innovative on the long term, because the information and solutions in networks become fixed after a while. For market modes, innovation is required due to the high competition. Goal consensus is relatively low in market conditions, since other competitors can be consulted to provide the desired product or outcome. Innovation is an important concept in the governance of fire safety. Both innovation of the building design is desired by the market, but also innovation relating to prescriptive forms of formulations remains desired.

The other side of the coin is that there are also several reasons why it is not worth to invest in networks or to consult the market, because of potential threats that may arise. First of all, networks create *interdependency,* resulting in a potential *loss of autonomy* in decision making. Consensus building is one of the core issues in network governance, which deliberately ignores possibilities of autonomous decision making. Some actors have a tendency to show free-rider behavior, where actors are beneficial without making sufficient investments in the process.

In line, the principal-agent theory is a theory derived from the institutional economics. Another threat of network governance and market governance is the potential threat of *opportunistic behavior* of other actors in that network. There is a very specific contract, where the principal has the ownership and delegates his tasks to the agent. The delegation of this task from the principal to the agent results in the possibility that the interest diverge and results in *unequal information* the side of the principle with regard to the agent. The agent can perform tasks or produce outcomes that are not in line with the interests of the principle. When the agent provides false, or actually withholds information to the principle due to his or her own interests, we call it *'opportunistic behavior'* (Groenewegen, 2004; Twist & Klijn, 2007). It is in thus important to prevent information asymmetry. Other threats in networks are spill-over and hold-up problems. Spill-over might occur when actors leak information or resources to other competitors which are not part of the network. Investments in means of resources in that network are then thrown over the fence to other stakeholders which did not participate in that network. Another example of a problem that might occur is the *hold-up* phenomenon, where increased dependencies between parties cause an abuse of power in terms of prolonging an assent. Also in market conditions where competition is high, hold-up problems might occur. Independent advising agencies might become dependent on sufficient transactions, and adapt their product or outcome to the desires on the demand side. This might increase *venality* on the supply side.

Van Kersbergen & van Waarden (2004) take the argument one step further, and argue that shifts in governance can cause problems with governability, accountability and legitimacy (Kersbergen, 2004). This implies that networks and markets have one major consequence in common, the traditional institutions with its *checks and balances* becomes obsolete. These modes of governance often lack transparency, it is hard to identify where decisions are being taken and who is responsible. In other words, democratic accountability is often neglected. Esmark (2007) gives some possibilities to overcome this problem. He argues that 'in order to solve this, one must develop a clearer notion of networks and markets as representative institutions and conduct these modes of governance accordingly' (Esmark, 2007). There are three dimensions that can serve democratic accountability. First, *inclusion* means that clear distinctions should be made who the representative is and who is being represented. Second, *publicity* should be given to the current state of affairs, where representatives provide explanations and responsibility for their actions. Besides, those affected should have sufficient access to relevant information. In other words, procedures should be transparent. Last, *responsiveness* means that there should be a possibility to correct or approve actions of representatives. When these three elements are covered, it is very likely that the outcomes are being interpreted as legitimate and a wide variety of threats and problems can be overcome.

For the specific case of the fire safety domain and the actors involved, these findings result in some points that should be taken into account with governance modes that use networks and markets. For municipalities, often facing complex domains involving multiple actors, networks can provide a great opportunity to gain effectiveness and efficiency and to solve multi complex problems with regard to fire safety in complex buildings. Richards & Hay (2000) mention for example that 'networks are a flexible, adaptive and dynamic quality of networking as a social and political process' (Richards, 2000). Networks can provide an ideal way to get rid of the image that civil services are bureaucratic. Networks can increase effectiveness and efficiency, resulting in a higher output legitimacy. As a result, satisfaction with the decisions that are being made in the fire safety domain might receive broader support. Markets can be a valuable governance mode when governments have to restrain in certain domains due to budget cuts or retrenchments. Delegation then provides opportunities to uses resources in the market, where specific knowledge and expertise is available. Many of the pitfalls of networks and markets can be overcome or prevented when individuals are aware of these threats. It is especially important that the democratic core values are not neglected, and to include aspects that look after responsibility, transparency, accountability, and representation. Besides, consensus building can increase the legitimacy of the outcome.

3.5 Arrangements that maximize benefits and minimize problems

It should be clear which form of governance is most eligible in a specific situation to maximize benefits of that form of governance and to minimize the problems which might occur. As already mentioned in section 5.3, considerations have to be made which governance form is most efficient in adapting, coordinating and safeguarding exchanges (Jones et al., 1997). These considerations depend upon the effectiveness of the governance form, which is determined by the level of trust, the number of participants, the final goal consensus and the need for competencies or knowledge (Provan & Kenis, 2007). Provan & Kenis (2007) argue that the leader organization-governed network and the network administrative-governed network are preferred over the participant-governed network when trust is low, the number of participants are high, goal consensus as a consequence declines and the need for network level competencies increases. Fenger & Klok (2001) also hypothesize that differences in interdependencies between organizations can result in different types of inter-organizational arrangements (Fenger, 2001). Besides, market modes can be used to outsource certain issues to private organizations.

In networks, social mechanisms are being used to overcome certain exchange problems as spill-over, free-rider behavior, hold-up problems and other opportunistic behavior. Jones et al. (1997) mention different social mechanisms to prevent these threats. *Restricted access* refers to a reduction of exchange between network members by using a status maximization strategy or relational contracting. This decreases the coordination costs and facilitates safeguarding, because less actors in the network have to be monitored. Besides, it reduces the risk of opportunistic behavior of new actors that enter the network. A second social mechanism that can be designed is a *macro culture*, characterized by widely shared assumptions and values that guide actions and create typical patterns of behavior. This mechanism also increases coordination and it reduces the costs of coordination by socialization of the network. The third social mechanism that is being mentioned by Jones et al. (1997) is the *collective sanction*. This refers to the punishments of actors within a network that deviate from the settled norms, values or goals of that network. This safeguards exchanges by demonstrating that unacceptable behavior has serious consequences. Last, *reputation* refers to the skills, reliability and the character of the actors in a network. When environmental uncertainties are high, reputation is desired, because it can safeguard potential exchanges by spreading information about behaviors of other actors in the network. Finally, it is again of great importance to stress issues like *knowledge, trust and control*. Trust, control and knowledge often go hand in hand, especially when agents like municipalities in the fire safety domain are forced to monitor activities. It is in this regard important that information and mutual expectations are being exchanged, this increases trust en control (Twist, 2007).

In market situations, it is the stakeholder on the demand side that decides which transactions are being made. The power, in normal market conditions with full competition, is on the demand side. *Full competition* suppresses scarcity, and increases efforts on the supply side to get a transaction. This results in the risk of *venality* on the supply side. Especially in cases of specific *technocratic* advise, outcomes can be adapted to the wishes on the demand side. An example is the case where advising agencies provide a performance based approach to reach an equivalent level of fire safety. Due to the highly specific knowledge and the abstract means how to reach an equivalent level of fire safety, it is possible for designers to bribe advising agencies to provide a report or outcome that fulfills the requirements of the designer. Due to this threat, it is of high important that adequate *checks* are in place and to give this superintendence to autonomous and independent governance organs. It is of even more importance however, that these organs do have sufficient knowledge to revise the submission of the designer and eventually may rely on the knowledge of others like the regional fire brigade. The approval of the submission should also result in direct *accountability* to assure the quality and adequacy of these checks and balances. Finally, after transactions have been made, the aftercare should also be guaranteed to prevent decadence.

3.6 Current governance modes in the fire safety domain

The theoretical framework being discussed gives an opportunity to describe the current state of affairs in the Dutch fire safety domain. At this moment, the governance of fire safety shows hybrid forms of governance structures, including characteristics of markets, hierarchies and networks as can be seen in table 6 on page 39. The starting assumption is that the market has the core responsibilities and liabilities with regard to fire safety in buildings. The approaches to both structural, installation technical and organization fire safety are being elaborated in the market using contracts among clients, architects, consultancies and (sub-) contractors. This is where step 1 and 2 of figure 10 is being elaborated and designed. Integrity, reputation and mutual liabilities and responsibilities are central aspects to guarantee quality of the approaches to fire safety in buildings. Even though, there remain considerable threats by using a market approach solely. Local governments are therefore included as a superintendence in this process to increase the checks and balances of the approach being used. This is where step 3 in figure 10 can be observed.

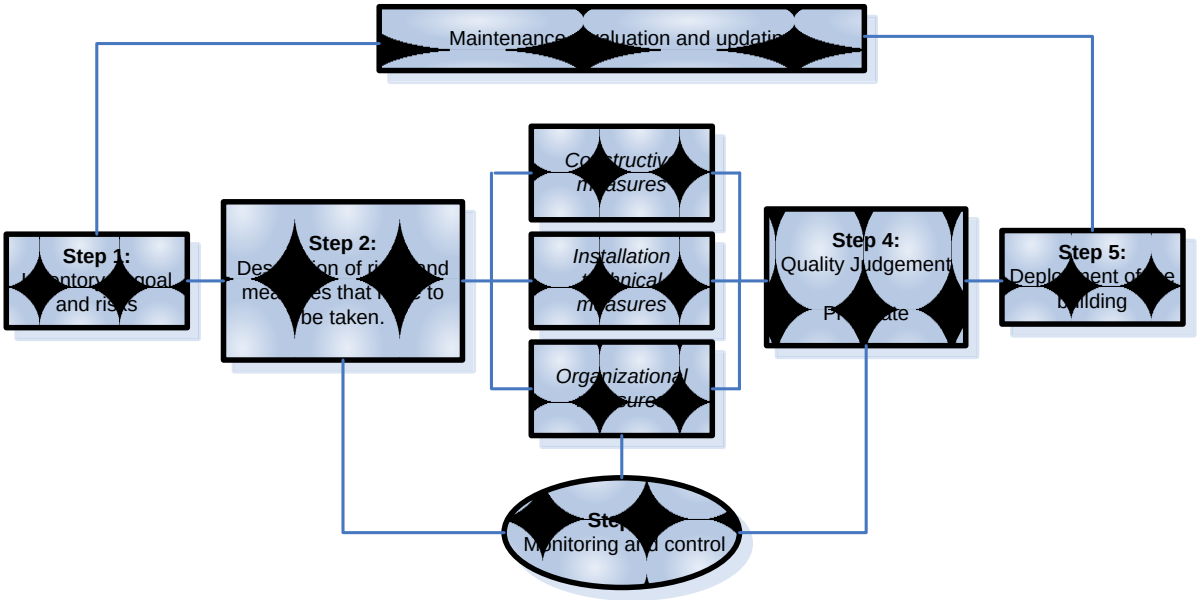


Figure 10. The circle of the governance of fire safety (CCV, 2010)

It provides material for discussion whether governmental superintendence is actually a traditional hierarchical mode of governance or a form of leader-based network governance. Both forms are hierarchical, but due to the involvement of a government entity as a decisive authority it is argued that this remains a form of hierarchical governance. This is where the market form of governance starts to become more hybrid, and potential governance analysis might provide more insight in this discussion. However, it remains obvious that public-private partnerships are being used in this process, local governments have the mandate to issue building licenses in their municipalities by administrative supervision, approval and enforcement. The assessment of the design by powerful governments gives an additional check of private approaches to fire safety in contemporary or complex buildings. This additional check also increases the certainty that the approaches are complying with policies, laws and regulations. The hierarchical approval is dependent from an unprejudiced authority who has the power to (dis-)approve an approach to the fire safety design and not provide or withhold a building license accordingly. This is where step 4 in figure 10 is being performed. Even though the final assessment is being performed by local governments, the main accountabilities and liabilities in case of deficiencies remain in the private domain during the entire process. This observation remains a very important factor to judge the quality and the adequacy of the public approval, supervision and enforcement.

After the approval of the building design, where local governments have given a quality judgment and predicate, local governments remain hierarchically dominant over the private domain by the power and the duty to monitor and control the construction of that building and to enforce possible transgressions, see step 4 and step 5 of figure 10. After the construction, local governments still have the superintendence to monitor and enforce identified transgressions. The market however still has the core responsibilities to guarantee that structural measures, installation technical measures an organizational measures are being maintained to remain the same level of fire safety as has been contemplated in their approach. This makes the circle in the governance of fire safety round.

3.7 Conclusion Section 3

This section discussed the frequently observed shifts from traditional hierarchical forms of governance towards network governance and market governance. This theoretical framework allows us to give more answers to- and insight in the formulated research questions. Currently, we extensively observe public-private partnerships in the governance of fire safety. Especially when problems become unstructured, so far from certainty on required and available knowledge and far or not close to agreement, markets or networks are being used to find a solution or outcome. When the prescriptive based approach is being compared to the performance based approach, we thus confirm the observation that the governance of fire safety becomes more complex with the performance based approach. The most relevant observation in this regard is that these shifts in governance modes often raise questions regarding the loci of power and central responsibility and accountability. The rationale of these shifts are being discussed, and the basic explanation is that knowledge and expertise of frequently being observed in the market and should therefore also be consulted in this sector. Besides, by consulting the market or networks, the aggregation of information and knowledge will increase the output legitimacy of the decision or the final approach to the fire safety design in buildings.

The findings presented in this section also give more substance to the central research question; to what extent and how should the governance of fire safety be amended to achieve an effective and efficient form of governance in the fire safety domain. The pros and cons of the divergent governance modes have been discussed, and give more insight in potential valuable changes in the governance of fire safety and their added value. Potential threats have been discussed and mechanisms have been presented to overcome them. Social mechanisms can be used to prevent or overcome certain threats of the diverging governance modes, varying from opportunistic behavior, hold-up problems and spill-overs. In order to prevent these threats, allocation of responsibilities and also accountabilities in case of deficiencies should be clear to all the actors involved. The last section discussed the contemporary governance structure that is being observed in the governance of fire safety. This section demonstrated that, due to the potential threats that may arise while using market governance or network governance solely, hierarchical governmental supervision remains a desired form of superintendence that increases traditional checks and balances.

The next section goes deeper in the discussion whether and how the current governance of fire safety has to be amended, and also tries to confirm other findings of the formulated sub-questions. The assumption of the Commission Dekker (2008), which opts for a governance mode that relies on the market where possible, is being posed in a questionnaire to get a better insight in the desires and attitudes of the market towards this change. Based on the findings of this survey, more structured recommendations can be proposed on how to improve the current governance of fire safety.

4. Survey design

The theoretical framework being discussed was initially designed to be used for practical case studies. Even though, it turned out that case studies were not possible, and the research methodology has changed to an exploratory research using a regular survey. Using this research methodology, multiple stakeholders that are involved in the Dutch governance of fire safety can be approached with an online survey consisting of questions which are as far as possible elaborated from the theoretical framework. This questionnaire allows us to test whether the multiple threats distilled from the theoretical framework are actually experienced among the stakeholders that are frequently being observed in the governance of fire safety. Besides, potential and possible changes in the governance of fire safety can be proposed to the respondents to get a better insight in the desires and attitudes towards potential changes in the governance of fire safety. Compared to case studies, online surveys provide less opportunities for in-depth and detailed open interview questions, including all the aspects of the theoretical framework. Surveys can only consist general questions which cannot be explained in detail. Even though, surveys can provide a valuable insight in the current attitudes of the stakeholders towards multiple aspects in the governance of fire safety.

The background discussed in this research and the theoretical framework still provide the same function as for which they were intended, they still have a descriptive and explanatory nature that helps to discuss and explain why certain problems in the governance of fire safety occur. The surveys give a possibility to confirm or disprove that these issues actually occur in practice. The theoretical framework also might provide opportunities to explain why certain results from the surveys have come about, and will be used to discuss the results from the surveys. Last, the theoretical framework can be used to make substantial recommendations to improve the current governance of fire safety. The surveys are therefore both exploratory as explanatory by using the theoretical framework.

4.1 Survey questions

The detailed representation of the survey questions being used in this research are added in appendix 11.2. As previously discussed, surveys unfortunately provide less opportunities for in-depth questions which can be sent to multiple actors. Many findings from the theoretical framework can therefore not be included in the survey questions. The premise of the surveys therefore only focused on the general attitudes of the actors towards the current debate whether to use traditional hierarchical governance or to use market governance instead where possible. Networks are not elaborately included in this regard, since they are not observed in licensing processes itself. The design of the survey questions basically consists of the following 7 sections;

1. The first section allows the respondents to indicate to which general group of stakeholders they belong and which aspects of fire safety they deal with. This gives a valuable insight whether or not there is a fair distribution of the stakeholders in the response and the gathered results. This section also allows us to further analyze which group op stakeholders favor specific response options.

2. The second section contains questions which cover general aspects of fire safety in contemporary and modern buildings. Besides, the level of education with regard to fire safety is being questioned to get a better insight in the distribution of knowledge among the involved stakeholders.

3. The third section focusses on the licensing process using Bouwbesluit 2012. One question covers the frequency of which stakeholders deal with Bouwbesluit 2012. Besides, they can indicate how specific or complex they experience this approach. The next questions focus on the attitudes of the stakeholders with respect to the licensing process at local governments. Last, there is a question whether or not the traditional hierarchical governance approach can be replaced by a market approach when using Bouwbesluit 2012.

4. The fourth section has a comparable format as the third section, instead using questions with the fire safety engineering approach. These similar questions allow us to compare responses with the two distinct approaches. The respondents are being asked how complex or specific they experience the fire safety engineering approach and how frequent they deal with this approach. In line with sections 3, there are questions with regard to performance of the licensing process and local governments when they deal with the fire safety engineering approach. Last, there is again a question whether or not the traditional hierarchical governance approach can be replaced by a market approach when using fire safety engineering. This allows for a comparison in the governance structure with Bouwbesluit 2012.

5. The fifth section focusses on the responsibilities of- and interactions between stakeholders. The interactions allow to make a dyadic analysis of the relationships between the actors involved. The questions with responsibilities should reveal whether or not it is clear among all the stakeholders who is responsible for fire safety in buildings and whether this is communicated accordingly. Besides, some questions are formulated to analyze the levels of knowledge, expertise and independence of the involved stakeholders.

6. The sixth section contains questions that should reveal whether local governments actually monitor during the various stages of a licensing process. Hereafter follow some questions that have to reveal the attitudes and expectations of stakeholders towards the centralization of local governments to regional governments in 2013. These questions focus on aspects like capacity, levels of knowledge and expertise, quality of monitoring and enforcement, and the potential level of fire safety in buildings.

7. The last section provides questions and answers which respondents can choose to select their preferred or favored mode of governance, diverging from a governance mode that includes governmental superintendence as a form of market governance where government restraints. These questions include aspects like the function(s) of local governments, the responsibility and accountability or liability in the governance of fire safety.

4.2 Survey approach

By using a search engine on the Internet, a total number of 21 Dutch architects have been approached. In line, 45 advising agencies with regard to fire safety have been approached by using the results from a search engine on the Internet. A total number of 5 individuals of local governments that are responsible for issuing fire safety in buildings have been approached and asked to forward the invitation to other colleagues in their network. Finding contact information of individuals that deal with fire safety for insurance companies turned out to be a challenge, even though a total number of 2 individuals were approached and asked to forward the hyperlink to other colleagues to increase the representation of insurance companies. In the Dutch Institute for Safety (NIFV), a total number of 4 individuals are being approached with a request to forward the invitation to other relevant persons in their network. To increase the representation of the other actors that are involved in the governance of fire safety, a section of fire safety on LinkedIn has been used to increase the overall representation and number of respondents who have a significant affinity with fire safety. A Dutch version of the invitation letter for the questionnaire that has been sent to the respondents is attached in appendix 11.1.

5. Results

5.1 Survey results: respondents

A total number of 34 respondents fully completed the questionnaire, and the representation of the results in graphs is added in appendix 11.3. There was a little attrition during the survey, since a total number of 40 respondents started the survey. Even though a total number of 6 respondents did not complete the survey, but they are included in the results of the questionnaire to increase the significance of each separate question. The results of section one of the survey further revealed an important observation about the distribution of the respondents among the actors that are being observed in the Dutch governance of fire safety. Advising agencies are significantly overrepresented in the survey results, as they represent 60% of the respondents. The reason for this overrepresentation cannot be directly explained, since the number of invitations for this survey has not been sent to a significant undistributed target groups. A possible explanation is that architects have assigned themselves to advising agencies, because they often label themselves as 'advising agencies for the construction of buildings'. The internal validity of this question therefore might be hampered, i.e. this question is not really measuring what it was intended to measure. Since there is no clear distribution of involved actors, the attitudes and opinions cannot be generalized among all the actors that are being approached. The second question did reveal that the respondents face the multiple stages of a licensing process, and therefore have a large share in the governance of fire safety. This is being confirmed by the third question, since 67.5% of the respondents deal with the licensing process between a daily and monthly time period.

5.2 Survey results: Experiences of the respondents with regard to fire safety

The experiences of the respondents reveal that the following building functions deal with relatively low levels of fire safety: cell functions, healthcare, industry, and lodging. These are often functions where the use of a building results in high risks for individuals. The formulation if this question does not allow to analyze the experienced level of fire safety in buildings that have a complex design, requiring different approaches like prescriptive and performance ones. The subjective level of fire safety in many buildings is thus low, while the statistics discussed in section 3 actually reveal that there are quite few annual fatalities compared to other European countries. Besides, most fatalities occur in standard housing and the subjective levels of fire safety thus do not match with the statistics. This might indicate that recent accidents and the disproportional representation in the media do influence individuals perceptions with regard to objective levels of fire safety. It is remarkable that the majority of the respondents experience a relatively good level of fire safety in normal housing functions, whereas the background of this research revealed that these functions result in the most annual fatalities. Many of the respondents (77.5%) indicated that they had specific education, training or courses for fire safety in buildings. This indicates that the level of knowledge among the respondents with regard to fire safety is relatively high.

5.3 Survey results: Fire Safety Engineering compared to Bouwbesluit 2012

Since survey section 3 and 4 have a comparative goal, they are discussed jointly in this paragraph. Survey section 3 contained questions with regard to Bouwbesluit 2012, i.e. a prescriptive based approach en section 4 with regard to Fire Safety Engineering, i.e. a performance based approach. The first question of section 3 and 4 revealed that the respondents frequently deal with both of these approaches. The majority deals with these approaches between once a day and once a month. More than fifty percent of the respondents indicate that they deal with Bouwbesluit 2012 daily, whereas this is only ten percent the case with Fire Safety Engineering. The respondents also clearly indicate that they experience the approach of Fire Safety Engineering as significantly more complex or specific than is the case with Bouwbesluit 2012. This finding is in line with the theoretical background discussed in this research.

With regard to the licensing process, the majority of the respondents indicate that the licensing process at local municipalities is long and intensive with both approaches. When we compare both approaches, 58% of the respondents indicate that they share this statement with Bouwbesluit 2012, and this statement is even more widely supported by 71% of the respondents when the Fire Safety Engineering approach is being used. A more complex approach using goals rather than means thus might result in more intensive procedures, where various and divergent interest should be reflected in the final decision being made. Besides, by using a regulatory which uses goals instead of means, assessment of compliance or equivalency might become more difficult in the governance of fire safety. In this regard, there are clear distinctions when the question raises whether local governments are reticent in providing licenses with the distinct approaches. 77% of the respondents indicate that they do not observe this when dealt with Bouwbesluit 2012, i.e. local governments are not reticent in providing licenses with a prescriptive approach. When the performance based approach or Fire Safety Engineering is being used however, we face the other side of the coin. 72 % of the respondents do indicate that local governments are reticent in providing a building license when the Fire Safety Engineering approach is being used.

The majority of the respondents further indicate that local governments are considering costs and benefits of preventative or repressive measures to a lesser extent, but these findings are not really convincing, since the findings are to some extent contradictory. 54% of the respondents confirm this statement when dealt with Fire Safety Engineering and 61% of the respondents when dealt with Bouwbesluit 2012. These findings are remarkable, since it would be expected that performance based approaches give more opportunities to demand additional measures to gain an equivalent level of fore safety, and it is argued that objective measurement tools to equivalency are not obviously available. A small majority of respondents also indicate that they observe limited levels of knowledge and expertise at local governments with regard to designing fire safety in buildings. This is the case with both prescriptive as performance based approaches to fire safety, where 63% of the respondents confirm this statement. Respondents do expect that the centralization of local governments to regional governments will have a positive effect on the levels of knowledge and expertise. The question after this centralization is whether local governments do have sufficient knowledge to assess compliance or equivalency to national fire safety legislation.

The last question of section 3 and 4 are formulated to analyze whether the respondents share the opinion of the Commission Dekker (2008), where it is stated that the governance of fire safety should be delegated to the private sector where possible. The majority of the respondents indicate that they do not favor this statement both with both the prescriptive as the performance based approach. With fire safety engineering, 74% of the respondents disapproves to use a market approach solely, and 66% of the respondents also disapproves this when Bouwbesluit 2012 is being used. In other words, respondents do emphasize that public supervision should be maintained in the governance of fire safety. The findings of the survey also point out that public supervision is especially favored with complex approaches like fire safety engineering. These findings are quite remarkable, since many respondents did indicate that the levels knowledge and expertise is limited at local governments. In line, they indicated that procedures are long and intensive due to the assessment at local governments. Even though, due to the potential risks and the societal disruption in case of fires, governmental supervision during the licensing process seems to be desirable in the market. An additional check of the fire safety approach by local governments might increase the reliability of the final design, and also might prevent certain threats in the market from occurring.

5.4 Survey results: Responsibilities of- and interactions between stakeholders

The fifth section focusses on the responsibilities of- and interactions between stakeholders. The first question was formulated to get a better insight whether the market has a good insight in the central responsibility for fire safety. The respondents show that they have a good feeling who is primarily responsible for fire safety in buildings, 86% of the respondents correctly indicate that this is the owner of a building. It is important to notice however that this question gives an option to choose for multiple answers. This is what many of the respondents have done, they indicated that multiple actors are responsible for fire safety in buildings. The integral character of this process thus results in mutual responsibilities among stakeholders involved. A very important observation is that the majority, namely 69% of the respondents, indicate that the government does not communicate the responsibility for fire safety clearly among the actors that are being observed in the Dutch governance of fire safety. There is thus not an optimal transparency of the assigned responsibilities in the market. When these responsibilities are not clear, consequences may arise in the quality of fire safety in buildings and liabilities in case of deficiencies might be confrontational.

With the above mentioned, it is interesting to look at the experienced levels of knowledge and expertise among the observed actors about laws en regulations in the Dutch governance of fire safety. 79% of the respondents indicated that owners or users of a building have a moderate to poor level of knowledge about this legislation, while they are primary responsible for fire safety in buildings. The majority also indicates that designers, architects and insurance companies have less knowledge and expertise in this regard. For safety regions and local governments, the majority indicate that the knowledge with regard to national legislation in these organizations are moderate to good. In line, 70% of the respondents indicate that advising agencies do have a good or very good level of knowledge in this regard. This picture might not be reliable, since advising agencies are overrepresented in the survey. It is obvious that they label themselves with high levels of knowledge in this regard.

Local governments issue building licenses and assess whether the design complies with the national legislative requirements. It is thus important that public organizations are independent and remain authoritative. Approximately fifty percent of the respondents indicate that they label local governments as little till not independent. For the other actors, no clear picture can be distilled out of the response. It seems that the internal validity of this question is not optimal. With regard to the publicity of the documentation and the possibilities to voice during a licensing process, the respondents indicated that there is also a little transparency in the documentation and that there are limited possibilities to voice. 74% of the respondents indicate that there is an insufficient possibility or only a possibility among the involved actors to voice during a licensing process. In line, 80% of the respondents indicated that there the publicity of the documentation is insufficient or that there is only publicity among the directly involved actors. The licensing process can therefore be seen as a very closed process, not really accessible for third parties.

5.5 Survey results: Functions of local governments

Survey section 6 is intended to reveal whether local governments actually supervise during the various stages of a licensing process. Hereafter follow some questions that have to reveal the attitudes and expectations of stakeholders towards the centralization of local governments to regional governments in 2013. The response shows us that there is a limited supervision of local governments during three stages; construction, completion and during the employment. Experiences of the respondents point out that supervision of local governments is mainly limited to the license application and providing a license. Intensive supervision is, according to the results, limited at every state of a licensing process. The central focus of local municipalities is thus to issue licenses and to judge whether the design complies with national standards.

The respondents show no clear-cut expectations with regard to the capacity improvement or decline after a centralization of local governments to regional governments. 50% of the respondents expects that the capacity will decrease and 50 % expects an improvement after a centralization. In line, there is a duality in the results which questions aspects like quality improvement and expectations with regard to general levels of fire safety that is acquired after a centralization. This is also the case for aspects like monitoring and supervision during the licensing process. For enforcement however, 64% of the respondents expect a negative effect. In other words, individuals expect that enforcement of the government will become less after a centralization, while they currently already experience limited supervision and enforcement after a license has been issued.

5.6 Survey results: Potential modes of fire safety governance

The last section of the survey gives the respondent an option to indicate their preferred mode of governance of fire safety and how they prefer to give substance to it. The first question of this section revealed that nearly all the respondents favor a government that sets the legislative framework and enforces transgressions of this legislation. Still 59% of the respondents also favor a government that assesses whether the design complies with the national legislation. With regard to the division of responsibilities, 71% of the respondents option for a collective responsibility with regard to fire safety in buildings. Responsibilities should be divided to both the public as the private sector. These findings suggest that there is a little enthusiasm to delegate these responsibilities in its entire to the private sector. Respondents do indicate that they expect more innovation in the approaches to fire safety when this delegation occurs, but 61% of the respondents expect that the market will not take its delegated responsibilities with regard to fire safety in buildings when governmental supervision is being omitted. In line, 60% of the respondents expects that the quality and the general level of fire safety in buildings without governmental supervision will decline. This observation is in line with the statement of the respondents that the care for fire safety should remain an issue of governmental supervision, combined with responsibilities in this regard. In cases of deficiencies, 56% of the respondents indicate that the accountability and liability should belong in the private sector, whereas 41% options for a collective accountability and liability.

6. Should the current governance of fire safety be amended?

Currently, we observe a hybrid form of governance, where the market initiates a draft design including all the relevant fire safety aspects. The local government hereafter assesses whether this design complies with national standards, and issues a building license accordingly. The current situation can thus be labeled as public-private partnerships. The term public-private partnership can actually already be seen as a form of privatization, since it is defined as 'an arrangement in which a government and a private entity, for profit- or non-profit, jointly perform or undertake a traditional public activity to share risks, costs and revenues' (Savas, 1999). Governments and private actors will then be able to concentrate on their own qualities, and by combining them, synergy will be achieved (E. H. T. Klijn, M.J.W., 2007). The public-private partnership can clearly be observed in the governance of fire safety, a complex relationship involving a local government and a consortium of private firms. The theoretical framework on governance structures revealed that shifts in governance or hybrid forms of governance primarily raise questions concerning the loci of power, responsibilities, and accountabilities (Kersbergen, 2004). These findings are being confirmed by findings from recent accident investigations of major fires in the Netherlands, see section 4. The findings from the survey provide the same image, since many respondents hold multiple stakeholders responsible for fire safety in buildings. The construction of a building requires an integral approach, where all stakeholders have a divergent contribution in the final construction of a building. This observation obviously results in mutual responsibilities and liabilities. It is therefore explainable why ultimately nobody takes its responsibilities, because people tend to rely on others. The central question that does raise after these findings is to what extend en how the current governance of fire safety has to be amended to achieve a more effective and efficient governance in the fire safety domain.

To answer this question, a first remark has to be made. Budged cuts have often resulted in marginal possibilities of governmental organs to perform well. They have to prioritize how to use their resources in an optimal way. This will result in a loss of substantial quality of governments on specific domains. The following phrase of Savas (1999) advocates how and why it is often an easy argument to choose for privatization or markets, where the private domain absorbs previously governmental services.

> '*If, to many, private means better, it is partly because of long-existing restrictions on the scope and quality of public provision. We commonly limit public services to a functional minimum and thereby guarantee that people will consider the private alternative a step up. The restricted quality of public provision is a self-reinforcing feature. Because the poor are the principal beneficiaries of many programs, the middle-class public opposes expenditures to produce as high a quality of service as they must pay for privately; and because the quality is held down, the poor as well as the middle class develop a contempt of the public sector and an eagerness to escape it. The movement toward privatization reflects and promotes this contempt, and therein lies part of its political danger.*' (Savas, 1999)

Outsourcing services to the private domain is thus often a result of restrictions in resources given to functions performed by governments. If the services of local governments with regard to fire safety turns out to be deficient, it does not mean that they are not able to perform adequate. Other variables often make it impossible for them to cover all the aspects which are demanded from them. Changing the governance of fire safety towards the market should thus not be a result of budget costs, the importance of governmental supervision in domains containing high potential societal risks should not be lost out of sight. Instead of bypassing governmental interference, balanced resources should be provided to improve their performance. This discussion is by itself already a challenge, and possibilities to further privatize the public-private partnerships in the fire safety domain are later discussed. First we look at the possibilities to improve the current governance of fire safety, by using the assumption that governmental interference should remain. This was also the basic premise emerging from the surveys and the theoretical framework.

6.1 Improving public-private partnerships

The literature provides a better conceptualization of the concept 'good governance' which can be used to make improvements in the current situation. Graham *et al.* (2003) describe in general which principles contribute to good governance. These principles are summarized in table 7. These issues which encourage good governance are being discussed to oversee whether these issues are being observed in the governance of fire safety. These findings are combined with the findings from the theoretical framework to generate a combined schematic overview which recommends to what extent and how the Dutch governance of fire safety can be improved.

Table 7. The five principles of Good Governance (Graham, 2003)	
Legitimacy and Voice	*Participation-* every individual should have a voice in decision making, either directly or through legitimate intermediate institutions that represent their intention. *Consensus orientation*- good governance mediates differing interests to reach a broad consensus on what is in the best interest of the group and, where possible, on policies and procedures.
Direction	*Strategic vision-* leaders and the public have a broad and long term perspective on good governance, along with a sense of what is needed for such a development. There is also an understanding of historical, cultural and social complexities in which that perspective is grounded.
Performance	*Responsiveness-* institutions and processes try to serve all stakeholders. *Effectiveness and efficiency-* process and institutions produce results that meet needs while making the best use of resources.
Accountability	*Accountability-* decision makers in government, the private sector an civil society organizations are accountable to the public, as well as to institutional stakeholders. This accountability differs depending on the organizations and whether the decision is internal or external. *Transparency-* transparency is built on the free flow of information. Processes, institutions and information are directly accessible to those concerned with them and enough information is provided to understand and monitor them.
Fairness	*Equity-* among all *Rule of law-* legal frameworks should be fair and enforced impartially

The table above mentions five core issues of 'good governance'; legitimacy and voice, direction, performance, accountability and fairness. In order to make improvements, specific criteria arising from this table can be integrated or improved in the current governance of fire safety. The basic fundamental in the governance of fire safety is that the final design or the building has to comply with the national standards or fire safety legislation. In the Netherlands, government has set a clear *legislative framework*. The traditional Bouwbesluit 2012 is being formulated as a guideline for standard buildings and offers a performance based approach for complex buildings. The problem with regulatory which formulates goals instead of means is a situation where it is hard to assess whether an equivalent level of fire safety is gathered. In these situations, risk assessments can provide a valuable outcome. Even though risk assessments are is some situations sensitive to subjectivity, a combination with output legitimacy in terms of *consensus building* among multiple actors can provide a valuable approach to equivalency. In order to increase *legitimacy and voice*, processes should thus be open and transparent and in the end aim on consensus building. Consensus building will in the end increase the output legitimacy of the decisions being made, see section 3.4.

Dutch local governments have the mandate and the duty to assess whether building proposals comply with national fire safety standards, and approve or dismiss a building license accordingly. The current situation does however allocate limited *accountabilities* or liabilities for local governments in case of granting a building license that proves to be unjustified. This is also the case for negligent supervision and enforcement of local governments. When output legitimacy or consensus building is a mean for approving building licenses, equal accountabilities have to be assigned to all the actors involved. When there is no liability or accountability, responsibility and quality as a consequence also becomes obsolete for the actions or decisions being made. Guaranteeing adequate *performance* of the involved organizations is thus not optimal. This situation as a consequence results in a doubtful interpretation of the adequacy of processing licenses under supervision by local governments with limited responsibilities and accountabilities.

The most obvious improvement in the governance of fire safety is thus that the responsibilities and accountabilities of the multiple aspects covering fire safety have to be clearly formulated and transparently communicated among all the actors involved, from the approach to fire safety until the completion and commissioning of that building. In line, the accountability in case of subsequent deficiencies should be clear among the involved stakeholders. Especially the responsibilities and accountabilities of supervising local governments have to be tightened, otherwise local governments might be cutting corners. This might result in a situation where resources in local governments are not being used optimally, and restricts *effectiveness and efficiency* of issuing licenses, monitoring and enforcement in the Dutch governance of fire safety.

With regard to *responsiveness*, the inspectorate of the ministry of VROM highlights that governments are in this regard confronted with the following problems in the fire safety domain (Inspectie, 2008); limited capacity for monitoring and enforcement; insufficient trained personnel at local governments; limited or no supervision on building sites; insufficient enforcement when violations are actually detected; designers and builders who abolish their own quality control and rely in government control. These observations are largely confirmed by the findings from the survey, and indicate that local governments are facing problems to issue all the licenses equally. This can be done by making governmental inspections more integral, for example by combining environmental inspections with fire safety inspections. Another possibility is to formulate a strategic vision to *direct* potential changes in the governance of fire safety, like the recommendation of the Commission Dekker and the subsequent supporting research and discussion. These visions might improve the issues of good governance, and will increase overall responsiveness. The strategic vision of the Commission was to outsource the responsibilities and accountabilities where possible in its entire to the market, i.e. to the private domain. With regard to the high societal risks and the often observed societal disruption, combined with the potential threats of a pure market approach, it is questionable whether this approach is desirable. A valuable recommendation to increase responsiveness is to make a prioritization based on potential risks of buildings that are being submitted for governmental approval. A possible premise is that risky objects require more intensive governmental supervision than objects containing lower risks, see for example (Bouwkwaliteit, 2012). Based on this prioritization, responsiveness can be adjusted to the cases where governmental supervision is actually seen as a prerequisite.

Based on historical experiences, lessons can and should be learnt about both good as bad practices in the governance of fire safety. By clustering knowledge and expertise in networks, like best practice forums, *direction* can be given on how to formulate a long term perspective for improving and ensuring good governance in the fire safety domain. This includes, as formulated in table 7, an understanding of historical, cultural and social complexities in which that perspective is grounded. It is often observed that resources are being provided after recent accidents resulting in societal outrage. These resources and their priorities are often faded away on the long run, and budget cuts make again a decline in the effectiveness and efficiency in the governance of fire safety. Implemented measures have to be institutionalized and not fade away on the long term due to financial reasons. These issues should be considered and expressed in future plans. Foliente (2000) emphasizes the importance of a facilitating platform or network in the fire safety domain. This network allow to make the both positive and negative experiences in the governance of fire safety visible and eventually to learn from current bottlenecks. Networks are flexible, and can result in mutual benefits, stakeholders can learn from each other in the governance of fire safety. The entire project needs to be analyzed, from the concept of the approaches being used, the project proposal, the handover or commission to the authority, the acceptance and in the end the maintenance of this acquired level of fire safety to get the circle around. This visualization is given in section 3.6. This recommendation was the main summary of the 'model integrated fire safety in constructions' (CCV, 2010). One way to do this is to develop a form of network governance, a form of governance that has been discussed in section 3.2.3. Networks for example can raise frameworks for performance based approaches based on mutual agreement, which increases output legitimacy of these approaches. In this regard, the market can also set the frameworks for supported approaches to fire safety.

Summarized, the Dutch governance of fire safety is not optimal. By combining the findings from the concept good governance with the theoretical framework, there are five main points that are susceptible for further improvement. These five points are summarized below and further elaborated in table 8:

1. Transparency in processes, of tasks, responsibilities and the loci of power or decision making
2. The final design satisfies or is equivalent to the requirements in Bouwbesluit 2012
3. Prevent or minimize threats from occurring in the governance of fire safety
4. Public and private accountability and liability have to be transparent and clearly communicated
5. Networks are valuable in formulating directions in the governance of fire safety

In order to improve public-private partnerships, clear comments have to be made regarding expectations of public-private partnerships. In general, public-private partnerships are seen as mechanisms 'where stakeholders, while maintaining their own identity, collectively realize a project with a commercial or corporate purpose based on a transparent distribution of tasks and risks which are grounded in formal contracts' (PPS, 2000). This form of collaboration results in mutual expectations between the public and private sphere, and these expectations do not always turn out to be straightforward. Twist & Klijn (2007) explicitly mention that the core values of public and private organizations differentiate from each other. Expectations regarding public-private partnerships are as a consequence sometimes not realistic due to the institutional values in their domain. Core values of private institutions are in general; strong competitive, respecting contracts and emphasis on opportunities in the market to gain a transaction. Market share and profitability are therefore core values of private institutions. Public institutions on the other hand can afford losses, as long as they are being covered and tolerated by politicians. Core values of the public parties mainly concern the image of politicians, and political damage often due to negative media-attention has to be avoided. These values result in a situation where public parties tend to extensively control the process. This conflicting institutional background with diverging core values result in a situation where intrinsic values like synergy of public-private partnerships often are not being observed (Twist & Klijn, 2007). Even worse, tensions and conflicts may arise between de involved parties, while consensus building in the end is a desired outcome.

Twist & Klijn (2007) mention some examples which are representative for the governance of fire safety. Currently, there are quite extensive expectations that a further delegation towards the market will improve innovative solutions. The authors raise the question whether this is actually straightforward, since many private actors are operating in a domain where the environment forces them to sharpen prices and cover potential risks. The most dominant incentive for private stakeholders is thus to choose for proven techniques and familiar solutions. The market is, according to the core values, not willing to take significant risks. Last, there are typical overwrought expectations of governments that public private partnerships offers opportunities to escape from budget constraints in the public sector by using resources in the market. The contributions that the private domain wants to deliver is also limited to such an extent, that is fits in their institutional values. These values are often overestimated. Vice versa, the private domain often expects that public stakeholders are a partner on which they can rely in every occasion. The public scope is much wider however, and it is thus an illusion that governments can serve all clients intensively. It is thus important that the considerations have to be made which expectations stakeholders have from each other, and considerations have to be made whether these expatiations are realistic and achievable. Miraftab (2004) mentions three conceptual nodes that have to be considered when considering public-private partnerships and the equity and transparency of expectations among stakeholders being involved: (i) the definition of partners' roles and responsibilities in processes and of what is expected from the public and private sectors; (ii) associated action arising from issue one and how to achieve horizontal power relations among partners; (iii) considering to what extent and how the state should play a mediating role, both enabling and regulating the public-private partnership or the form of privatization. When table 8 on the following page is being used to further improve public-private partnerships, the above mentioned differences in the institutional values and the mutual expectations of the involved parties thus have to be clear in order to be successful.

Table 8. A schematic overview of the theoretical framework of the governance of fire safety. Elaborated on an existing table (Bouwkwaliteit, 2012)					
Variable	**No**	**Threat/Benefit**	**No**	**Criteria**	**Specification**
Transparency of tasks, responsibilities and the loci of power or decision making	1	Shifts in governance modes raise questions concerning the loci of power, the assigned responsibilities, and the legitimacy of actions and decisions being made *(Kersbergen, 2004)*	1.1	Unambiguous formulation of tasks	✓ Clearly formulate and communicate the specific structured demands from the actors that are involved in the process ✓ Formulate the responsibilities during proposal, licensing, construction and completion ✓ Formulate and assign tasks like advising, monitoring and enforcement of fire safety in buildings to specific actors ✓ Record these tasks in contracts
			1.2	Unambiguous formulation responsibilities	✓ Formulate the specific responsibilities and the resulting accountabilities of the actors that are involved in the process ✓ Formulate the responsibilities during proposal, licensing, construction and completion ✓ Record these responsibilities in contracts
			1.3	Unambiguous formulation of the loci of power	✓ Formulate the authorization or authorized signatories for the judgment that a building complies with national standards ✓ Ensure that power is not being abused by powerful stakeholders ✓ Record and communicate the loci of power and the central decision making in contracts
The final design satisfies the requirements in Bouwbesluit 2012	2	No single actor, nor public or private, has all the knowledge and information required to solve complex, dynamic and diversified problems . *(Kooiman, 1999)*	2.1	Assuring the completeness and accuracy of the final result	✓ The construction fulfills the requirements or the level of fire safety in accordance with national standards ✓ Equivalency to national standards can be demonstrated based on a risk assessment and based on broad consensus ✓ Use verifiable and transparent documentation of the assessment of equivalency and final compliance with national standards ✓ Monitoring and enforcing quality assurance among actors and decisions during the design, execution and completion phase ✓ Increase effectiveness and efficiency in this regard, governmental inspections should become more integral. Environmental inspections and fire safety inspections can be combined. ✓ All the actors involved have an opportunity to voice and will be heard during the process to increase completeness and accuracy
			2.2	Assuring quality in the involved organizations	✓ Ensure that quality is a core aspect in the involved organizations ✓ It is preferred that involved organizations use an integrated quality management system ✓ Possible opportunistic organizations should be avoided ✓ Reputation is an important attribute of the quality of the involved stakeholders
			2.3	Expertise and competency of involved actors	✓ Required level of education within organizations is formulated and considered ✓ Required levels of experience within organizations is formulated and considered

Prevent or minimize threats from occurring in the governance of fire safety	**3**	Social mechanisms are being used to overcome certain exchange problems as spill-over, free-rider behavior, hold-up problems and other opportunistic behavior *(Jones et al., 1997)*	3.1	Restricted access	✓ Use implicit and open-ended contracts to define who is included ✓ Inclusion is based on considerations of reputation, knowledge, expertise, and financial aspects ✓ Clear distinctions have to be made who the representative is and who is being represented
			3.2	Collective Sanction	✓ Punishment of actors within a network that deviate from the settled norms, values or goals ✓ Including a registration system of justified complaints against actors ✓ Hold up phenomena should be reported directly
			3.3	Reputation	✓ Reputation, proven competence is of high importance in considering consultancies ✓ Reliability, integrity, independency and liquidity are important aspects in the consideration of reputation
			3.5	Independency / impartiality	✓ The independency / impartiality of involved actors is being secured by collective sanction ✓ The involved actors are all autonomous firms ✓ The final assessment of compliance is not being influenced by (financial) powerful stakeholders
			3.6	Financial collateral	✓ Organizations prove to be healthy with regard to financial aspects (liquidity and solvency) ✓ Involved organizations are insured in a proper way in case of liability
			3.7	Measuring performance	✓ Key performance indicators can indicate whether targets of organizations are being achieved ✓ Auditing organizations can visualize shortcomings and opportunistic behavior in an early stage
Public and private accountability and liability	4	Shifts in governance can cause problems with accountability. *(Kersbergen, 2004)* 'in order to solve this, one must develop a clearer notion of networks and markets as representative institutions and conduct these modes of governance accordingly' *(Esmark, 2007)*	4.1	Publicity	✓ Publicity should be given to the state of affairs surrounding the multiple attributes leading to a decision or outcome ✓ Actors should give explanations and in line show their responsibility with regard to their actions and decisions ✓ Publicity and transparency of the used approaches and the final documentation to all interested parties or stakeholders
			4.2	Responsive-ness	✓ There should be a possibility to correct or approve actions of the involved actors ✓ Interested parties and stakeholders have an opportunity to voice and will be heard to increase output legitimacy ✓ Including a registration system of justified complaints against actors
			4.3	Accountability	✓ It should be clear among all the involved stakeholders who is accountable for which aspect(s) of fire safety ✓ Failure to comply with certain matters as described in this table results in sanctions which are clearly formulated and communicated ✓ Accountability to certain matters are recorded in contracts and signed by stakeholders

Widening horizons in the governance of fire safety.	**5**	Network forms of governance are especially appropriate to develop activities in the context of complex situations with incomplete, contradictory and changing visions and requirements *(Kenis, 2007)*	5.1	Establish a platform	✓ Like the PeBBu[5]: "Stimulation and pro-active facilitation of (inter)national dissemination and implementation of Performance Based Building in building and construction practice" ✓ Networks can monitor the system ✓ Networks make the both positive and negative experiences in the governance of fire safety visible / tangible ✓ Networks involving multiple stakeholders can provide mutual benefits ✓ Networks are flexible and can solve complex issues
			5.2	Formulate strategic visions and be steering in formulating directions	✓ A broad and long term perspective on good governance in the fire safety domain, along with a sense of what is needed for such a development. ✓ Networks also have an understanding of historical, cultural and social complexities in which that perspective is grounded. ✓ Strategic visions may include the formulation of actions, means, stakeholders, resources, culture and results.
			5.3	Improve / manifest available knowledge	✓ Networks can improve consensus orientation on performance based approaches ✓ Networks can facilitate performance criteria and attributes covering them ✓ Can formulate specific guidelines for performance based approaches
			5.4	Monitor quality of the (adapted) approaches	✓ Stakeholders in the network individually monitor daily affairs and bring them forward ✓ To monitor changes in the governance of fire safety and its efficiency and effectiveness ✓ To make substantial recommendations and improvements based on this monitoring.
			5.5	Improve transparency and publicity	✓ Publicity of successful equivalent approaches which can be used in the market ✓ Publicity of reputation of stakeholders in the market ✓ Publicity of demand en supply
			5.6	Provide resources for research and scientific support	✓ Networks can serve topics which are eligible for further research ✓ Networks provide ideal resources which can be consulted for scientific research. ✓ Networks should facilitate scientific research for further developments ✓ Networks can give scientific justification or rejection on certain issues

[5] http://www.pebbu.nl/pebbuthematicnetwork/

6.2 Possibilities for further privatization

Table 8 gave an oversight of the issues which are eligible for further improving the current governance of fire safety, where governmental supervision is being maintained resulting in public-private partnerships. These improvements are primarily considered on the concepts that increase good governance, combined with the findings presented in the theoretical framework. Currently, there remains an ongoing debate to further encourage a privatization in the fire safety domain. The Commission Dekker (2008) launched the statement: 'private where possible, public when required'. The last remainder of this research therefore presents an overview on how changes can be made from an arrangement that relies relatively much on a local government, to an arrangement that relies more or totally on the private sector. Drawing on combined scientific literature, the following three broad measures can result in more privatization in government-run services (Savas, 1999): (1) *delegation*, where government retains responsibility and oversight, but uses the private sector for service delivery; (2) *divestment,* where government relinquishes responsibility; and (3) *displacement*, where the private sector grows and displaces a government activity. These measures are further elaborated in table 9, the elaborations are phrases derived from 'privatization and public-private partnerships', in Savas (1999).

Table 9. Further privatization in public-private partnerships. Derived from (Savas, 1999)

Measure	Description	Possible Tools	Operation
Delegation	Delegation requires a continuing, active role for government, which retains responsibility for the function or service, while delegating the actual activity to the private sector.	**Contracts**	Government can privatize an activity by contracting with a private organization, for profit or nonprofit, to perform functions or services for them.
		Public-private competition	The goal of contracting is competition, and has proven to be a powerful incentive for public agencies under the threat of privatization to improve their performance.
		Franchises	Government awards a private organization the right to sell a service or a product to the public. The private firm usually pays the government a fee in return.
		Public-private partnerships	Is an arrangement where government states its needs by using a complex combination of government and private financing and then operated by a private entity under a long term franchise, contract or lease.
		Grants or Subsidies	Instead of governments itself carrying out an activity, it arranges for a private entity to do the work, and it provides financial support for this service.
		Mandates	A government mandate requiring private agencies to provide a service at their expense. They lead to a lesser role for government.
Divestment	Divestments means shedding an enterprise, function or asset. This requires a direct, positive act by government. Unlike delegation, it is a one-time event.	**Sale**	State-owned enterprises are being sold and thereby transferred to the tender mercies of the marketplace.
		Free transfer	The divestment does not require sale of an enterprise, the latter could be given away.
		Liquidation	Divestment can be carried out by shutting down an liquidating a poorly performing government enterprise.
Displacement	Displacement is a more passive or indirect process that leads to government being displaced more or less gradually by the private sector – a withering away as markets develop to satisfy unmet public demands.	**Default**	When the public considers government performance to be inadequate, and the private sector recognizes and starts to fulfill this unmet demand, this is displacement by default.
		Withdrawal	By consciously constricting the growth of a government agency or shrinking its size while the private sector expands into that field.
		Voluntary action	Government-encouraged voluntary action may also lead to cost displacement in particular cases.
		Deregulation	Deregulation facilitates privatization if it enables the private sector to challenge a government monopoly and even displace it altogether.

There are thus three general tools that can be used in further privatizing the governance of fire safety which are eligible for further future research, and might actually already occur. Due to *deregulation* we already observe that the governance is already being filled by using a more market approach. Instead of formulating goals rather than means, advising agencies are more en more frequently observed in formulating approaches to fire safety in buildings. The main rationale behind this principle is that it increases freedom of action and the innovation in both the approaches to fire safety as to the design. This form of deregulation is frequently being observed, and goal-based regulation can significantly further encourage privatization. Timmer (2011) mentions some arguments that should be considered in order to be successful wilt goal-based regulations. First of all, those to whom the requirement addresses should have sufficient knowledge to know how they can achieve their goal. Furthermore, they should have much affinity with the requirements so that they are willing to comply voluntarily, the prescription must match their interests and professionalism. It is in this regard important that to whom the goals are formulated are also included in the formulation of that goal to increase the affinity and ownership. Besides, they also often have the most relevant practical experience that increase the strength and relevance of the outcomes. In line, enforcers also need a considerable degree of expertise to be able to assess whether the stakeholders apply the goal-based regulations properly (Timmer, 2011).

Contracts are often cited solutions for further privatization or to increase effectiveness and efficiency in public-private partnerships. When mutual expectations are being recorded in formal contracts, threats resulting from information asymmetry can be prevented. Contracts might include methods of sanctions in case stakeholders fail to comply with the formulated agreements. The problem with contracts is that it is hard to pre-fit all the aspects in advance, and this is also a very intensive procedure for all the stakeholders involved. Drafting detailed contracts is therefore costly, and increases transaction costs significantly. Trust and increasing trust are therefore other often cited solutions, see for example Klijn & Twist (2007). Trust is not only relevant in further privatizing the governance of fire safety, but also increased the effectiveness and efficiency of public-private partnerships. Trust can be defined as 'a more or less stable expectation of actor A over actor's B intention that it refrains from opportunistic behavior, even if the opportunity arises' (Klijn & Twist, 2007). The authors further mention that trust promotes three general issues; (i) trust decreases transaction costs, because strategic behavior become more predictable and expensive facilities are less necessary. (ii) Trust increases cooperation, stakeholders rather tend to invest in partnerships when other stakeholders are trustworthy. (iii) Trust also increases potential possibilities for innovation because stakeholders are more willing to exchange information. Research demonstrated that trust affects the outcomes of private collaborations in a positive way, and it encourages origination and existence of partnerships (McEvily, 2006). Existing research of public-private partnerships provide the same image, where a clear correlation is being observed that high levels of trust increase the level of satisfaction about the outcomes (E. S. Klijn, 2006). It is therefore an obvious explanation why the concept trust is often mentioned in the argument of the Commission Dekker (2008) to further encourage privatization.

Due to deregulation, due to complex regulations or due significant budget cuts we might already observe that the levels of knowledge and as a consequence the capacity at local governments might tend to become less obvious and consultancies enter the domain. In this case we observe *displacement* by *default or withdrawal*, or *public-private competitio*n, where the public domain is being supplanted by the private domain. It seems that the market is already capable to fill these gaps that arise due to self-administered reasons, and it is not unlikely that the market will dissipate the public in its entire due to new arising institutions. Local governments currently are in many respects only corrective when inconsistencies are being found with regard to national legislation or in cases when no consensus can be reached in the approach to fire safety. Local governments are in this regard independent of the various - often financial interests in the market, and are thus quite valuable during the licensing process. Besides, local governments have the authority to monitor and eventually enforce transgressions.

There are still some private organizations that might have a valuable contribution in further privatizing the governance of fire safety. By revising table 6 on page 39 we observe that the market contains many characteristics that have to be considered while using market governance solely. Means of holding others accountable is often based on jurisdiction, resulting in organizations having to acknowledged and assure their private integrity. Their responsibility is however primary focused towards their client, and since means of communication are prices and transactions, haggling is often used to resolute conflicts. Where hierarchical forms of governance are based on certainty, markets are focused on efficiency. Opportunistic behavior might thus be present in many situations. These observations make clear that effective checks and balances have to be implemented in the market, this in order to prevent these threats from occurring in a market climate. These possibilities are now being discussed.

In order to guarantee the quality of the entire process, the circle in the governance of fire safety visualized in figure 10 of page 43 has to be warranted. This visualization in fact uses the well know Deming cycle containing four phases; plan, do, check and act. It seems that the market is currently already capable to fill the first to gaps, consisting of plan and do. Based on an initiative from a client, an architect will make a first design of the construction to be made. At the same time, other stakeholders are being consulted in order to warrant environmental issues and fire safety issues that have to be considered in the lay-out of the construction. Fire safety consultants then revise the design and formulate the measures to fire safety in buildings that have to be fulfilled in order to comply with national fire safety legislation. In many occasions, an output document is being formulated that considers the fire safety aspects that have to be implemented and maintained for that specific building. This document is called a 'Programma van Eisen', or a document of requirements, and is also applicable in the governance mode using public-private partnerships. This integral document should contain the relevant starting assumptions regarding fire safety. Since these starting assumptions require a broad consent of the owner, the architect, fire safety consultants, and the insurance company, legitimacy and accuracy of the final design can be acquired based on output legitimacy. This is a situation where consensus is a mean to assure quality and support for the final outcome. This document is thus the founder for all the steps in this process. In order to warrant this first and most important step, each stakeholder has to sign this document in order to confirm their consent and follow-up. In case of any inconsistencies, the document might has to be revised and signed accordingly. The market can eventually be consulted for counter expertise in serious conflict situations.

The next step is that contractors have to warrant that the design and the approaches to fire safety are also implemented and completed based on the elaborations in the document of requirements. Consultancies or insurance companies might have to acquire a more prominent role in supervising whether this actually occurs, and there is thus an additional check to warrant that the elaborations of the document of requirements are also fulfilled. After this final stage, where the building is being constructed in compliance with the assumptions being agreed, it is important that the fire safety consultants delegate the responsibilities with regard to fire safety to the owner of that building in order to maintain the level of fire safety when the building is being used. It is also important to notice that the owners to some extend need knowledge about fire safety, otherwise changes might not be associated with a decline in the level of fire safety. The elaborations in the document of requirements thus have to be clearly explained towards the one that is responsible for that building. These first steps, initiative, design, consensus and construction are visualized in figure 11 on the next page.

The last step in the process has to assure aspects like monitoring and enforcement after a building has been completed. Due to the possibility that the use of a building in the long term might deviate from its original purpose, the implemented basic assumptions from which the fire safety design has been chosen have to be revised and updated. The expiration date of the document of requirements thus has to be considered, and a revision of this document once in a five year cycle might be desired. Besides, inspection agencies in the market can cover many monitoring functions to assure that the measures or installations arising from the document of requirements are also being maintained in a proper way.

Similar inspections can also be performed by insurance companies, because they insured that building according to the starting assumptions in the document of requirements which they signed. Insuring means an equitable transfer of the risk of a loss, from one entity to another in exchange for a payment. The amount to be charged for a certain coverage is called the premium. The insurance company can adjust the insurance premium in accordance to the shortcomings with regard to this output document. Based on the risks and the shortcomings, insurance companies might have a more prominent role in monitoring buildings, and might enforce shortcomings by means of adjusting the premium to an unacceptable level that forces the user to make changes in order to comply with the initial supported requirements.

It is thus clear that the document of requirements should not only state which fire safety measures have to be implemented. The document should also in advance clearly outline responsibilities for each specific stakeholder, starting with the owner of that building, the architect, the consultants, the contractors and the insurance company. In addition, the document of requirements should include or refer to inspection plans on the prescribed installations or measures. This in order to warrant a clear monitoring function, that has to make sure that the situation also complies with the elaborations in the document of requirements. Finally, the document of requirements should clearly state its revision frequency in order to warrant that any changes in the design or use of the building are also being considered in this founding document. Figure 11 below shows a conceptualization of this further privatization in the Dutch governance of fire safety, keeping in mind that the figure should include loop for continuous improvement and revision.

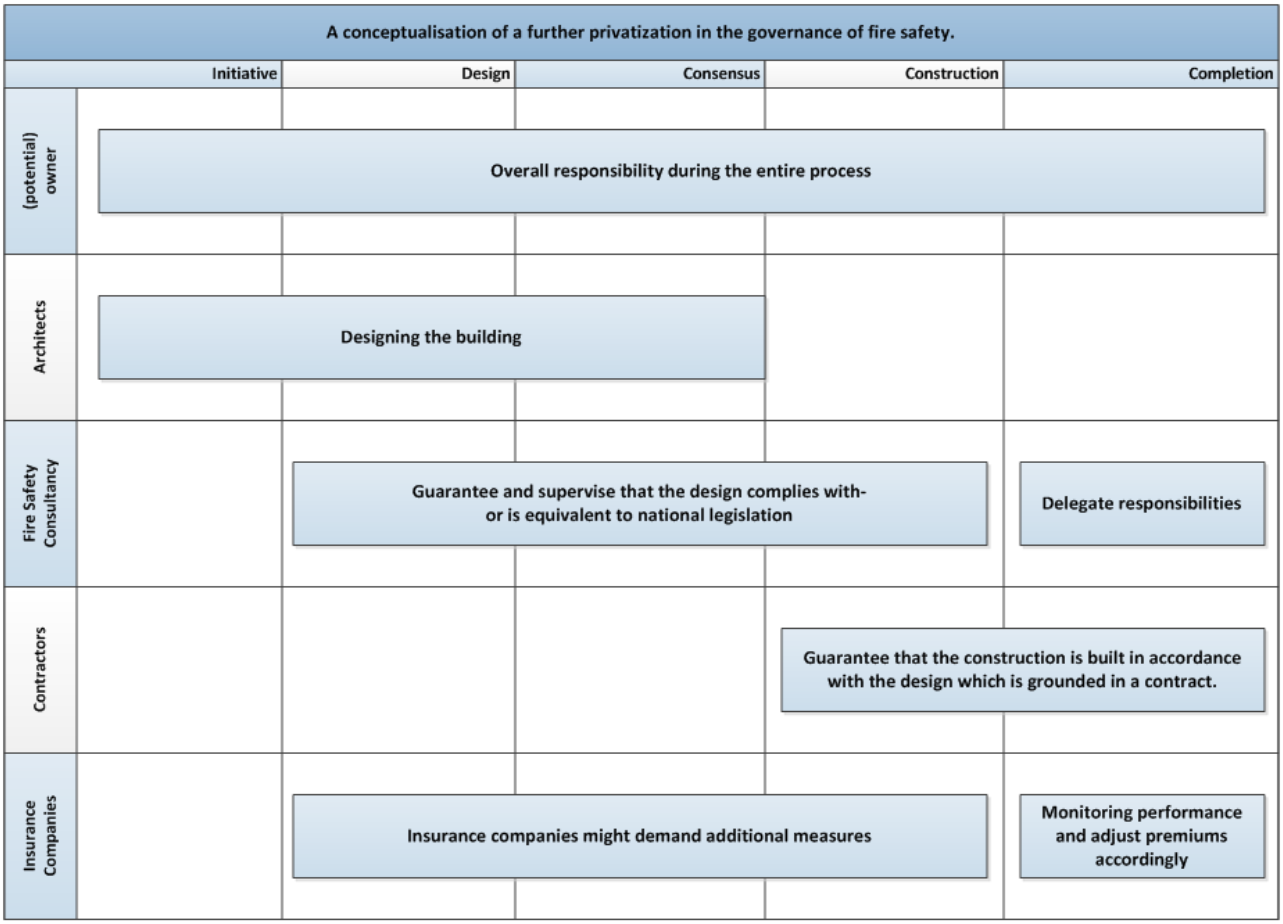


Figure 11. A conceptualization of a further privatization in the governance of fire safety.

As usual, the at first sight laudable intentions for further privatizations often turn out to conceal the worst due to hidden threats, to mention issues like an abuse of power to increase financial benefits. Even though, private institutions might have to acquire a more extensive contribution in the governance of fire safety being discussed in this section. Private institutions in the market can serve as an additional check to decrease administrative burdens, since the scope of government intervention has increased significantly in many domains over the last decades. Future research and practical experiences might give more insight in the practicality of the possibilities presented in this section. Networks and best practice forums can have a valuable contribution in this regard. The last section of this research ends by discussing some caveats that can be dedicated to privatization and public-private partnerships to increase awareness about both pragmatic as idealistic constraints of privatization as public-private partnerships. These issues can and should be considered to outweigh the virtues of these changes in the Dutch governance of fire safety.

6.3 Caveats about privatization & public-private partnerships

To end the discussion about further privatization, or to discuss why public-private partnerships occur, some caveats about privatization and public-private partnerships are being discussed here. The findings of the surveys of this research already revealed that there are currently two sides with regard to privatization, one that encourages this in the fire safety domain and one that has critical concerns about privatization. There is thus a clear contradictory vision regarding further privatization in the Dutch governance of fire safety. The critical concerns regarding further privatizing the governance of fire safety can be seen as both pragmatic as ideological, and can thus be explained accordingly. The pragmatic concerns cluster the kinds of failures that are often being observed by privatization or public-private partnerships. One of the most relevant points in this regard is that governments 'fail to monitor the performance of a private actor, thereby abdicating their responsibility and leaving an opening for an unscrupulous provider to cut corners and lower service quality' (Savas, 1999). Management of contemporary services thus turn out to suffer from the same shortcomings like cutting corners when responsibilities and accountabilities are not obvious or delegated properly. In other words, private institutions also have to be monitored and enforced to guarantee the quality of their designs and approaches to fire safety. This monitoring also has to prevent certain opportunistic behavior from occurring. Twist & Klijn (2007) for example explicitly mention that the core values of public and private organizations differentiate from each other. Core values of private institutions are in general; strong competitive, respecting contracts and emphasis on opportunities in the market to gain a transaction. Market share and profitability are therefore core values of private institutions. These core values of private institutions are often at odds to serve the common interest or desired outcome, in the context of this research the level of fire safety in buildings. Miraftab (2004) highlights that the rapid rise towards privatization is thus often not a result of overwhelming evidence for the social and political benefits of this governance mode, since some severe threats and practical constraints show otherwise. The context or the climate of the market can be drawn according to the overview of the theoretical framework being discussed, see table 6 on page 39. The way in which interpretation is given to the variables in a market situation clearly outline that some practical constraints should be noted, even though they have also been discussed in previous sections. The primary means of communication in a market climate is based on prices, and relationships can thus be seen as the degree of transactions among stakeholders. In is thus clear that financial interests and benefits are the main means of communication. In order to consider quality, reputation is a threshold whether or not to contract a specific stakeholder. All the stakeholders in the market have their own integrity, and from a theoretical point of view they are willing to preserve their integrity. On the other hand, due to the competition in the market, reputation is a variable that might be dominating over the integrity of stakeholders.

Reputation is being gathered by the judgment of previous outcomes for delivered services, based on the extent to which the preferences of the client are being fulfilled, weighed against the cost incurred. This is where the most significant practical constraint can be observed, since the power in this occasion is dedicated to the preferences of the client. The market might then be vulnerable to adjust or manipulate services or outcomes based on the preferences of their client, even though they are not in line with the national fire safety legislation. Reputation in this occasion dominates integrity. The climate of the traditional hierarchical form of governance provides a solution for this problem, where authority and power of local governments dominate private and financial interests of the market, overall serving as an additional check to assure an adequate level of fire safety in accordance to the level that is being contemplated in national legislation.

There are also some critical ideological concerns that can be dedicated to further privatization. Some for example mention that privatization undermines the foundation of claims for public purpose and public service and that it shifts power to those who can more readily exercise power in the market. Private services also often maximize profits, not by seeking quality but by seeking the least costly clients (Savas, 1999). Miraftab (2004) highlights this by stating that '[…] public private partnerships are free to operate as the Trojan Horses of development. Private sector firms approach local governments and their impoverished communities with the message of power sharing, but once the process is in motion the interest of the community are often overwhelmed by those of the most powerful member of the partnership – the private sector firms.' The author highlights that not only relationships provide a more detailed insight in the structure of public-private partnerships or private collaborations, a dyadic analysis of dominating power relations between stakeholders provide a better insight in the effectiveness and efficiency in those partnerships.

Another ideological constraint regarding further privatization is that it can be a signal about the competence and desirability of public provision, as has been discussed in section 6. The argument has been stated that outsourcing services to the private domain is often a result of restrictions in resources given to functions performed by governments. Government expenditures on public services are reduced to shrink its areas of responsibility, and public-private partnerships or privatization are being prompted to avoid inefficiencies of the public sector by relying more on the private sector (Forrest, 1991). If the services of local governments with regard to fire safety turns out to be deficient, it does not mean that they are not able to perform well. In 't Veld (1992) elaborates on these ideological visions, and argues that the ineffectiveness of certain policies often require more resources in order to increase the overall effectiveness and efficiency of that policy. Constantly balancing between brittleness and malleability of certain governance modes or policies typifies the work of in 't veld (1992), where he demonstrates that many attempts to steer policies barely grasp collective interests and sometimes as a consequence results in even more undesirable than desired outcomes. When policies then turn out to be failing, it reinforces the view that government cannot be expected to perform well (Starr, 1988). Miraftab (2004) confirms these broad and diverging visions based on varying political ideologies, some of them favoring the market to dominate, others favoring government interference. It is therefore also argued that shifts in governance are a result of political tendencies and ideologies. These visions indicate that policies are nearly never filling collective interests from an ideological perspective. The above mentioned arguments, both pragmatic as ideological, can and should be considered to outweigh the virtues of further privatizing the Dutch governance of fire safety. Clear arguments have to be raised which emphasize the importance of further privatization in the Dutch governance of fire safety. Many state that forms of contracts and trust can favor further privatization, but do not state whether and how privatization can replace the responsibilities of the public sector in order to serve the overall public good, in this occasion contributing to the overall public safety. Changes in the governance of fire safety at least have to maintain or serve the overall effectiveness and efficiency, otherwise there will remain a continuous cycle of improvement and decline.

7. Conclusion

The central question in this research is to what extent and how should the governance of fire safety be amended to achieve an effective and efficient form of governance in the fire safety domain? To answer this central research question, four complementary sub-questions have been formulated. (i) How is the governance of fire safety enshrined in the contemporary way of designing fire safety in buildings using Bouwbesluit 2012? (ii) What are the contemporary problems in the governance of designing fire safety in buildings using Bouwbesluit 2012? (iii) What changes in the governance of fire safety in complex buildings when the fire safety engineering approach is applied? (iv) What are the problems in the governance of fire safety in complex buildings when the fire safety engineering approach is being used? Below, the sub-questions of this research are first being answered which allow us to answer the last and central research question.

The background of this research provided general information about the Dutch legislation with regard to fire safety and discussed both the prescriptive and the performance based approaches being used. This elaboration provided an opportunity to highlight possible contemporary problems in the governance of fire safety due to the shifts from prescriptive based approaches to performance based approaches, which were the essence of the sub-questions formulated in this research. By using Bouwbesluit 2012, the governance of fire safety seems to be quite convenient. Due to the prescriptive requirements it is straightforward what to comply with and how to assess compliance. Due to the straightforward, but though often technical formulations of prescriptive requirements, the private sector has a clear reference how to comply with national standards. In line, local governments use this reference for a straightforward assessment of the design. This however becomes more ambiguous when the performance based approach is being used. By demonstrating equivalency it is possible to deviate from Bouwbesluit 2012, and to demonstrate by other means that a sufficient level of fire safety is being acquired. This approach thus formulates goals, and gives the designer the possibility to use means by its own discretion. Practical experiences have shown that fire safety science and risk assessments are being used to demonstrate equivalency. However, it might be hard for local governments to assess whether an equivalent level of fire safety is being acquired based on these complex assessments. The performance based approach can thus be seen as a complex approach in the governance of fire safety, which might result in a more long and intensive licensing processes. Combined with recent disproportional media representation of major fires, and the often confronting accident reports, local governments might become more reticent in providing licenses when the performance based approach is being used. These are the most significant observations in the contemporary problems between two distinct approaches, but there are also two main problems which can be observed by both the approaches. Important aspects like monitoring and enforcement are not being fulfilled to a sufficient extent, therefore lowering overall level of fire safety in buildings.

These findings present that the current governance of fire safety is thus not optimal, most likely primary caused by lacking resources given to these domains due to political tendencies. There remains an ongoing discussion to change the current structure in the governance of fire safety, where it is argued that the governance of fire safety should be delegated to the private sector where possible. This has been the basic premise of the Commission Dekker in 2008. The statement of the Commission already resulted in quite extensive exploratory research from different perspectives. This research contributed in this debate by focusing on the theories underlying the different governance modes that are being observed in modern societies. The theoretical framework explained that a hybrid form of governance can be observed in the contemporary governance of fire safety, a combination better known as public-private partnerships. One of the most important threat in this occasion is that public-private partnerships might result in blurred responsibilities and accountabilities, where actors tend to designate responsibilities and accountabilities to each other, while trivializing their owns. The current situation therefore results in a governance mode which can be seen as an ‘anarchy’. In other words, the governance of fire safety is disordered due to a semi-hierarchical and semi-horizontal organization without central allocated responsibilities and accountabilities. From a juridical point of view these responsibilities and

accountabilities are clearly formulated, but due to the integral character of the governance of fire safety, the allocation of responsibilities are not always straightforward or rather mutual. Besides, formal responsibilities are not communicated transparently among all the stakeholders which are being observed in the governance of fire safety. There are in this regard significant improvements to be made. In order to improve the allocation of- and reference to responsibilities and accountabilities, a founding document of requirements can create more transparency in both public-private partnerships as market governance. A document of requirements further includes the basic premises and the formulated requirements that have to be implemented and maintained. This document therefore also refers to inspection plans that are being formulated on the prescribed requirements. This founding document has to be signed by all the involved stakeholders, this in order to assure that all the parties have agreed and approve the elaborations in this document.

The central question in this research is therefore to what extent and how the governance of fire safety has to be amended to achieve an effective and efficient form of governance in the fire safety domain. The findings of this research, partly from past experiences as from a scientific theoretical perspective, demonstrate that the current governance system is not optimal from multiple perspectives and still allows significant improvements to be made. In order to improve the current governance structure, a scientific schematic framework has been presented that can be used in directing potential changes of the contemporary governance of fire safety, a system which still quite extensively relies on governmental superintendence. This framework combines mechanisms to minimize problems and to maximize benefits while combining divergent governance modes. In order to anticipate on the premise of the Commission Dekker (2008), favoring for a private approach where government restraints, three broad measures and corresponding tools are being presented on how potential privatization in the governance of fire safety can be achieved. The Commission itself already stated that it realizes that the private domain might not have the instruments to bear the required responsibility from one day to the other. This research confirms this connotation, and demonstrates it might not be straightforward at all that the private domain will take all the dedicated responsibilities. By demonstrating the threats that might arise while using market governance solely and by discussing the caveats regarding privatization, it turned out that core values of public and private organizations differentiate significant from each other, and strategic visions or core businesses of the private domain are often focused on financial interests. The at first sight laudable intentions of further privatizations often turn out to conceal the worst due to these hidden threats, to mention issues like an abuse of power to increase financial benefits. This might explain why there is a clear ambiguous attitude of the market towards further privatizing the Dutch governance of fire safety. Many research has demonstrated that forms of contracts and trust can favor further privatization, but do not state whether and how privatization can replace the responsibilities of the public sector in order to serve the overall public good in the governance of fire safety. There are thus significant threats associated with further privatizing the Dutch governance of fire safety that have to be considered, and governmental superintendence therefore seems to remain a desired form of administrative supervision to prevent these threats from occurring. The main conclusion regarding the central research question is thus that the current governance of fire safety using public-private partnerships still allows significant improvements to be made, but from the perspective of this research it seems desirable that governmental superintendence has to be safeguarded and to prevent a total privatization to occur. In sum, due to the potential threats that may arise with further privatization the Dutch governance of fire safety should not be amended to such an extent, that governmental superintendence during the licensing process is being omitted. Maintaining public-private partnerships will serve the common good, covering all the relevant aspects in the governance of fire safety, see figure 10 on page 43. Answering the central question of this research how the governance of fire safety has to be amended is not straightforward, and budget cuts and ideological or political visions often force these changes to be made. The presented scientific schematic framework table 8 page 55-57 helps to give insight in potential changes, and helps to direct potential changes in the governance of fire safety. When strengthening allocations of tasks, responsibilities and accountabilities, we actually may conclude that the current governance of fire safety performs well compared to other European countries.

8. Recommendations

This research confirms that the current governance of fire safety is not optimal, and that structural improvements can be made. It is not recommendable to further privatize the Dutch governance of fire safety due to the potential threats that might arise while using market governance solely. The core values of private institutions are often based on transactions and financial interests, both at odds to serve the common interest. The main recommendations in this regard have been formulated to improve the currently observed public-private partnerships. These recommendations are visualized in table 8 on page 53-55, where a schematic theoretical framework has been presented that can help to direct potential amendments in the governance of fire safety. This framework elaborates on the assumption that public-private partnerships are being maintained, and that governmental superintendence prevents certain threats arising from private institutions from occurring. The core recommendation in this framework is that stakeholders should clearly communicate and formulate mutual expectations. Tasks have to be clearly allocated, and subsequent responsibilities and accountabilities in case of deficiencies have to be formulated and be clear among all the stakeholders being involved. The second set of recommendations are being formulated to warrant that the final design satisfies or is equivalent to the requirements which are being formulated in Bouwbesluit 2012. The third set of recommendations in the schematic framework are being formulated to prevent or minimize threats from occurring in the Dutch governance of fire safety. The last recommendation is that best practice forums or other forms of networks can have a valuable contribution in the governance of fire safety. They might support future research in this domain an might help to visualize emerging problems in the governance of fire safety and direct potential changes accordingly. They can serve as networks which institutionalize values and beliefs, and can have a significant contribution in many domains, to mention issues as policy making, direction of changes and best-practice programs.

The above mentioned recommendations are the most significant ones recommending on the central research question. There are however also several general problems that emerged throughout this research which are worth noticing, and can partly be dedicated to the formulated sub-questions. The bold phrases below discuss the general problems that emerged throughout this research, and discusses which recommendations can be made in order to further improve the overall Dutch governance of fire safety;

- ➔ **Accidents in the fire safety domain often result in sudden concern about the quality and adequacy of the governance of fire safety, resulting in extensive exploratory research how to make substantial improvements. The priority of these findings tend to fade away on the long term, resulting in a reverting pattern.** Goode and Ben-Yehuda (1994) pose the question whether moral panics cause social instability resulting in different outcomes or if it is a phenomenon that is fading away in the long run. Specialists in the fire safety domain conform this finding. Hagen, for example, observes the concept volatility in the Dutch fire safety domain what he labels as 'governmental amnesia' (Hagen, 2007). It is, in particular, of great importance that 'governmental amnesia' is not resulting in budget cuts or resources provided to the fire safety domain. Eye-openers must be institutionalized and not fade away on the long term due to financial reasons. Historical observations have shown that public organizations tend to be reactive in case of providing resources to specific public organizations, often based on extraordinary media-attention.

- ➔ **The inspectorate of the ministry of VROM highlights that local governments are currently confronted with multiple problems in the fire safety domain, like limited capacity for monitoring and enforcement on building sites (Inspectie, 2008).** To increase effectiveness and efficiency in this regard, governmental inspections should become more integral. Environmental inspections and fire safety inspections can be combined. Besides, inspections of insurance companies have a valuable contribution in the overall inspection of fire safety in buildings. Integral inspections will lead to more effective and efficient monitoring and enforcement.

➔ **'There is a preventive assessment of municipalities and there is an integral responsibility for the building market to meet the requirements which results in shared and blurred responsibilities, and partly in realized buildings that do not always meet the set requirements.' (Bouwkwaliteit, 2012).** These experiences provide an essential incentive to label the current governance of fire safety as not optimal and to oversee which changes are desired and possible. This research shows us that a further privatization is not desired. Governmental supervision remains an important component in the governance of fire safety. In order to give the governance of fire safety a good structure, clear distinctions have to be made which matters can and should be treated in the public domain, and which matters can be outsourced to the market or the private domain.

➔ **Responsibilities and accountabilities with regard to fire safety in buildings are clearly formulated in national legislation. These responsibilities and accountabilities are actually not always clear among the actors that are involved in the governance of fire safety.** The findings of the survey demonstrate that responsibilities and accountabilities are not clearly communicated. These aspects can be seen as one of the most important issues in the governance of fire safety. This communication should be top-down, since the government sets the legislative framework. Governments should communicate these matters to the private domain, since the primary responsibilities are also dedicated to the private domain. This communication can either be done during a licensing process or specific campaigns can make a valuable contribution to catch up with the arrears.

Another way to make substantial steps is to use a document of requirements. This integral document should contain the relevant starting assumptions regarding fire safety, the dedication of responsibilities, underlying inspection plans and revision frequency of this document. Since these starting assumptions require a broad consent of the owner, the architect, fire safety consultants, and the insurance company, legitimacy and accuracy of the final design can be acquired based on output legitimacy. This is a situation where consensus is a mean to assure quality and support for the final outcome. This document is thus the founder for all the steps in this process. In order to warrant this first and most important step, each stakeholder has to sign this document in order to confirm their consent and follow-up.

➔ **Public liabilities are also regulated by law, but they seems to be inferior with regard to private liabilities. Jurisprudence has shown that local governments often cannot be held liable for their negligence.** Public organizations are having a very important share in the governance of fire safety. Local governments assess whether the approach to fire safety in a building comply with- or are equivalent to national legislation. In order to ensure the quality of governmental supervision, additional accountabilities should be dedicated to these organizations, especially when designers and builders tend to abolish their own quality control and rely in government control.

➔ **In cases where outsourcing in the private domain occurs, clear formulations have to be made that the decision making process does occur on a statutory liable basis to prevent corruption and venality which result in perverse outcomes. Besides, formal contracts can provide a valuable outcome.** Based on previous research, 78% of the designers of a building stated that they endorse that fire safety consultants should be registered. This implies that the designers have the opinion that professionals in the field of fire safety should be statutorily liable to their work (Lo, 1999). The legitimacy of fire safety should be a statutory basis to ensure that an adequate level of fire safety is achieved. This is primarily important when performance based approaches are being used and in situations where delegation to the private domain occurs. Also when the approach to fire safety in buildings is being outsourced, and transactions are being made, contracts can be used to clearly communicate and delegate responsibilities and accountabilities to others. This makes mutual expectations more transparent.

➔ **A consequence of the growing amount of prescriptive fire safety codes was that actors strictly followed the rules without thinking about their goals or values to fire safety.** Satisfying or complying with the prescriptions in Bouwbesluit 2012 often is the primary goal, without actually thinking about a rational approach to achieve a satisfactory level of fire safety in buildings. Fire safety consists of four major goals that have to be guaranteed; preventative measures, measures that limit the development of a fire, measures that increase the self-reliance and measure that increase possibilities for an effective repression. These four aspects are very closely interrelated, and people should be aware of this. Deregulation can significantly contribute in this regard, where goals are stated instead of means.

➔ **The demonstration of equivalency points out to be very difficult, since there is not yet an objective measurement tool to determine the actual level of fire safety in buildings (Kobes, 2006).** Gibson (1982, p.4) for example emphasizes that 'the performance based approach is […] the practice of thinking and working in terms of *ends* rather than *means*. This phrase also highlights that the ends or the goals are of main importance. The problem with regulations that have aims without clear means is uncertainty, it is not clear how to honor these goals. Performance based approaches can be supported by using risk-assessments. The performance base approach then uses a probabilistic way to demonstrate the equivalency in fire safety, based on a comparison of the risks using the prescriptive requirement and de risks of the measures that are being applied with the performance based requirements. When the probabilistic way is applied, risks can be defined as the product of a chance of a fire to occur combined with the possible effects as a consequence. By the consideration of all the scenarios, a total risk can be quantified, resulting in more objective considerations.

➔ **To make substantial steps in the governance of fire safety and a more smooth administrative process is to encourage a best practice for the performance based approach. Foliente (2000) emphasizes the importance of a facilitating platform or network in the fire safety domain.** Practical examples of the application of the performance based approach and experiences in the governance of fire safety give an opportunity to make the both positive and negative experiences visible and eventually to learn from current bottlenecks. The entire project needs to be analyzed, from the concept of performance based approaches, the project proposal, the handover or commission to the authority and the acceptance. Even the enforcement of fire safety in buildings should be analyzed to get the circle around. This visualization is given in section 3.6. Networks also might help to direct potential changes in the governance of fire safety.

➔ **Current approaches to fire safety in buildings are not open to the public, and can therefore be seen as not transparent. This observation hampers potential research in the governance of fire safety.** Initially, this research was designed to use two case studies to highlight possible threats and benefits in the governance of fire safety due to the shifts from prescriptive based approaches to performance based approaches. Unfortunately, approached stakeholders were not very willing to cooperate in this research. This finding is confirmed by the results from the survey that has been conducted in this research. Substantive documentation is not open to the public, and therefore hampers possibilities to widen horizons and to give opportunities for further research.

9. Discussion and further research

This section ends this research by mentioning some limitations that have been observed throughout this research. The most inconvenient finding during this research was that multiple attempts have failed to perform case studies in the fire safety domain. Case studies can test the findings that have been presented in the theoretical framework in a practical situation. Unfortunately, substantive documentation of the approaches to fire safety were not open to the public, and approached individuals were quite reticent in providing the contact information of all the stakeholders that were involved in the process. This research was as a consequence forced to use general surveys, which did not allow to pose in-depth questions. The questions in the survey are thus rather superficial. The survey that has been sent to multiple stakeholders did also result in a significant undistributed representation of respondents, the majority of the respondents consisted of advising agencies. Due to the delays incurred by the failed case studies, time constrains resulted in an impossibility to resend this survey to more respondents. This finding has to be mentioned explicitly, since the findings and attitudes of respondents that are being discussed might not be representative for other stakeholders. The findings can thus not directly be generalized among all the stakeholders that are involved in the contemporary governance of fire safety. Future research can therefore use the design of this research to further explore attitudes towards potential changes in the governance of fire safety. Future research then might use case studies, but this can only be achieved when approaches actually will become open and transparent to the public.

Currently, local governments are being regionalized. It has been stated that by clustering knowledge on a regional scale will improve effectiveness and efficiency. The findings of this research revealed that local governments previously did not fulfill all their demanded tasks, aspects like monitoring and enforcement are not frequently being observed. This research demonstrated that the cycle presented on page 43 has to be warranted to guarantee the quality of fire safety in buildings. Future research might has to focus on the effectiveness and efficiency of each separate step in this figure and criticize established shortcomings in this process by analyzing the new situation. This includes the effectiveness and efficiency of the approach to fire safety being used, the assessment of the design, the efficiency of governmental supervision, the practical implementation of the fire safety measures and finally maintaining the level of fire safety and enforcing transgressions. Practical situations, and thus case-studies, can give a valuable insight in this process, but also this occasion requires more open and transparent processes in order to be successful.

Further in-depth analysis of the public-private partnerships might provide more insight in the relations and interactions between stakeholders involved in the governance of fire safety. Based on a dyadic analysis, further recommendations can be made about the relevance of the stakeholders involved in the governance of fire safety. This dyadic analysis can both analyze power relationships between the actors, and responsibilities and accountabilities can be formulated accordingly. Finally, further research is possible in currently formulated laws and regulations with regard to fire safety. Policy analysis will contribute to oversee possible shortcomings and substantial recommendations can be made to further increase effectiveness and efficiency, for example by further deregulation and the subsequent practical constraints.

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11. Appendices

11.1 Invitation Letter Survey

University of Twente
Enschede - The Netherlands

Enschede, December 2012

Betreft: uitnodiging voor het invullen van een vragenlijst

Geachte heer/mevrouw,

In het kader van mijn afstudeeronderzoek voor de master Public Safety aan de Universiteit Twente bent u benaderd met de vraag om een digitale vragenlijst in te vullen. Het afstudeeronderzoek draagt de titel 'The Governance of Fire Safety'. Dit onderzoek gaat in op de vormgeving van het huidige bestuur van brandveiligheid met zowel het Bouwbesluit 2012 als de mogelijkheid tot een gelijkwaardige benadering tot brandveiligheid, ook bekend als Fire Safety Engineering. Aan de hand van beide benaderingen wordt bekeken hoe aan het huidige bestuur vormgegeven wordt en of- en welke verbeteringen er mogelijk en wenselijk zijn.

Ik zal het zeer op prijs stellen als u de digitale enquête via onderstaande link in zijn geheel wilt doorlopen. Alle gegevens uit deze enquête zullen geanonimiseerd verwerkt worden. De vragenlijst bevat 26 vragen en zal ongeveer 10 minuten in beslag nemen.

Link naar de vragenlijst: *http://www.thesistools.com/web/?id=309602*

Mocht u interesse hebben in de resultaten van dit onderzoek, dan kunt u dit na afronding van deze vragenlijst invullen en uw e-mail adres achter laten.

Alvast vriendelijk bedankt voor het invullen van de vragenlijst.

Met vriendelijke groet,

Ninja Klapwijk

Student Master Public Administration
Master track Public Safety
Universiteit Twente

UNIVERSITEIT TWENTE.

11.2 Survey Questions

1) Kunt u aangeven tot welke groep betrokken actoren u behoort in het domein van brandveiligheid?
◯ Gebruiker
◯ Bevoegd Gezag (Gemeente)
◯ Veiligheidsregio
◯ Architecten
◯ Aannemers / contractors
◯ Adviesbureaus
◯ Verzekeraars
◯ Anders, namelijk:

2) Met welk aspect van brandveiligheid krijgt u het meest te maken gedurende uw werkzaamheden?
◯ De vergunningverlening tijdens de bouw
◯ De toepassing van de brandveiligheidsaspecten gedurende de bouw
◯ De handhaving van brandveiligheid
◯ De inspectie op brandveiligheid
◯ Het brandveilig gebruik van gebouwen
◯ Beleidsmatige aspecten van brandveiligheid
◯ Anders, namelijk:

3) Hoe vaak heeft u te maken met het aspect brandveiligheid in de vergunningverlening van gebouwen gedurende uw normale werkzaamheden?
◯ Dagelijks
◯ Wekelijks
◯ Maandelijks
◯ Jaarlijks
◯ Vrijwel nooit

4) In hoeverre heeft u opleiding / cursus / training gehad voor het onderwerp brandveiligheid in gebouwen?

- ◯ Geen opleiding, training of cursus
- ◯ Opleiding, training of cursus, namelijk:

5) Hoe ervaart u het niveau van brandveiligheid in de volgende gebouwtypen?

Gebouwtype	Niveau van brandveiligheid					
	Zeer goed	Goed	Middelmatig	Matig	Slecht	Zeer slecht
Woonfunctie	◯	◯	◯	◯	◯	◯
Bijeenkomstfunctie	◯	◯	◯	◯	◯	◯
Cel functie	◯	◯	◯	◯	◯	◯
Gezondheidszorgfunctie	◯	◯	◯	◯	◯	◯
Industriefunctie	◯	◯	◯	◯	◯	◯
Kantoorfunctie	◯	◯	◯	◯	◯	◯
Logiesfunctie	◯	◯	◯	◯	◯	◯
Onderwijsfunctie	◯	◯	◯	◯	◯	◯
Sportfunctie	◯	◯	◯	◯	◯	◯
Winkelfunctie	◯	◯	◯	◯	◯	◯

6) Hoe vaak heeft u in het kader van brandveiligheid te maken met Bouwbesluit 2012?

- ◯ Dagelijks
- ◯ Wekelijks
- ◯ Maandelijks
- ◯ Jaarlijks
- ◯ Vrijwel nooit
- ◯ Nooit

7) Als u de toepassing van bouwbesluit 2012 in het ontwerpen van brandveiligheid in een gebouw zou moeten classificeren, als zijnde hoe specifiek zal u deze aanmerken?

Niet specifiek		Niet erg specifiek		Algemeen		Specifiek		Zeer specifiek		
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

8) De commissie Dekker kwam met het volgende advies: 'privaat wat kan, publiek wat moet'. Hierbij wordt betoogd dat de zorg van brandveiligheid in het bedrijfsleven dient komen te liggen. Deelt u deze mening bij de toepassing van Bouwbesluit 2012?

◯ Ja, de zorg voor brandveiligheid kan in de private sector (het bedrijfsleven) komen te liggen

◯ Nee, de zorg voor brandveiligheid dient een onderdeel te blijven van publiek toezicht (de overheid)

9) Het bevoegd gezag is het toetsende orgaan, dat wil zeggen dat de gemeente toetst of het ontwerp al dan niet voldoet aan landelijke wet- en regelgeving omtrent brandveiligheid en verleent op basis van deze toetsing al dan niet een bouwvergunning. Ervaart u hierdoor wel eens bij het gebruik van bouwbesluit 2012:

Dat het traject van de vergunningverlening lang en intensief is?

◯ Ja ◯ Nee ◯ Geen mening

Dat het bevoegd gezag in mindere mate rekening houdt met de kosten/baten verhouding van preventieve maatregelen?

◯ Ja ◯ Nee ◯ Geen mening

Dat het bevoegd gezag een beperkte kennis/expertise heeft voor de beoordeling van het ontwerp?

◯ Ja ◯ Nee ◯ Geen mening

Dat het bevoegd gezag (gemeente) terughoudend is bij het verlenen van een bouwvergunning?

◯ Ja ◯ Nee ◯ Geen mening

10) Als u de toepassing van gelijkwaardigheid (Fire Safety Engineering) in het ontwerpen van brandveiligheid in een gebouw zou moeten classificeren, als zijnde hoe specifiek zal u deze aanmerken?

Niet specifiek		Niet erg specifiek		Algemeen		Specifiek		Zeer specifiek		
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

11) Hoe vaak heeft u in het kader van brandveiligheid te maken met een gelijkwaardige benadering voor brandveiligheid? (Fire Safety Engineering)

◯ Dagelijks

◯ Wekelijks

◯ Maandelijks

◯ Jaarlijks

◯ Vrijwel nooit

◯ Nooit

12) Het bevoegd gezag is het toetsende orgaan, dat wil zeggen dat de gemeente toetst of het ontwerp al dan niet voldoet aan landelijke wet- en regelgeving omtrent brandveiligheid en verleent op basis van deze toetsing al dan niet een bouwvergunning. Ervaart u hierdoor wel eens bij het gebruik van fire safety engineering:

Dat het traject van de vergunningverlening lang en intensief is?

◯ Ja ◯ Nee ◯ Geen mening

Dat het bevoegd gezag in mindere mate rekening houdt met de kosten/baten verhouding van preventieve maatregelen?

◯ Ja ◯ Nee ◯ Geen mening

Dat het bevoegd gezag een beperkte kennis/expertise heeft voor de beoordeling van het ontwerp?

◯ Ja ◯ Nee ◯ Geen mening

Dat het bevoegd gezag (gemeente) terughoudend is bij het verlenen van een bouwvergunning?

◯ Ja ◯ Nee ◯ Geen mening

13) De commissie Dekker kwam met het volgende advies: 'privaat wat kan, publiek wat moet'. Hierbij wordt betoogd dat de zorg van brandveiligheid in het bedrijfsleven dient komen te liggen. Deelt u deze mening wanneer gebruik gemaakt wordt van een gelijkwaardige benadering of Fire Safety Engineering?

◯ Ja, de zorg voor brandveiligheid kan in de private sector (het bedrijfsleven) komen te liggen

◯ Nee, de zorg voor brandveiligheid dient een onderdeel te blijven van publiek toezicht (de overheid)

14) Bij wie ligt volgens u de primaire eindverantwoordelijkheid voor brandveiligheid in gebouwen? (meerdere antwoorden mogelijk)

◯ Bij het bevoegd gezag (overheid)

◯ Bij de ontwerper van het gebouw

◯ Bij de aannemers die het gebouw bouwen

◯ Bij de gebruiker van het gebouw

◯ Bij de eigenaar van het gebouw

◯ Bij de brandweer

◯ Anders, namelijk:

15) Volgens de wet- en regelgeving is de gebruiker of eigenaar van een gebouw ten alle tijden verantwoordelijk voor brandveiligheid in haar gebouw. Communiceert de overheid deze verantwoordelijkheid volgens u duidelijk onder desbetreffende personen?

◯ Ja

◯ Nee

16) Wanneer u geïnteresseerd bent in de inhoudelijke documentatie over een (gelijkwaardige) benadering tot brandveiligheid, hoe ervaart u dan de mogelijkheden om deze rapportages in te zien gedurende de procedure?

Publiciteit

- ◯ Ik ervaar geen publiciteit
- ◯ Ik ervaar onvoldoende publiciteit
- ◯ Ik ervaar enkel publiciteit onder de betrokken actoren
- ◯ Ik ervaar publiciteit onder alle belanghebbenden of geïnteresseerden

17) Wanneer u het niet eens bent met de (gelijkwaardige) benadering tot brandveiligheid in gebouwen, hoe ervaart u dan de mogelijkheden om inspraak te hebben gedurende de procedure?

Inspraak

- ◯ Ik ervaar geen inspraakmogelijkheden
- ◯ Ik ervaar onvoldoende inspraakmogelijkheden
- ◯ Ik ervaar inspraakmogelijkheden onder de betrokken actoren
- ◯ Ik ervaar inspraakmogelijkheden onder alle belanghebbenden / geïnteresseerden

18) Kunt u aangeven in hoeverre u gedurende uw met onderstaande actoren heeft gecommuniceerd / informatie heeft uitgewisseld voor de vergunningprocedure?

	Onderlinge communicatie en informatie uitwisseling				
Actor	Vrijwel elke dag	Vrijwel elke week	Vrijwel elke maand	Eenmalig	Nooit
Brandweer	◯	◯	◯	◯	◯
Gemeente	◯	◯	◯	◯	◯
Provincie	◯	◯	◯	◯	◯
Ontwerpers / architecten	◯	◯	◯	◯	◯
Eigenaren / gebruikers	◯	◯	◯	◯	◯
Adviesbureaus	◯	◯	◯	◯	◯
Contractors / aannemers	◯	◯	◯	◯	◯
Verzekeraars	◯	◯	◯	◯	◯

19) Hoe ervaart u de kennis en expertise van onderstaande actoren met betrekking tot de wet- en regelgeving van brandveiligheid?						
Actor	**Niveau van kennis en expertise met betrekking tot brandveiligheid**					
	Zeer goed	Goed	Middelmatig	Matig	Slecht	Zeer slecht
Brandweer	○	○	○	○	○	○
Gemeente	○	○	○	○	○	○
Provincie	○	○	○	○	○	○
Ontwerpers / architecten	○	○	○	○	○	○
Eigenaren / gebruikers	○	○	○	○	○	○
Adviesbureaus	○	○	○	○	○	○
Contractors / aannemers	○	○	○	○	○	○
Verzekeraars	○	○	○	○	○	○

20) Hoe ervaart u de onafhankelijkheid onderstaande partijen die betrokken kunnen zijn in het domein van de brandveiligheid?				
	Onafhankelijkheid			
Actor	Zeer onafhankelijk/ niet omkoopbaar	Behoorlijk onafhankelijk/ weinig omkoopbaar	Afhankelijk en vrij omkoopbaar	Zeer afhankelijk en gemakkelijk omkoopbaar
Brandweer	○	○	○	○
Gemeente	○	○	○	○
Provincie	○	○	○	○
Ontwerpers / architecten	○	○	○	○
Eigenaren / gebruikers	○	○	○	○
Adviesbureaus	○	○	○	○
Contractor / aannemers	○	○	○	○
Verzekeraars	○	○	○	○

21) In hoeverre ervaart u het bestuurlijk toezicht van de overheid op het aspect brandveiligheid gedurende de vergunningprocedure en gedurende de bouw?				
Vergunningsaanvraag	**Vergunningsverlening**	**Bouw**	**Oplevering**	**Gebruik**
◯ Geen toezicht	◯ Geen toezicht	◯ Geen toezicht	◯ Geen toezicht	◯ Geen toezicht
◯ Beperkt toezicht	◯ Beperkt toezicht	◯ Beperkt toezicht	◯ Beperkt toezicht	◯ Beperkt toezicht
◯ Toezicht	◯ Toezicht	◯ Toezicht	◯ Toezicht	◯ Toezicht
◯ Intensief toezicht	◯ Intensief toezicht	◯ Intensief toezicht	◯ Intensief toezicht	◯ Intensief toezicht

22) Op dit moment vindt er een centralisatie plaats van gemeentelijke diensten naar omgevingsdiensten. Hieronder volgen enkele vragen omtrent deze centralisatie van gemeentelijke dienstverlening.	
Verwacht u dat de capaciteit naar aanleiding van de centralisatie voldoende is om alle vergunningen even zorgvuldig te behandelen?	
◯ Positief	◯ Negatief
Verwacht u dat de centralisatie van gemeentelijke diensten naar een omgevingsdienst een positieve of negatieve waarde geeft aan het kennisniveau van het bevoegd gezag?	
◯ Positief	◯ Negatief
Verwacht u dat de centralisatie een positief of negatief effect heeft op de kwaliteit en intensiteit van het bouw- en woningtoezicht? (Monitoren)	
◯ Positief	◯ Negatief
Verwacht u dat de centralisatie een positief of negatief effect heeft op het aspect handhaving van overtredingen bij het bouw- en woningtoezicht?	
◯ Positief	◯ Negatief
Verwacht u dat de centralisatie een positief of negatief effect heeft op de gemiddelde brandveiligheid van gebouwen?	
◯ Positief	◯ Negatief

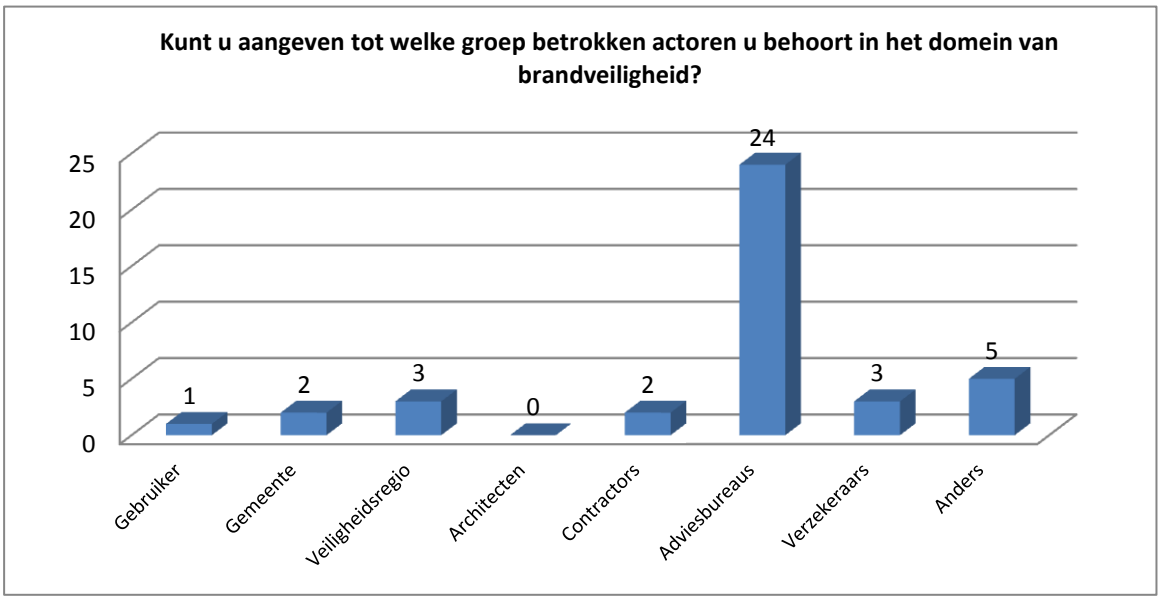
23) De overheid dient naar uw mening met betrekking tot brandveiligheid te zijn:
◯ Kader stellend: het formuleren van wet- en regelgeving
◯ Toetsend; het toetsen van het aspect brandveiligheid gedurende de vergunningaanvragen aan de wet- en regelgeving
◯ Handhavend: het toezien en handhaven op de uitvoering van preventieve en repressieve maatregelen en het gebruik
◯ En anders, namelijk:

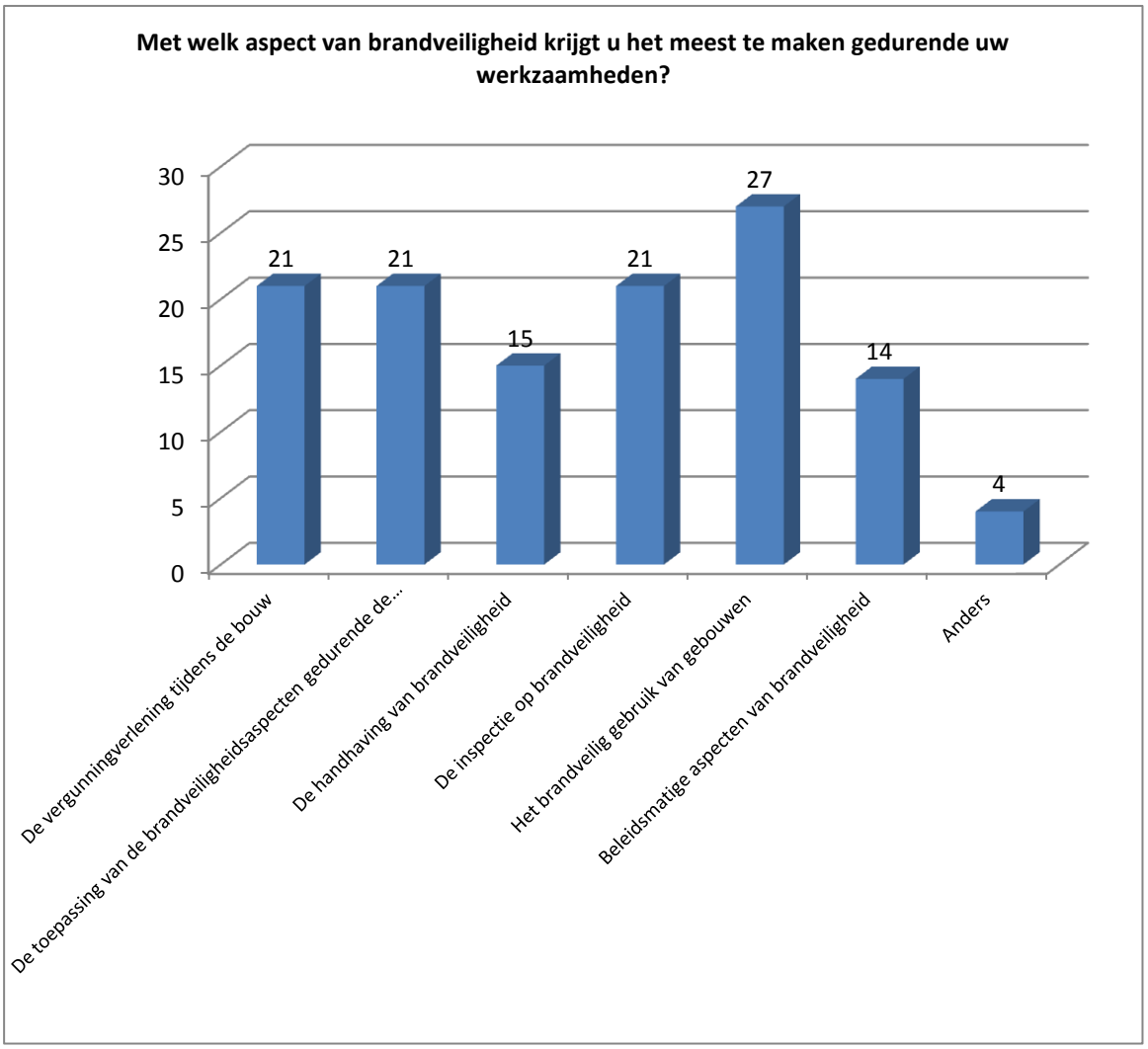
24) De verantwoordelijkheid voor brandveiligheid behoort volgens u:
◯ In de private sector te liggen (in het bedrijfsleven)
◯ In de publieke sector te liggen (bij de overheid)
◯ Een collectieve verantwoordelijkheid (zowel in de private sector als in de publieke sector)
◯ En anders, namelijk:

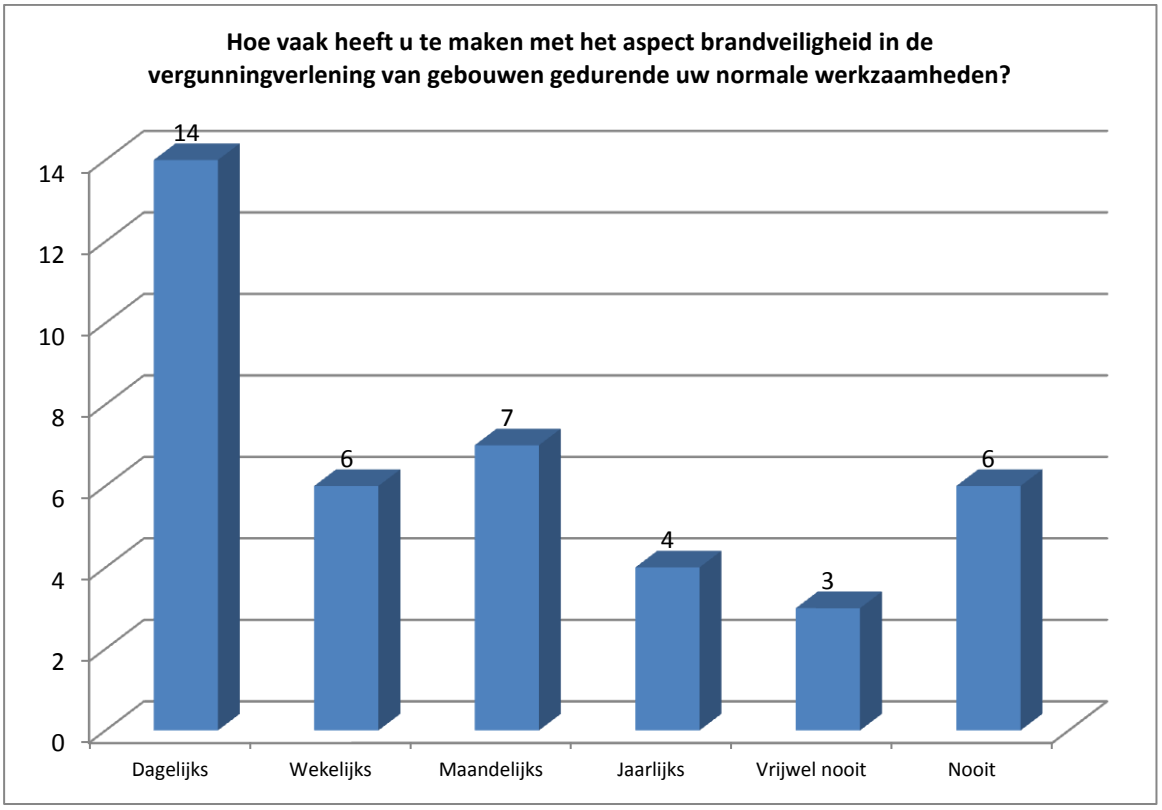
25) De aansprakelijkheid bij eventuele gebreken dient volgens u te zijn:
◯ Een private aansprakelijkheid (in het bedrijfsleven)
◯ Een publieke aansprakelijkheid (bij de overheid)
◯ Een collectieve aansprakelijkheid (zowel in de private sector als in de publieke sector)
◯ En anders, namelijk:

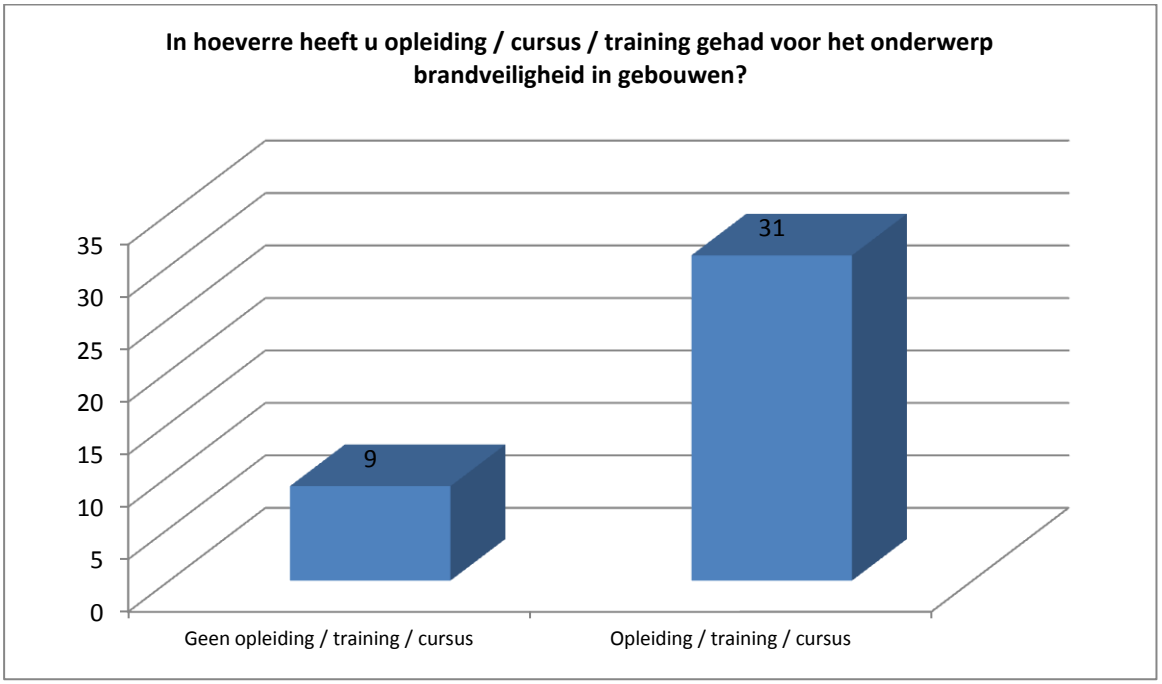
26) Wanneer de zorg voor brandveiligheid in de toekomst in de markt komt te liggen, wat zijn dan uw verwachtingen ten aanzien van onderstaande stellingen:			
Dat de markt zijn verantwoordelijkheid neemt ten aanzien van brandveiligheid in gebouwen?			
◯ Wordt aanzienlijk minder	◯ Wordt minder	◯ Wordt beter	◯ Wordt aanzienlijk beter
De innovatie van de benaderingen tot brandveiligheid in gebouwen?			
◯ Wordt aanzienlijk minder	◯ Wordt minder	◯ Wordt beter	◯ Wordt aanzienlijk beter
De kwaliteit en daarmee het niveau van brandveiligheid in gebouwen?			
◯ Wordt aanzienlijk minder	◯ Wordt minder	◯ Wordt beter	◯ Wordt aanzienlijk beter
De aansprakelijkheid onder betrokken actoren in geval van gebreken?			
◯ Wordt aanzienlijk minder	◯ Wordt minder	◯ Wordt beter	◯ Wordt aanzienlijk beter

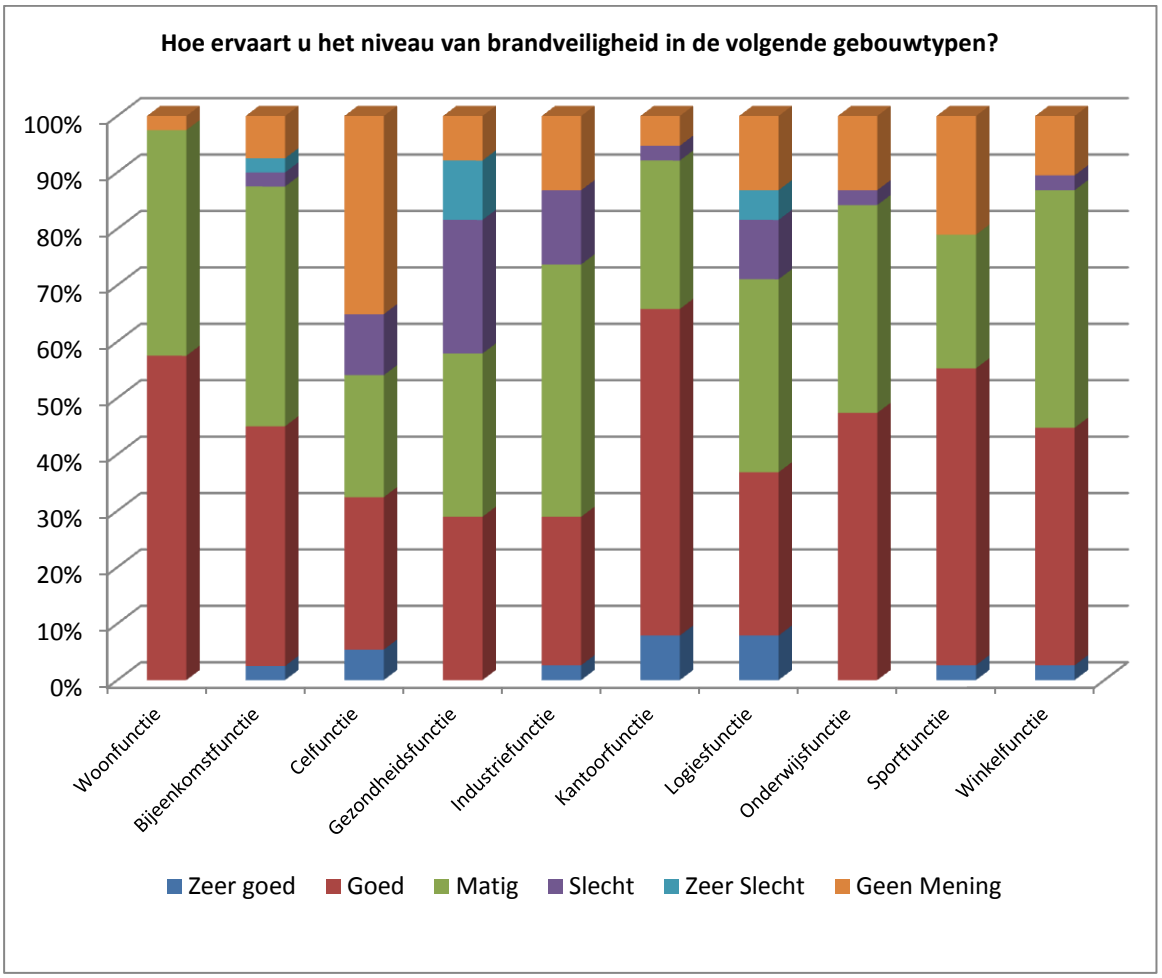
11.3 Survey Charts

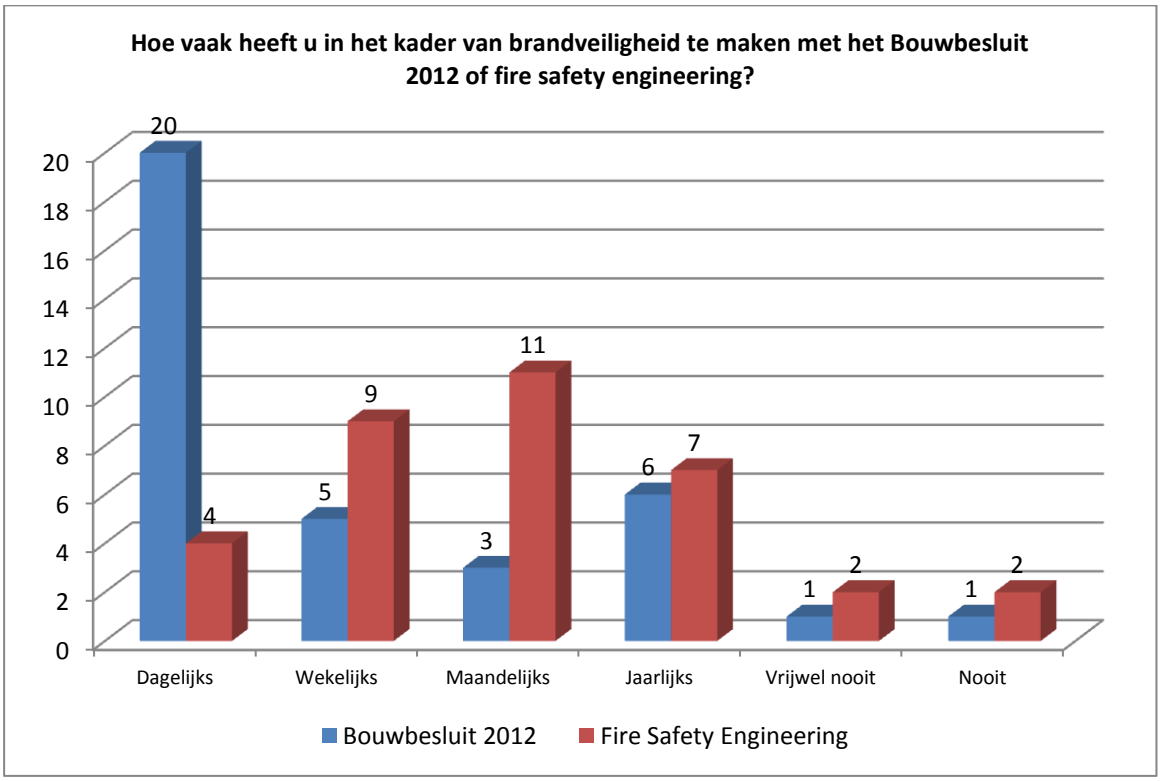


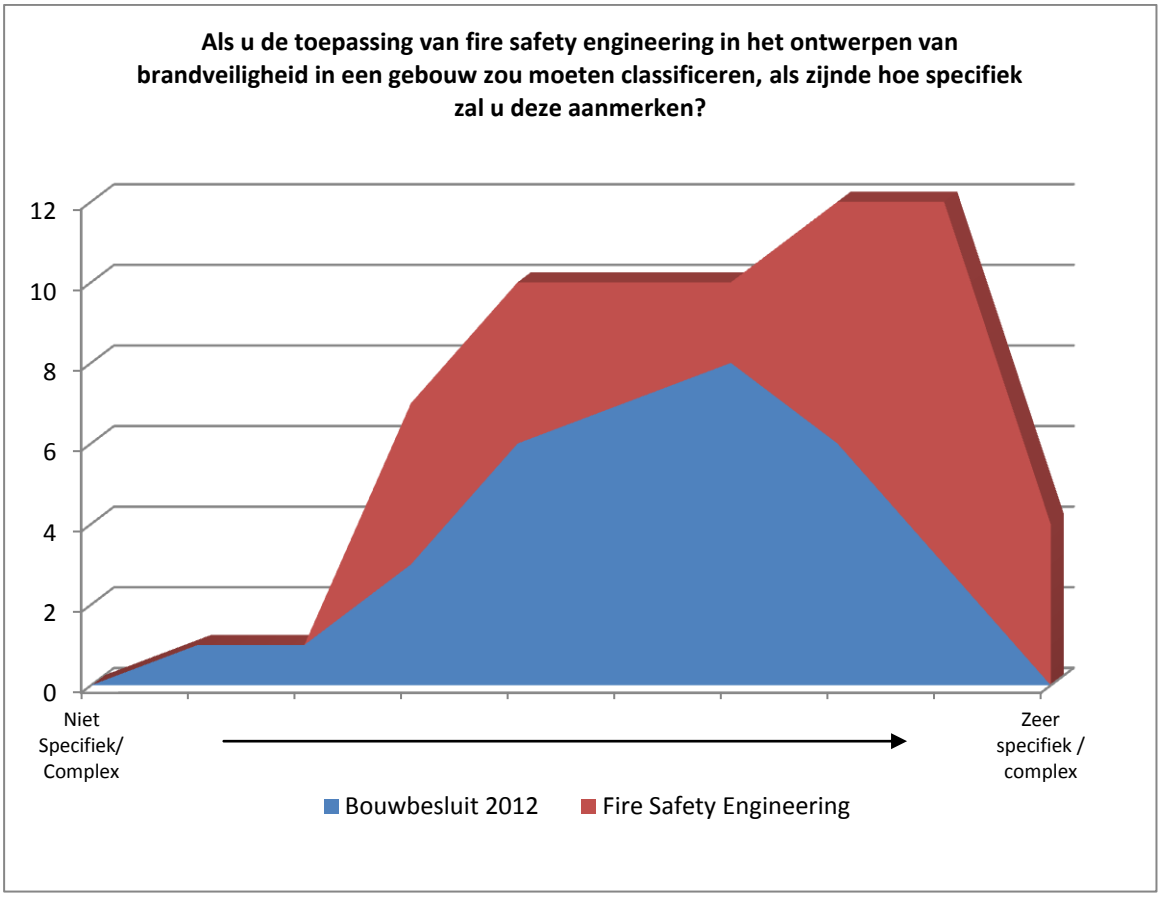


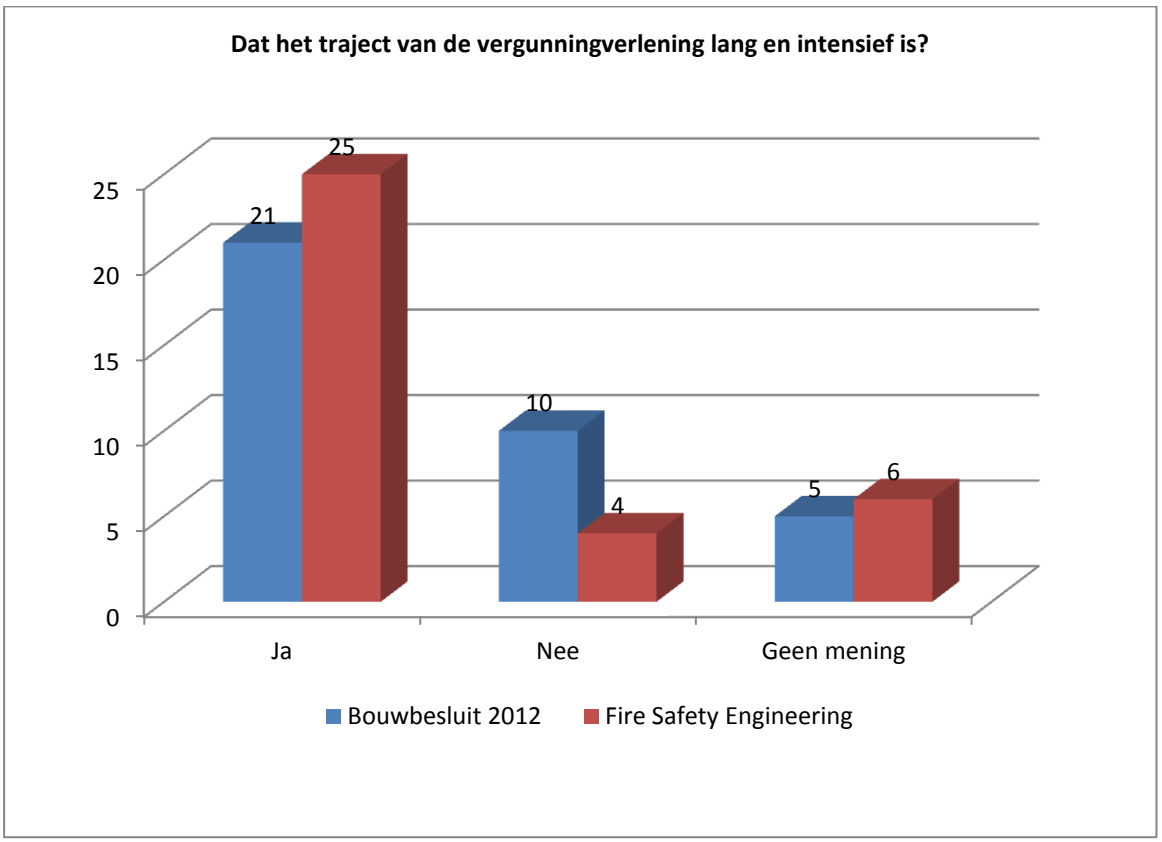

Hoe vaak heeft u te maken met het aspect brandveiligheid in de vergunningverlening van gebouwen gedurende uw normale werkzaamheden?
14
6
7
4
3
6
0
2
4
6
8
10
12
14
Dagelijks
Wekelijks
Maandelijks
Jaarlijks
Vrijwel nooit
Nooit

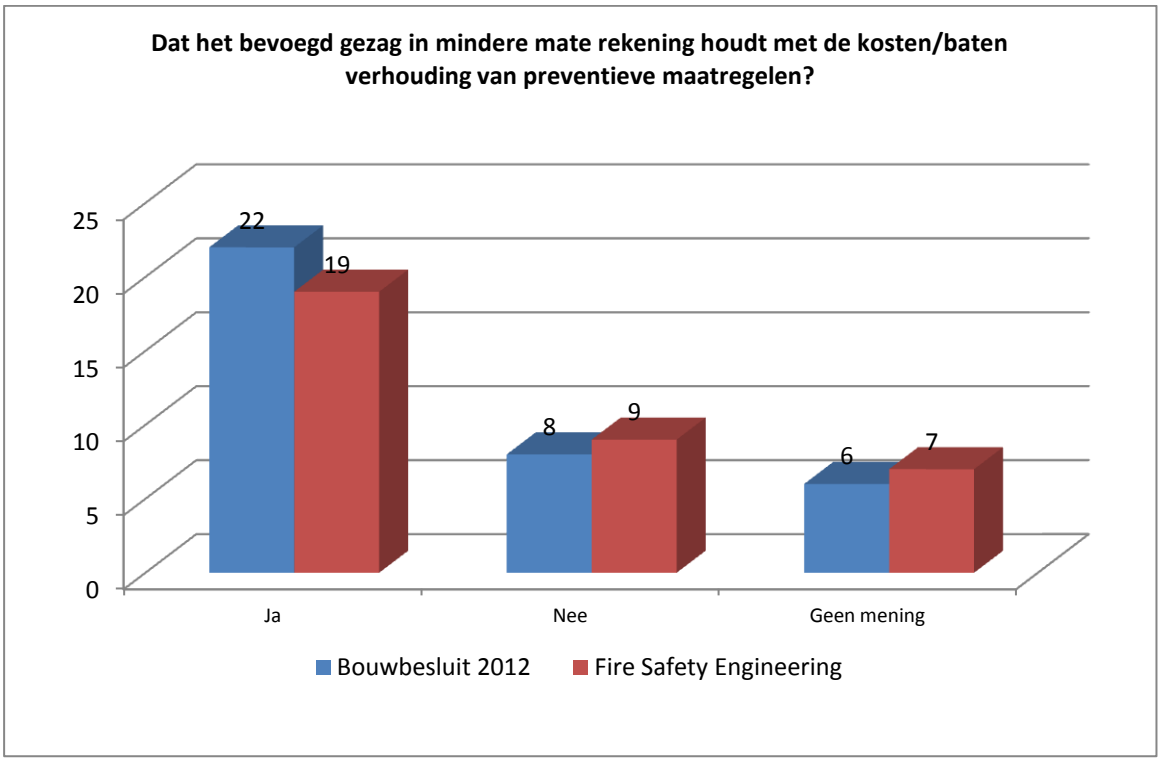

In hoeverre heeft u opleiding / cursus / training gehad voor het onderwerp brandveiligheid in gebouwen?
9
31
0
5
10
15
20
25
30
35
Geen opleiding / training / cursus
Opleiding / training / cursus

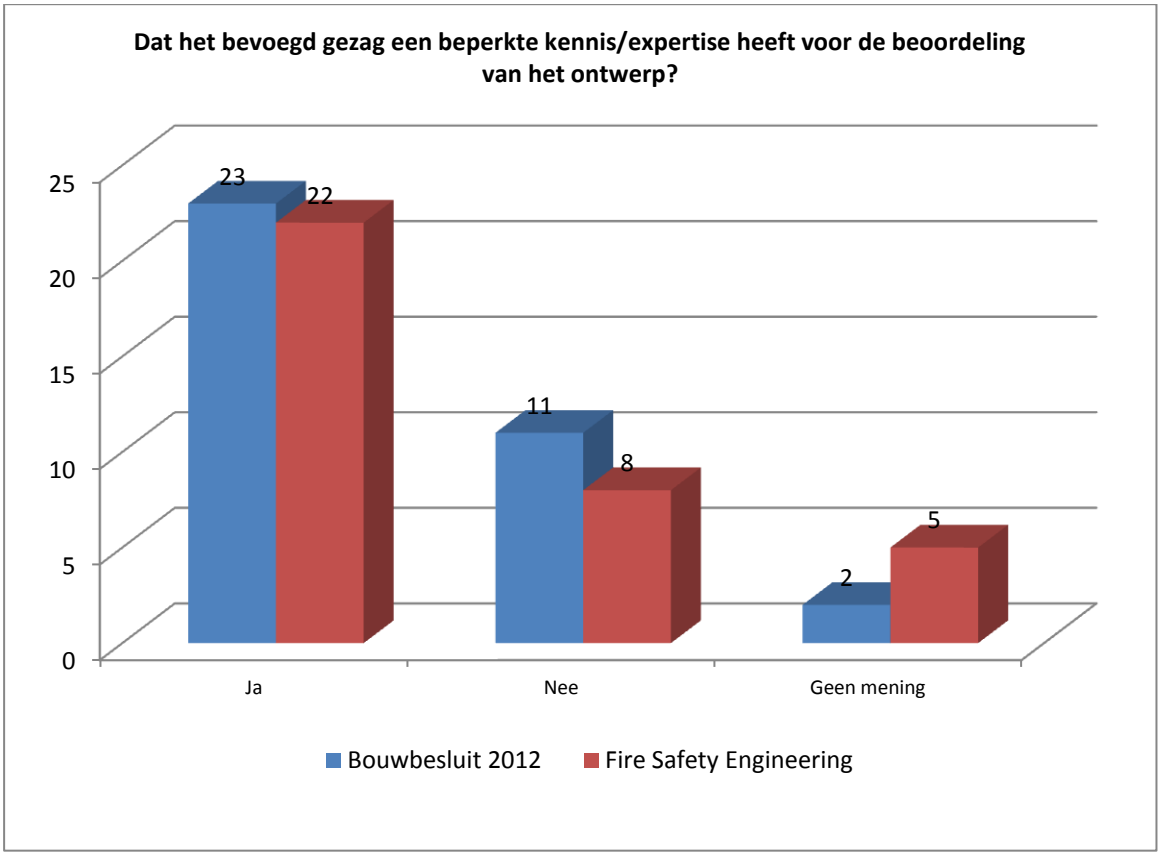

Hoe ervaart u het niveau van brandveiligheid in de volgende gebouwtypen?
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Woonfunctie
Bijeenkomstfunctie
Celfunctie
Gezondheidsfunctie
Industriefunctie
Kantoorfunctie
Logiesfunctie
Onderwijsfunctie
Sportfunctie
Winkelfunctie
Zeer goed
Goed
Matig
Slecht
Zeer Slecht
Geen Mening

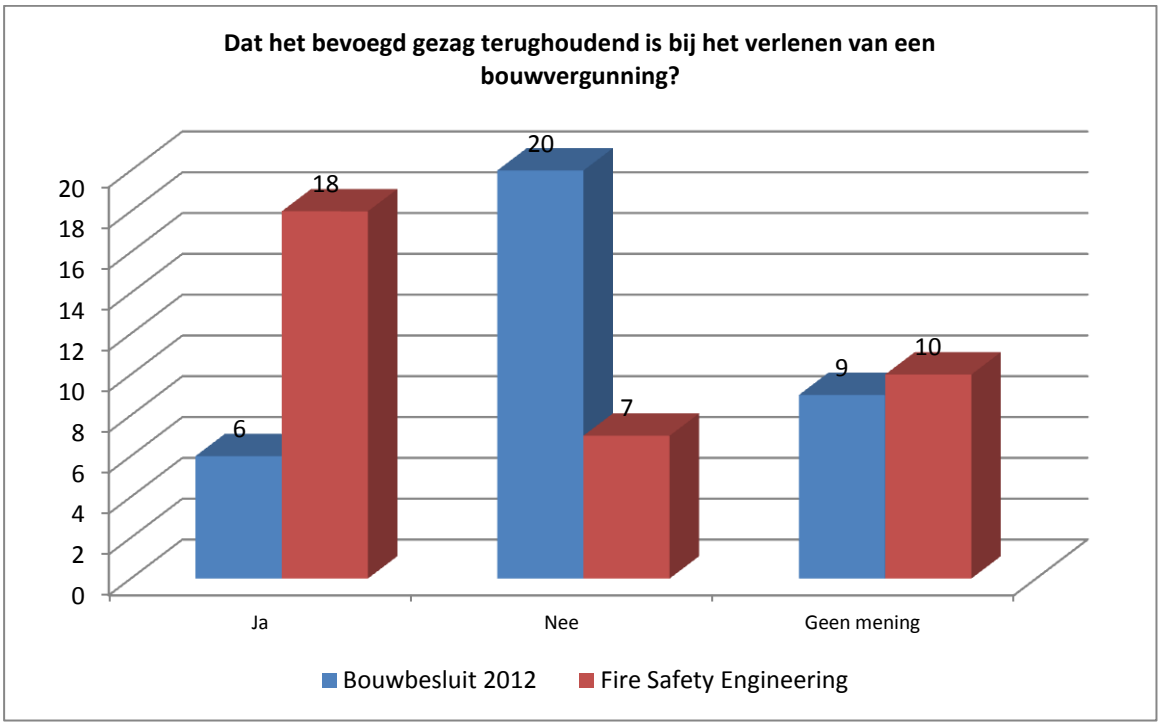

Hoe vaak heeft u in het kader van brandveiligheid te maken met het Bouwbesluit 2012 of fire safety engineering?
20
18
16
14
12
10
8
6
4
2
0
20
4
5
9
3
11
6
7
1
2
1
2
Dagelijks
Wekelijks
Maandelijks
Jaarlijks
Vrijwel nooit
Nooit
Bouwbesluit 2012
Fire Safety Engineering

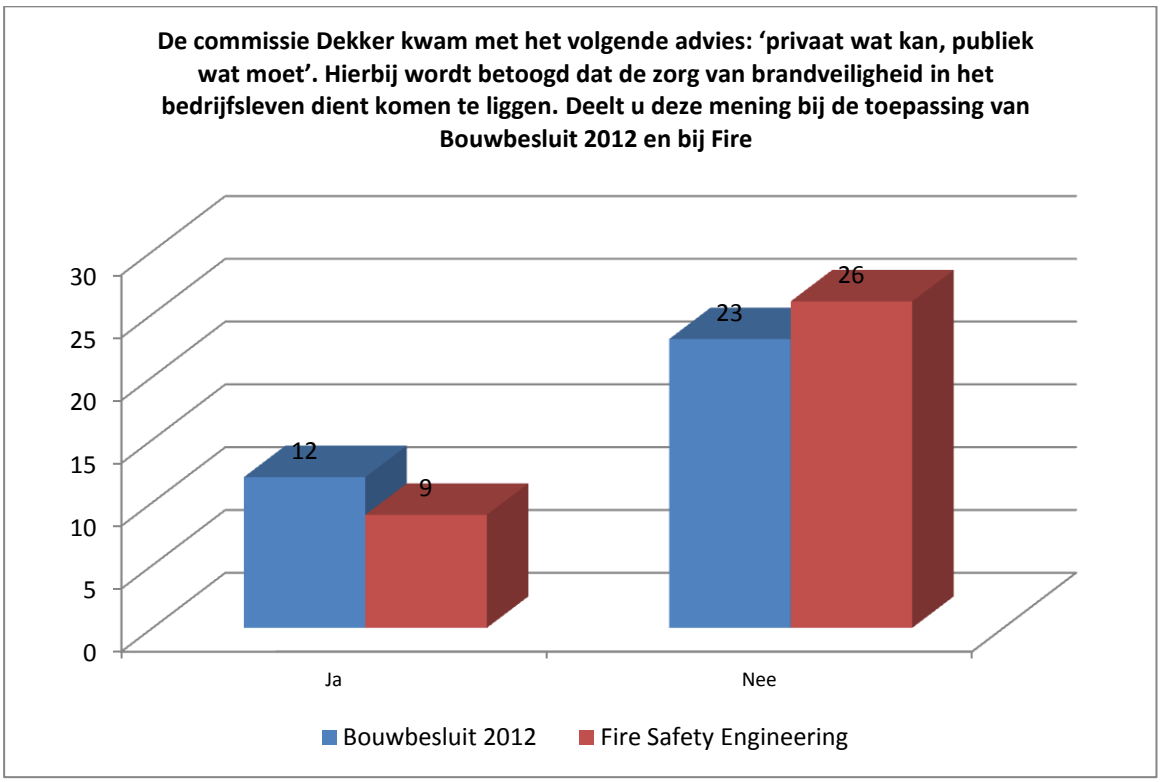

Als u de toepassing van fire safety engineering in het ontwerpen van brandveiligheid in een gebouw zou moeten classificeren, als zijnde hoe specifiek zal u deze aanmerken?
12
10
8
6
4
2
0
Niet Specifiek/ Complex
Zeer specifiek / complex
Bouwbesluit 2012
Fire Safety Engineering


Dat het traject van de vergunningverlening lang en intensief is?
25
20
15
10
5
0
21
25
10
4
5
6
Ja
Nee
Geen mening
Bouwbesluit 2012
Fire Safety Engineering

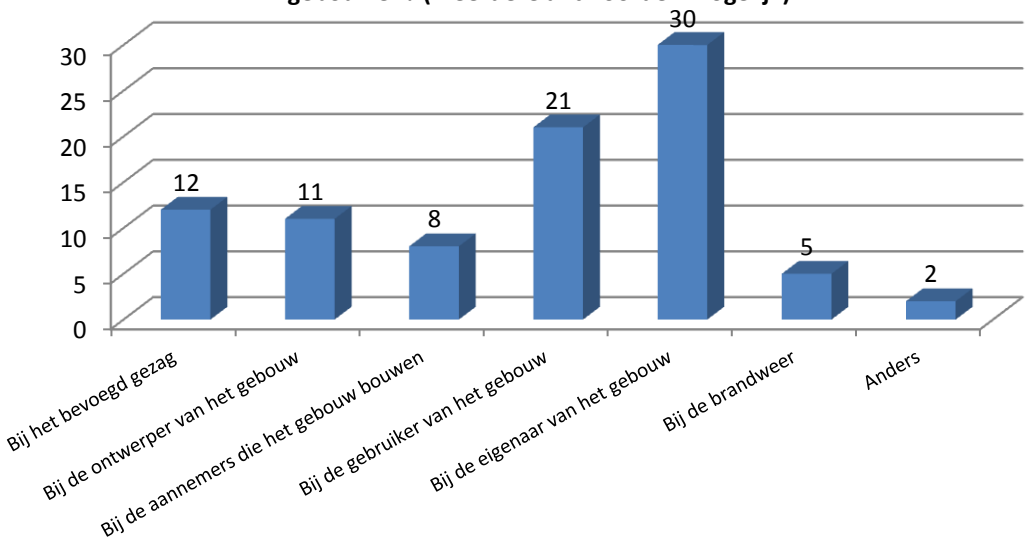

Dat het bevoegd gezag in mindere mate rekening houdt met de kosten/baten verhouding van preventieve maatregelen?
25
20
15
10
5
0
22
19
8
9
6
7
Ja
Nee
Geen mening
Bouwbesluit 2012
Fire Safety Engineering


Dat het bevoegd gezag een beperkte kennis/expertise heeft voor de beoordeling van het ontwerp?
25
20
15
10
5
0
23
22
11
8
2
5
Ja
Nee
Geen mening
Bouwbesluit 2012
Fire Safety Engineering

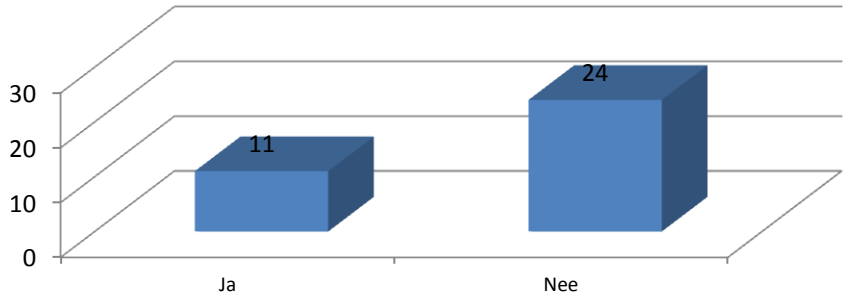

Dat het bevoegd gezag terughoudend is bij het verlenen van een bouwvergunning?
20
18
16
14
12
10
8
6
4
2
0
6
18
20
7
9
10
Ja
Nee
Geen mening
Bouwbesluit 2012
Fire Safety Engineering

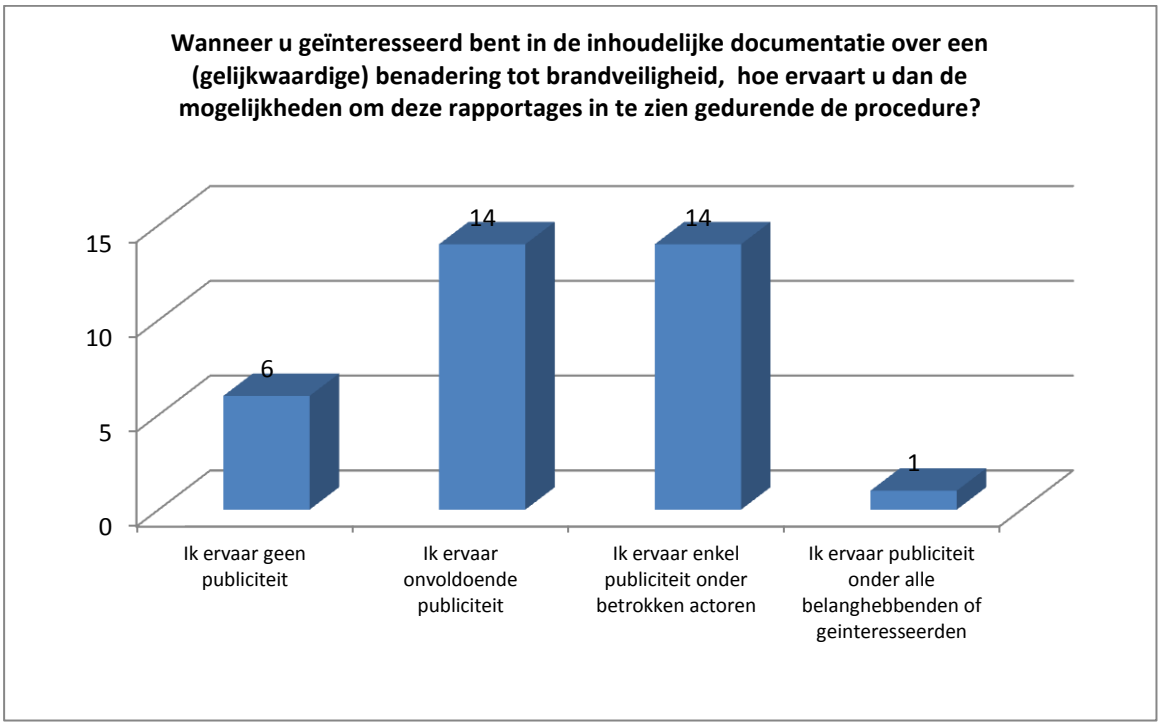

De commissie Dekker kwam met het volgende advies: 'privaat wat kan, publiek wat moet'. Hierbij wordt betoogd dat de zorg van brandveiligheid in het bedrijfsleven dient komen te liggen. Deelt u deze mening bij de toepassing van Bouwbesluit 2012 en bij Fire
30
25
20
15
10
5
0
12
9
23
26
Ja
Nee
Bouwbesluit 2012
Fire Safety Engineering

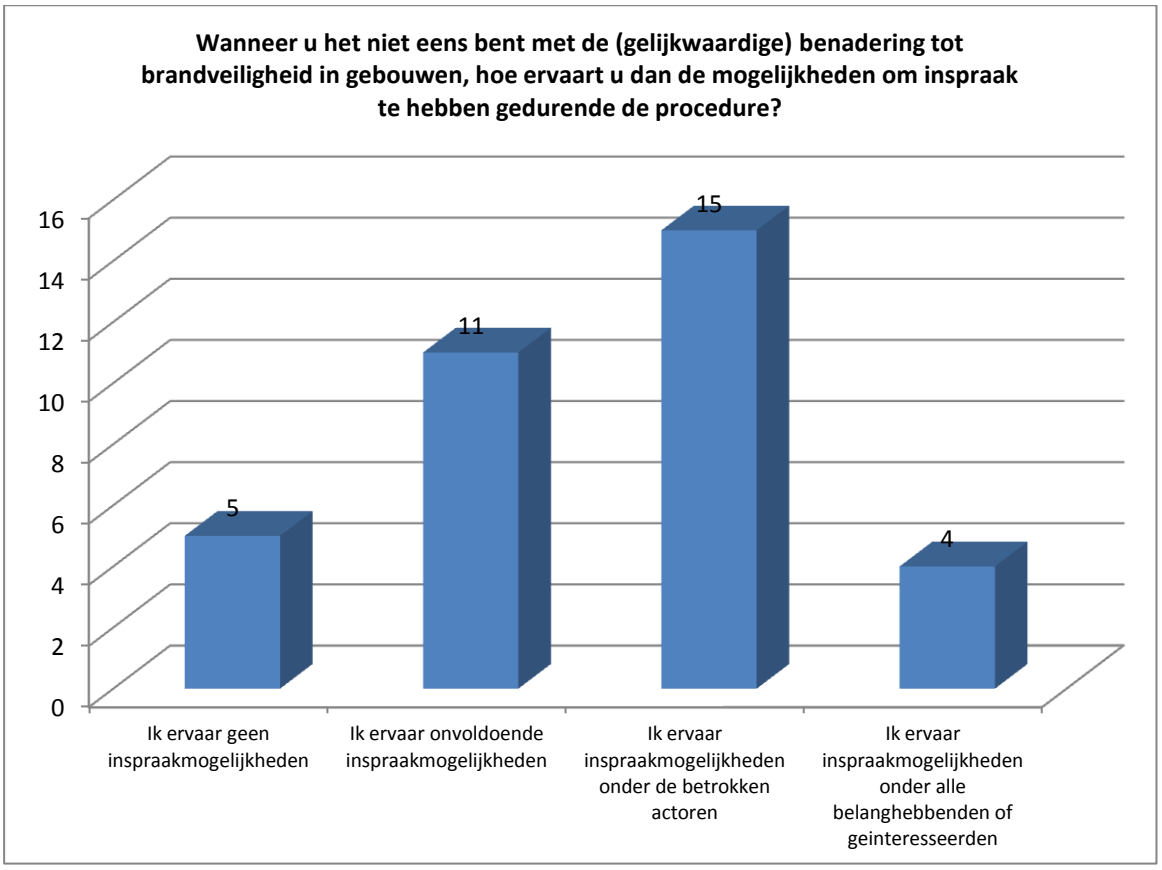
Bij wie ligt volgens u de primaire eindverantwoordelijkheid voor brandveiligheid in gebouwen? (meerdere antwoorden mogelijk)

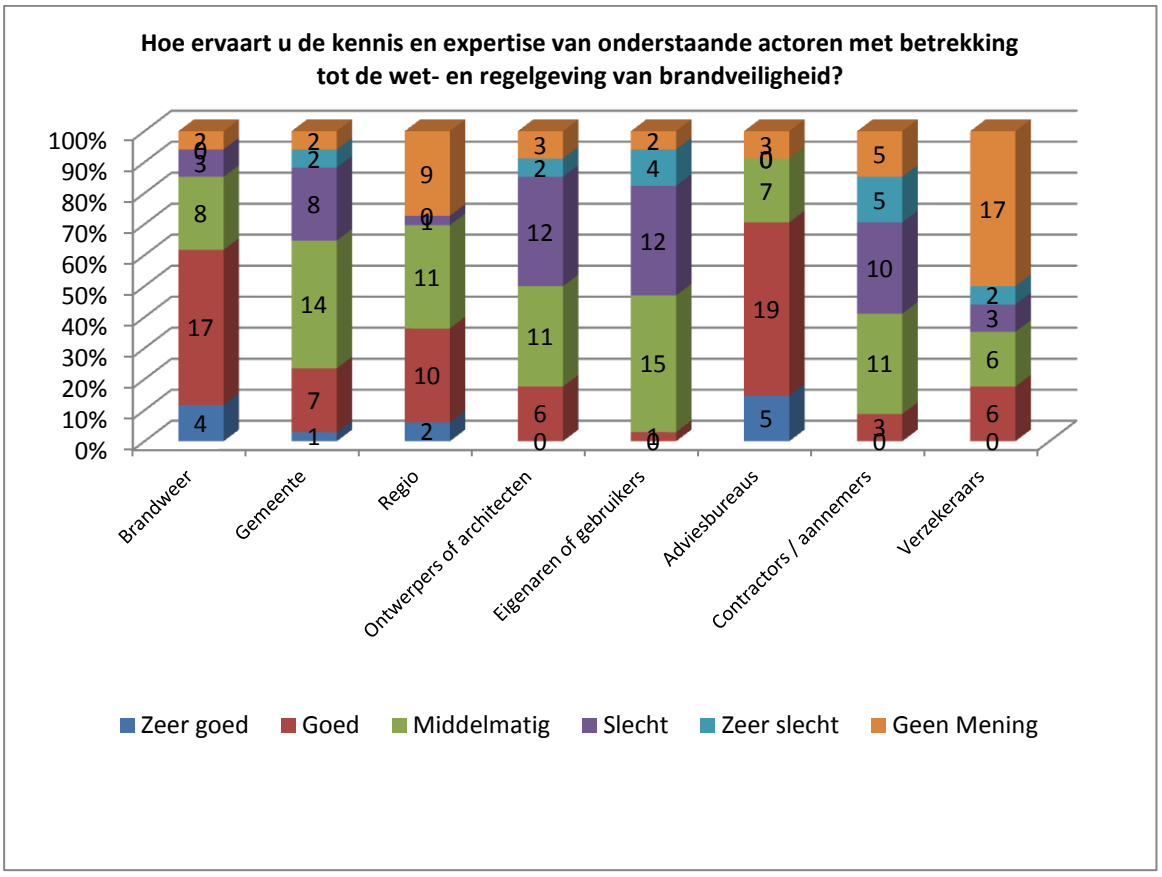


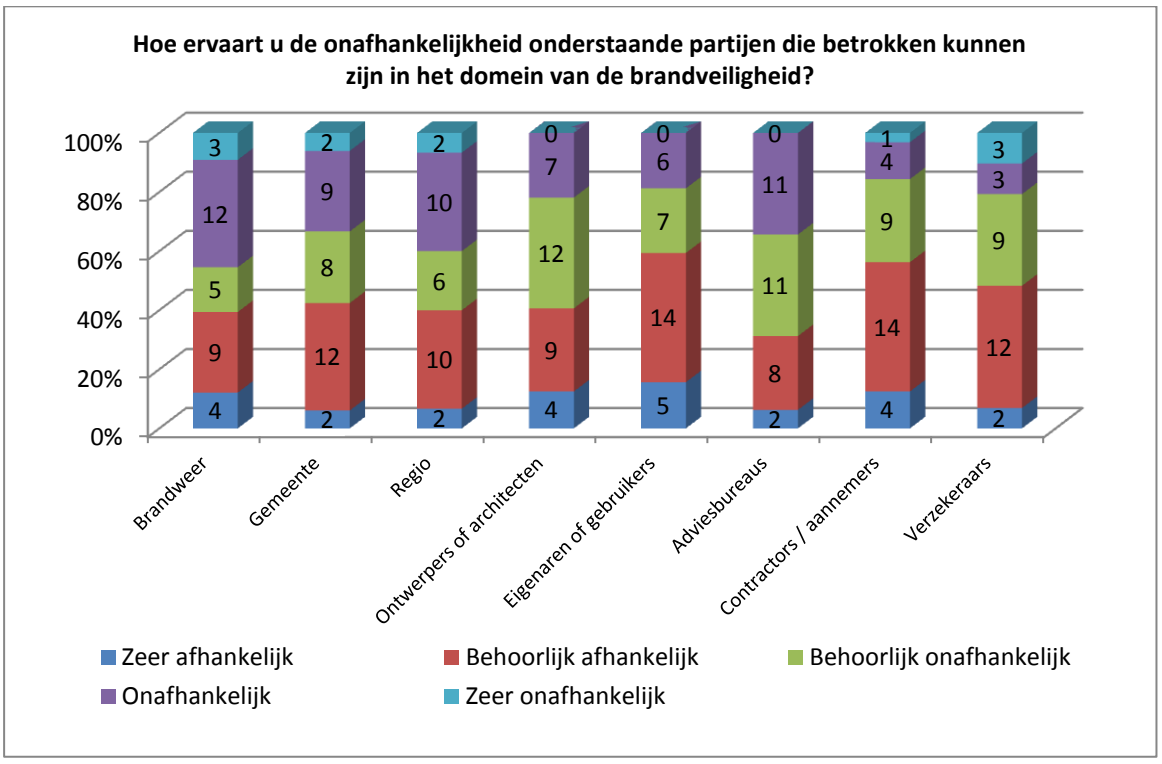
Volgens de wet- en regelgeving is de gebruiker of eigenaar van een gebouw ten alle tijden verantwoordelijk voor brandveiligheid in haar gebouw. Communiceert de overheid deze verantwoordelijkheid volgens u duidelijk onder desbetreffende personen?



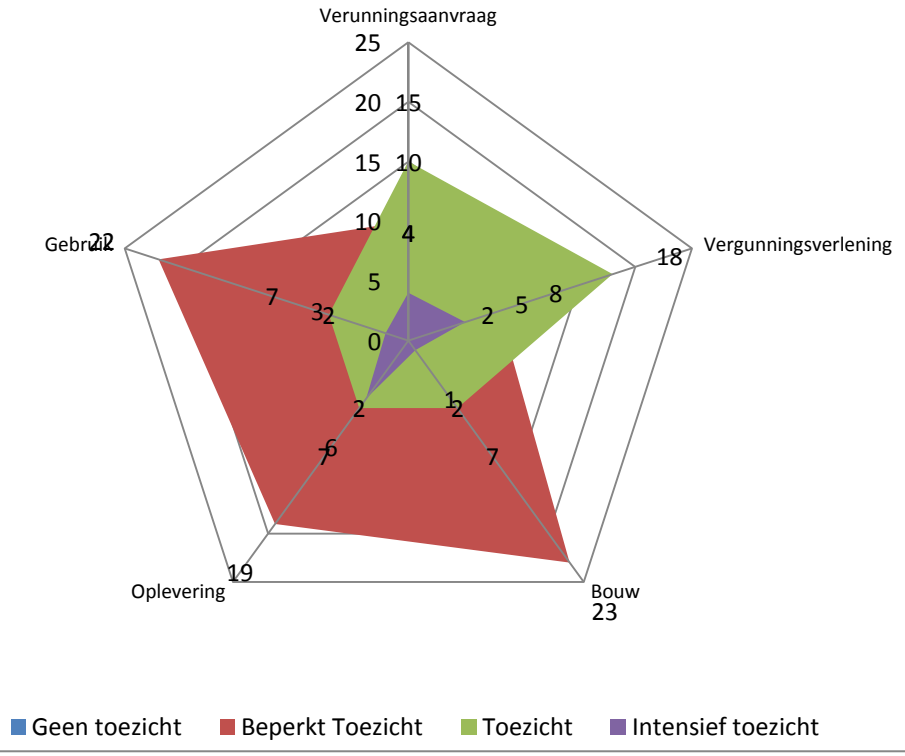

Wanneer u geïnteresseerd bent in de inhoudelijke documentatie over een (gelijkwaardige) benadering tot brandveiligheid, hoe ervaart u dan de mogelijkheden om deze rapportages in te zien gedurende de procedure?
15
10
5
0
6
14
14
1
Ik ervaar geen publiciteit
Ik ervaar onvoldoende publiciteit
Ik ervaar enkel publiciteit onder betrokken actoren
Ik ervaar publiciteit onder alle belanghebbenden of geinteresseerden


Wanneer u het niet eens bent met de (gelijkwaardige) benadering tot brandveiligheid in gebouwen, hoe ervaart u dan de mogelijkheden om inspraak te hebben gedurende de procedure?
16
14
12
10
8
6
4
2
0
5
11
15
4
Ik ervaar geen inspraakmogelijkheden
Ik ervaar onvoldoende inspraakmogelijkheden
Ik ervaar inspraakmogelijkheden onder de betrokken actoren
Ik ervaar inspraakmogelijkheden onder alle belanghebbenden of geinteresseerden

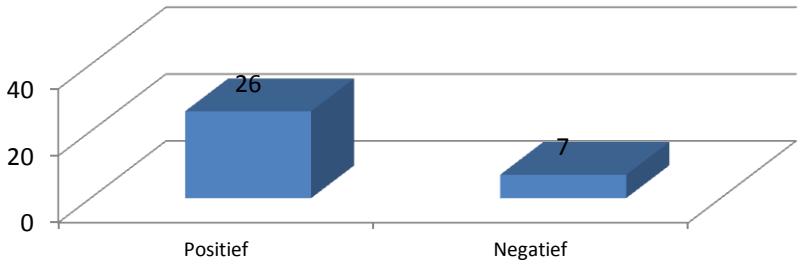

Hoe ervaart u de kennis en expertise van onderstaande actoren met betrekking tot de wet- en regelgeving van brandveiligheid?
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Brandweer
Gemeente
Regio
Ontwerpers of architecten
Eigenaren of gebruikers
Adviesbureaus
Contractors / aannemers
Verzekeraars
Zeer goed
Goed
Middelmatig
Slecht
Zeer slecht
Geen Mening


Hoe ervaart u de onafhankelijkheid onderstaande partijen die betrokken kunnen zijn in het domein van de brandveiligheid?
100%
80%
60%
40%
20%
0%
Brandweer
Gemeente
Regio
Ontwerpers of architecten
Eigenaren of gebruikers
Adviesbureaus
Contractors / aannemers
Verzekeraars
Zeer afhankelijk
Behoorlijk afhankelijk
Behoorlijk onafhankelijk
Onafhankelijk
Zeer onafhankelijk

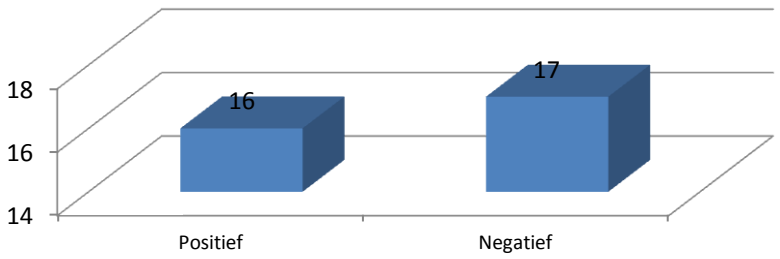
In hoeverre ervaart u het bestuurlijk toezicht van de overheid op het aspect brandveiligheid gedurende de vergunningprocedure en gedurende de bouw?



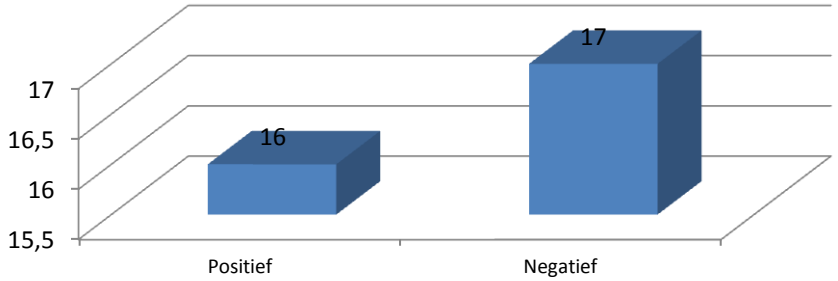
Verwacht u dat de centralisatie van gemeentelijke diensten naar een omgevingsdienst een positieve of negatieve waarde geeft aan het kennisniveau van het bevoegd gezag?



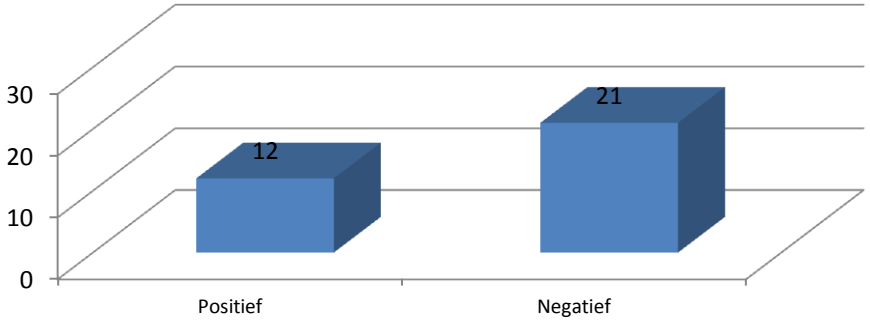
Verwacht u dat de capaciteit naar aanleiding van de centralisatie voldoende is om alle vergunningen even zorgvuldig te behandelen?



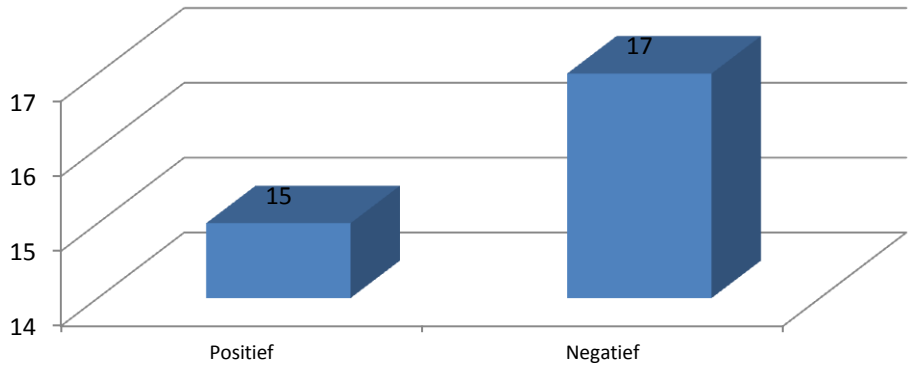
Op dit moment vindt er een centralisatie plaats van gemeentelijke diensten ... Verwacht u dat de centralisatie een positief of negatief effect heeft op de kwaliteit en intensiteit van het bouw- en woningtoezicht? (Monitoren)

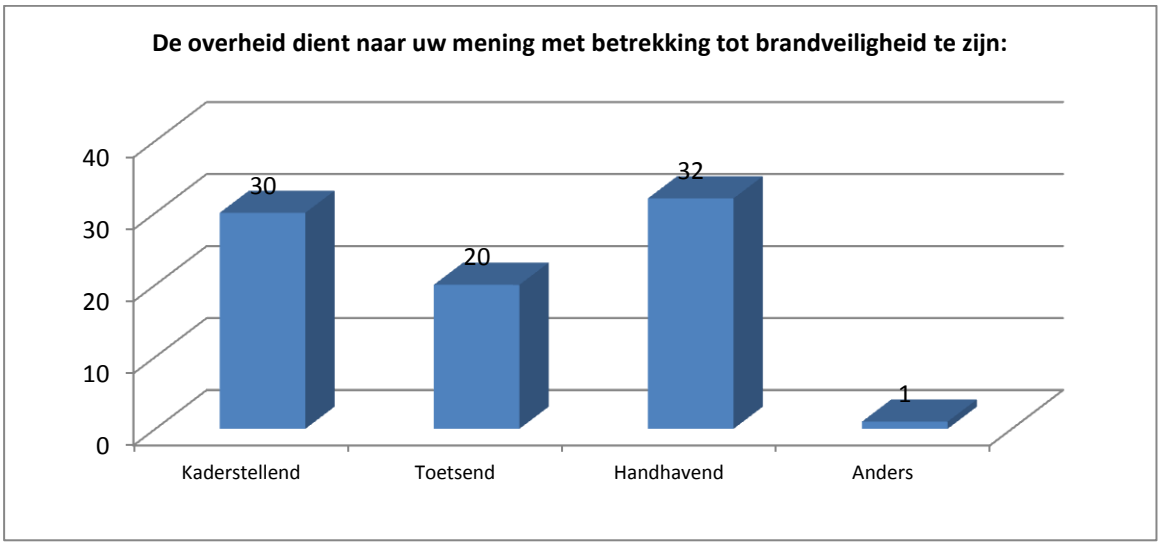


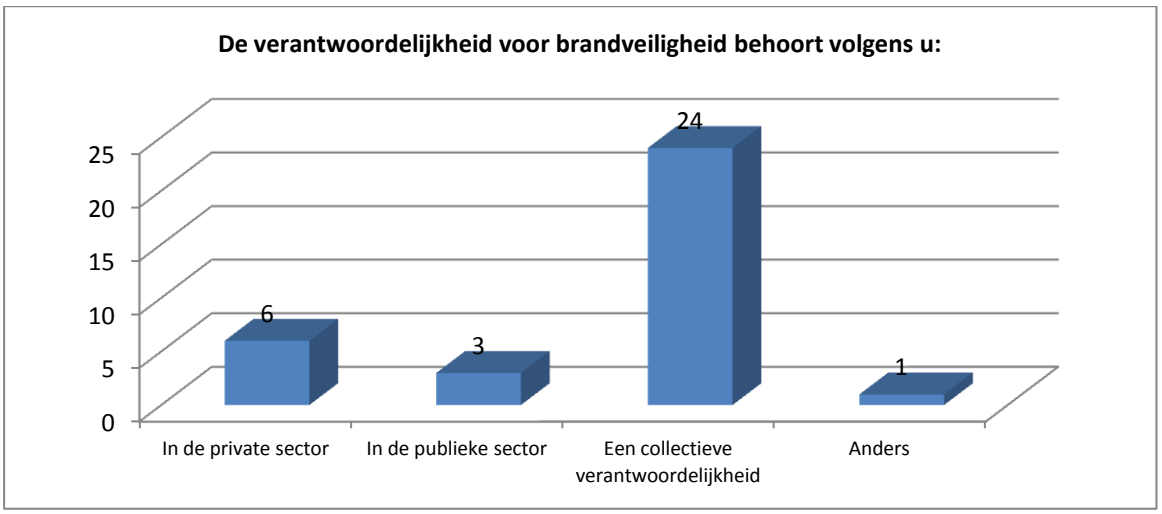
Verwacht u dat de centralisatie een positief of negatief effect heeft op het aspect handhaving van overtredingen bij het bouw- en woningtoezicht?)

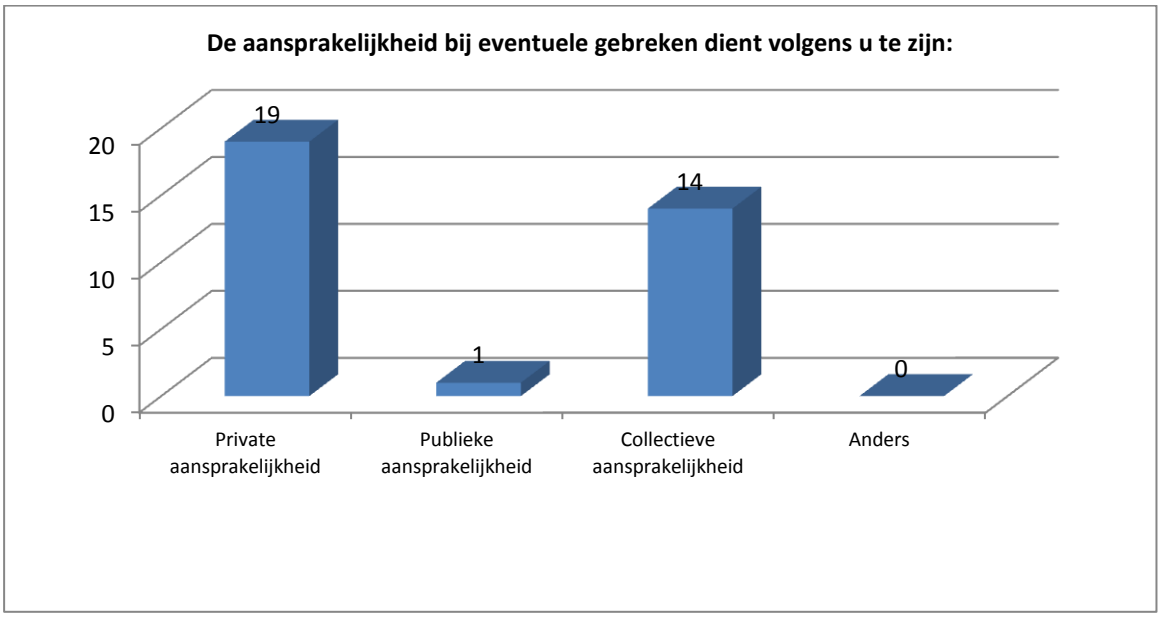


Verwacht u dat de centralisatie een positief of negatief effect heeft op de gemiddelde brandveiligheid van gebouwen?

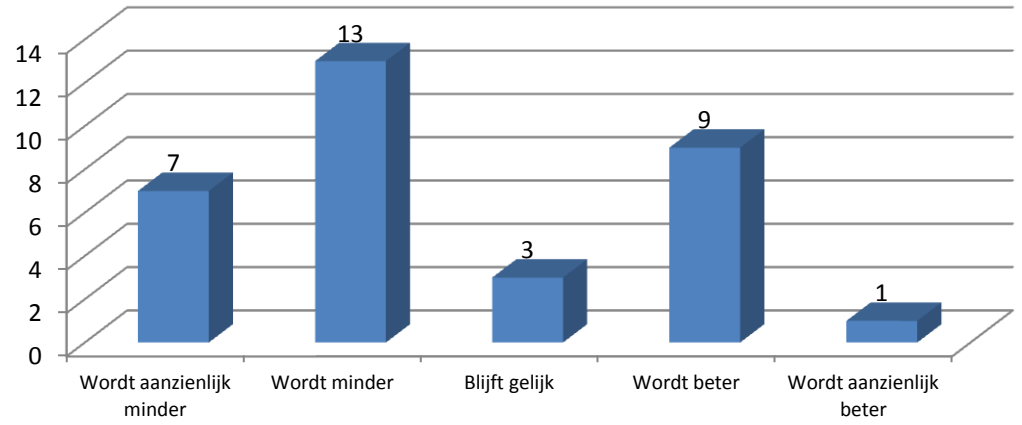



De overheid dient naar uw mening met betrekking tot brandveiligheid te zijn:
40
30
20
10
0
30
20
32
1
Kaderstellend
Toetsend
Handhavend
Anders

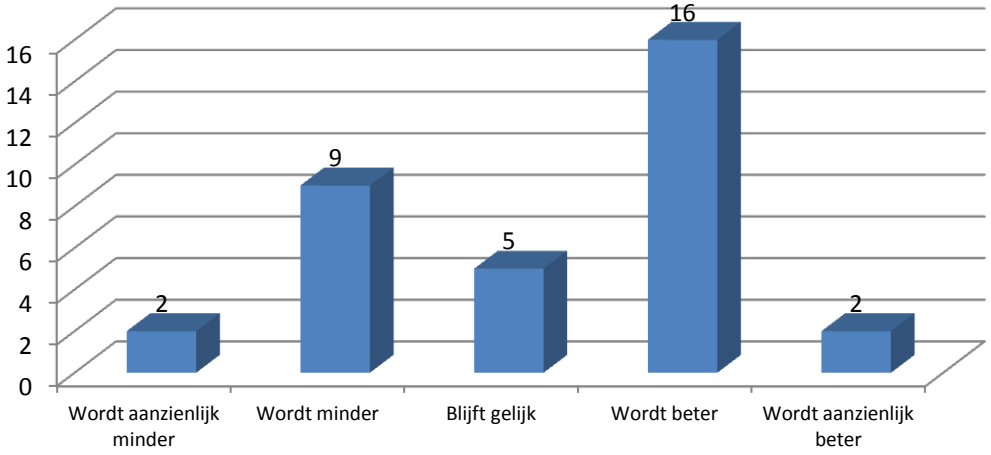

De verantwoordelijkheid voor brandveiligheid behoort volgens u:
25
20
15
10
5
0
6
3
24
1
In de private sector
In de publieke sector
Een collectieve verantwoordelijkheid
Anders


De aansprakelijkheid bij eventuele gebreken dient volgens u te zijn:
20
15
10
5
0
19
1
14
0
Private aansprakelijkheid
Publieke aansprakelijkheid
Collectieve aansprakelijkheid
Anders

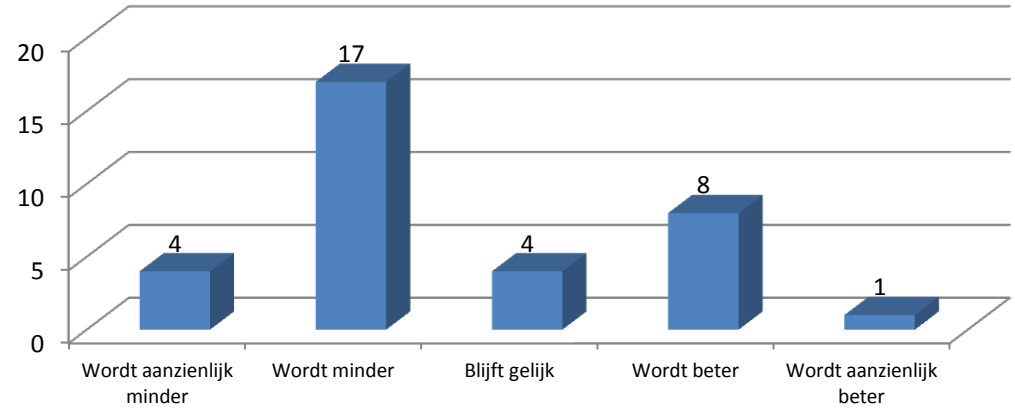
Dat de markt zijn verantwoordelijkheid neemt ten aanzien van brandveiligheid in gebouwen?

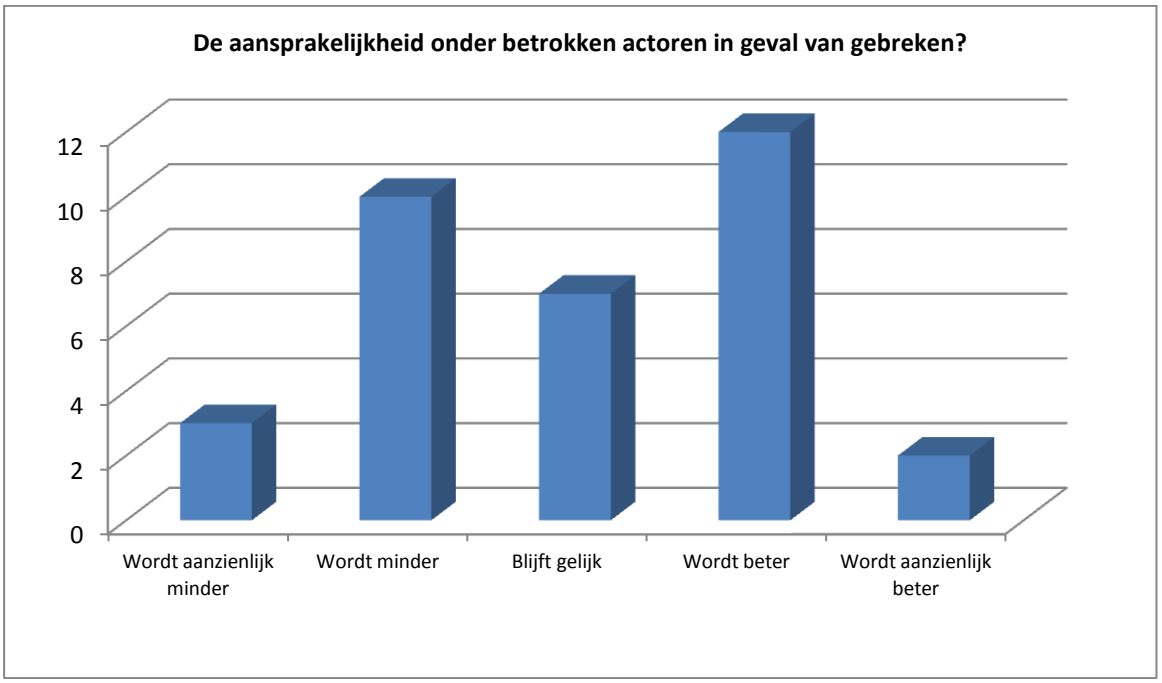


De innovatie van de benaderingen tot brandveiligheid in gebouwen?



De kwaliteit en daarmee het niveau van brandveiligheid in gebouwen?




De aansprakelijkheid onder betrokken actoren in geval van gebreken?
12
10
8
6
4
2
0
Wordt aanzienlijk minder
Wordt minder
Blijft gelijk
Wordt beter
Wordt aanzienlijk beter