



ANNIINA AUTERO

Ambiguity of Performance Management  
in the Fire Safety Policy of Finland



ACADEMIC DISSERTATION

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the board of the School of Management of the University of Tampere,  
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Anniina Autero



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# Abstract

At the same time as uncertainty and vulnerability exist in today's society, requirements for public policies and actions are increasing. This study argues that performance management in governmental agencies and institutions is ambiguous. Shifting goals, incomplete information, time pressure, uncertainty, and volatile conditions are present in public decision maker's agenda. Uncertainty is an overwhelming feature in public management, especially in the rescue services, and in fire safety policy. It is uncertain where and when fires will occur; however, the unfortunate certainty is that they will, and decisions have to be made and actions taken. Concurrently, expectations improving performance in the public sector and in public actions are relatively high.

The government is held responsible in terms of preventing accidents and disasters, and is accountable when taking action and saving lives during emergency situations. However, one-third of all deaths caused by fire in Finland were brought about by human error. Smoking is one of the most common causes of fires leading to human casualties. In most cases, the victims are under the influence of alcohol and are therefore helpless victims of fires. Carelessness and lack of caution have been identified as important contributory factors. In addition, it is widely supposed that fire deaths are a problem relating to social exclusion. For reasons of such an etiology, even the generally good proven performance of fire departments and fire brigades is not enough to ensure a reduction in the number of fire deaths and an improvement in performance.

Gaining an improved performance and increased effectiveness has been a dominant feature in public administrations and public management in recent years. The public management model is based on performance management that aims at measurable results and outcomes in terms of public actions. The performance management model is studied as a cycle, where the identification of policy problems should be, and can be perfectly rational; policy targets are rationally set and policy actions are properly chosen. Given the same model, evaluations of the rationality of policy actions commonly entail accounting and outright measurement.

At the heart of the performance management model lies the "rational actor model." In a rational world, a rational actor would make "optimal" choices in a highly specified and clearly defined environment. However, public decision making purports to be rational, but is constrained by limited cognitive capabilities and incomplete information that limits

rational behavior. Research problems are both – in general and in the particular application of fire safety policy – regarded in the light of what is known as bounded rationality.

The theory of bounded rationality has been elaborated on 1957, when Herbert A. Simon and James G. March developed it. The theory has been applied in different disciplines, for example, in economics. James G. March together with Johan P. Olsen in 1976 developed the theory even further in the context of organizational research and created the garbage can model, involving a complete cycle of choice and the theoretical concept of ambiguity. These theoretical tools are used in this study to scrutinize performance management in terms of fire safety policy.

Performance management is ambiguous and ambiguity affects the coherence of the performance management cycle. How different but intercrossing policies “go together” and mutually support each other is studied through the concept of coherence. Ambiguity illustrates the complexity in organizational decision making, and coherence describes the relationship in organizational decision making between different phases in the performance management cycle, and between different policies.

The fire safety policy and deaths caused by fire in Finland have been chosen as the empirical research subject due to the ambiguous character of this specific policy problem. Target setting in safety policies is ultimately ambiguous. Safety is, at the same time, an overall state of effectiveness and also a target for effectiveness. Safety is usually confronted by operative performance targets. The Government of Finland has set an objective that Finland will be the safest country in Europe in 2015 and fire deaths is one of the measures targeted for improving internal safety. By the end of 2015, the number of fire deaths should be reduced to 50. This objective is 37 deaths less than the average from the 1952–2010 yearly count, and, therefore, can be considered as ambitious. However, the optimal result would be zero, where no one would die in a fire, and without ambitious objectives, the relevant operations to curb deaths will not necessarily develop. Statistical variation, but also changes in society affect the number of fire deaths.

No matter how carefully fire safety policy problems are identified, policy targets are set, policy actions are chosen, and policy measures are evaluated; rescue measures alone do not reduce the number of fire deaths. It is becoming increasingly common to state that many of the actions with respect to the threat from fire deaths should be preventive in nature, and that the implementation, and performance of these measures also require individual choice and responsibility, coherence, and co-operation between several policies, their planners, and the various implementing agencies involved.

Keywords: Decision making, ambiguity, performance management, fire deaths.

# Tiivistelmä

Tutkimuksen mukaan valtionhallinnon tulosjohtaminen on monitulkintaista. Muuttuvat tavoitteet, epätäydellinen informaatio, aikapaineet, epävarmuus ja vaihtuvat olosuhteet ovat julkisjohtajan arkipäivää. Päätöksiä täytyy kuitenkin tehdä ja kantaa niistä vastuu. Julkisjohtajalta odotetaan aikaan saatuja tuloksia ja vaikutuksia. Miten tuloksia sitten saavutetaan ja kenen tuloksellisuudesta lopulta onkaan kysymys? Hätätilanteissa ja onnettomuuksissa valtionjohto on vastuussa toimenpiteistä, ihmishenkien pelastamisesta ja onnettomuuksien ehkäisemisestä. Kuitenkin samaan aikaan kolmannes tulipaloista, joissa ihmishenkiä menetettiin, aiheutui inhimillisestä virheestä.

Tutkimuksessa on tarkasteltu palokuolemia vuosina 2007–2010, jolloin palokuolemia tapahtui 379. Tupakointi oli palokuolematapauksissa tulipalojen yleisin syytymissy. Useimmista tapauksista uhrin olivat myös alkoholin vaikutuksen alaisena ja heidän toimintakykynsä oli alentunut. Varomattomuus ja huolimattomuus olivat tulipalojen syytymisen kannalta vaikuttavia tekijöitä. Palokuolemiin liittyy myös syrjäytymiskehitystä. Näiden tekijöiden vuoksi pelastustoimella on vain rajalliset mahdollisuuden vaikuttaa palokuolemien vähenemiseen ja sitä kautta saavuttaa tuloksellisuutta ja vaikuttavuutta.

Tuloksellisuudesta ja vaikuttavuudesta on kuitenkin tullut eräs keskeisimmistä suomalaisen julkishallinnon toiminnan päämääristä. Tähän on vaikuttanut jo 80-luvun lopulta syntynyt uusi julkisjohtaminen (New Public Management), jonka tarkoituksena oli aikaansaada käytetyillä verovarilla konkreettisia ja vastikkeensa arvoisia tuloksia (*value for money*).

Uutta julkisjohtamista on toimeenpantu tulosjohtamisen ja tulosohjauksen keinoin suomalaisessa keskushallinnossa. Tulosjohtamisen myötä hallinnon toiminnalle on asetettu tulossopimuksin sovitut tulostavoitteet, joiden toteutumista mitataan, seurataan ja arvioidaan. Tulostavoitteita on asetettu niin organisaatioille, yksiköille kuin yksittäisille virkamiehille. Pyrkimyksenä on ollut saavuttaa ja tuoda esille tuloksia aina yksittäisistä toimijoista, organisaation tasoihin tuloksiin ja lopulta laajempiin toimintapolitiikkatasoihin vaikutuksiin (Bouckaert & Peters, 2000; Bouckaert & Halligan, 2008).

Pyrkimyksistä huolimatta tuloksellisuuden ja yhteiskunnallisen vaikuttavuuden osoittaminen on kuitenkin osoittautunut vaikeaksi ja tulosjohtamisjärjestelmään on sisältynyt epätäydellisyyksiä, jotka ovat vaikuttaneet sen soveltamiseen ja aiheuttaneet tyytymättömyyttä etenkin virkamieskunnassa.

Päätöksenteon näkökulmasta tähän sisältyy monitulkintaisuutta (*ambiguity*). Ei ole lainkaan selvää, miten tulokset ja vaikutukset on saatu aikaan. Yhteiskunnallisia ongelmia, joihin pyritään vaikuttamaan politiikkatoimenpiteillä – politiikkaongelmia – ei välttämättä tunneta. Politiikkaongelmat ovat monitulkintaisia ja sotkuisia ja niitä on lähes mahdoton ratkaista (Ney, 2009). Täydellinen optimointi politiikkaongelmien ratkaisuissa ja päätöksenteossa ei ole mahdollista. Rajoitetun rationaalisuuden mukaan, jota sovellan tutkimuksessa, päätöksenteko on etsintäprosessi, jonka kautta etsitään tyydyttävää päätösvaihtoehtoa. Etsintäprosessi jatkuu, kunnes tyydyttävä vaihtoehto löytyy. (Simon, 1957; March & Olsen, 1979; Selten, 2002.)

Tulostavoitteiden asettaminen vaatisi kykyä tuntea tulevaisuutta ja seurauksia, joita tavoitteiden asettamisella olisi tulevaisuudessa. Tulosjohtamisjärjestelmän osat (politiikkaongelmien määrittely, politiikkatoimien valinta, tavoitteiden asettaminen ja tulosten arviointi) muistuttavat täydellisen rationaalisuuden mallia, mutta toteutuakseen täydellinen rationaalisuus vaatisi rajattoman kapasiteetin ratkaista politiikkaongelmia, valita sopivia toimenpiteitä ja arvioida aikaansaatuja tuloksia. (Autero, 2009, 111.)

Tarkastelen näitä epätäydellisyyksiä tässä tutkimuksessa hyödyntämällä monitulkintaisuuden käsitettä ja rajoitetun rationaalisuuden viitekehystä, joita ovat kehittäneet Stanfordin yliopiston professori James G. March, joka oli Herbert A. Simonin tohtorioppilas 1950-luvulla Carnegie Institute of Technology -yliopistossa (nyk. Carnegie Mellon -yliopisto) (Vakkuri, 2009, 21). Päätöksenteossa pyritään rationaalisuuteen, mutta sitä rajoittavat kognitiiviset rajoitteet sekä epätäydellinen informaatio (March & Simon, 1959; March, 1988).

Pelastustoimen osalta yksi keskeinen tulosjohtamisjärjestelmään sisältyvä epätäydellisyys on se, että sisäasiainministeriön pelastusosasto johtaa ja valvoo pelastustoimintaa. Alueelliset pelastuslaitokset kuitenkin hoitavat varsinaiset pelastustoimen tehtävät alueillaan ja kunnat rahoittavat pelastuslaitosten toiminnan. Siten pelastusosastolla on rajalliset mahdollisuudet vaikuttaa pelastustoimen tuloksellisuuteen ja vaikuttavuuteen, koska varsinainen pelastustyö ja sen resursointi tapahtuu muualla. Pelastustoimi onkin todennut, ettei se voi toteuttaa tulosjohtamisjärjestelmää hallinnonalallaan, koska sen soveltaminen on osoittautunut hankalaksi. Sisäasiainministeriön pelastusosasto solmii kuitenkin tulossopimukset alaisensa hallinnon kanssa ja toteuttaa siten tulosjohtamisjärjestelmän mukaisia menettelyjä.

Suomalainen tulosohjausjärjestelmä, hallitusohjelma ja hallituksen politiikkaohjelmat muistuttavat kaikki täydellisen rationaalisuuden mallia, jossa pyritään tunnistamaan politiikkaongelmat, valitsemaan politiikkatoimenpiteet, asettamaan tulostavoitteet ja arvioimaan tulosten aikaansaannoksia.

Täydellinen rationaalisuus vaatisi toteutuakseen kuitenkin rajattoman kapasiteetin ratkaista politiikkaongelmia ja valita sopivia politiikkatoimenpiteitä sekä arvioida aikaansaatuja tuloksia. Päätöksentekijä kohtaa kuitenkin rajoitteita päätöksenteon toimintaympäristössään. Politiikkaongelmia ei välttämättä tunnisteta, politiikkatoimenpiteiden

keskinäisvaikutuksia ei tiedetä, politiikkatavoitteita ei osata asettaa optimaalisesti, eikä tulosten arviointikaan ole täydellisen rationaalista tulosten ja vaikutusten tarkastelua. Tutkimuksessa tarkastellaan mitä rajoitteita päätöksentekijä toimintaympäristössään kohtaa ja miten päätöksentekijä tässä ympäristössä päätyy tekemiinsä päätöksiin. Näitä kysymyksiä tarkastellaan tutkimuksen teoreettisen viitekehyksen ja palokuolematapausten avulla.

Tuloksellisuuskoherenssilla tarkoitan yhteensopivuutta tulosjohtamissyklissä politiikkaongelmien ja niiden tunnistamisen, tavoitteiden asettamisen, politiikkatoimenpiteiden ja niiden toimeenpanon sekä tulosten arvioinnin kesken. Muodostan tuloksellisuuskoherenssia koskevan käsitteellisen viitekehyksen, joka on tutkimuksen ”ideaalityyppi” päätöksenteon mallista ja kutsun tätä tulosjohtamissykliseksi (performance management cycle).

Tämän työvälineen tai viitekehyksen avulla voidaan tarkastella sekä konstruktion kohteena olevaa ilmiötä, että ilmiöitä, jotka poikkeavat siitä. Niinpä vaikka tulosjohtamissyklin mukaan inhimillisessä päätöksenteossa on kysymys pyrkimyksestä rationaaliseen käyttäytymiseen, syklin avulla voidaan tutkia myös poikkeamia tuollaisesta rationaalisuudesta.

Syklin avulla ja samalla tukeutuen myös rajoitetun rationaalisuuden laajempaan teoriaviitekehykseen tutkin erityisesti ilmiöitä, joissa koherenssi ja rationaalisuusolettamukset eivät pidäkään täysin paikkaansa. Tätä luonnehtii ambiguity eli monitulkintaisuus. Rationaalisuuden ja nimenomaan rajoittamattoman rationaalisuuden rinnalla tutkin myös ilmiötä, jossa rationaalisuus on määrätyn tavoin ”bounded” eli rajoitettu.

Tutkimani paloturvallisuuspolitiikka ja siitä erittelemäni palokuolemien torjuntaan liittyvä pulmallisuus soveltuu hyvin tuloksellisuuskoherenssin ja samalla yleisemmin rajoittamattoman rationaalisuuden ongelmien tieteelliseen tarkasteluun. Lähtökohtahavaintojen mukaan palokuolemaluvut ovat hiljalleen kääntyneet laskuun ja palokuolemien vähentämiseen on kiinnitetty paljon huomiota osana valtakunnallista paloturvallisuuspolitiikkaa. Valtioneuvosto asetti 29.8.2007 hankkeen valmistelemaan sisäisen turvallisuuden ohjelmaa. Asettaminen perustui pääministeri Matti Vanhasen toisen hallituksen ohjelmaan 15.4.2007, jonka mukaisesti hallitus määrittää sisäisen turvallisuuden tavoitteet ja toimenpiteet poikkihallinnollisesti sisäisen turvallisuuden ohjelmassa. Valtioneuvosto teki periaatepäätöksen sisäisen turvallisuuden ohjelmaksi 8.5.2008. Ohjelma ulottuu vuoteen 2015. Järjestyksessään jo kolmas sisäisen turvallisuuden ohjelma hyväksyttiin valtioneuvostossa 14.6.2012.

Ohjelman tavoitteena on, että Suomi on Euroopan turvallisiin maa vuonna 2015. Ohjelmaan sisältyy toimenpiteitä turvallisuuden ylläpitämiseksi ja parantamiseksi. Ohjelmalle on asetettu tavoitteet ja toimenpiteet koskien turvallisuuden kannalta keskeisiä alueita. Ohjelman yhtenä tavoitteena kodin, vapaa-ajan ja liikkumisen turvallisuuden parantamiseksi on laskea palokuolemien vuotuinen määrä 50:een vuoteen 2015 mennessä. Kuitenkin esimerkiksi vuonna 2007 tulipaloissa kuoli 85 henkilöä, vuonna 2008 107

henkilöä, vuonna 2009 107 henkilöä ja vuonna 2010 80 henkilöä. Päihtyneiden osuus oli 63 % kaikista tulipaloissa kuolleista. Alentunut toimintakyky on keskeinen taustatekijä tulipalojen syttymisessä ja erityisesti henkilövahingoissa. Tupakointi oli yleisin kuolinpalon syttymissy, ensimmäisenä syttyivät useimmiten huonekalut. Uhreista 73 % oli miehiä. Miehistä suurin palokuoleman riski oli keski-ikäisillä ja naisista ikääntyneillä.

Palokuolemien tapauksessa on kyse laajemmasta syrjäytymiskehitykseen liittyvästä yhteiskunnallisesta ongelmasta, johon vaikuttavat muutokset useilla politiikkasektoreilla. Palokuolemaongelman vähentämiseen vaikuttavat heijastusvaikutukset muilla politiikkasektoreilla kuten esimerkiksi alkoholi- ja sosiaalipolitiikassa. Pelastustoimen lisäksi eri politiikkatoimijoiden yhteistyö ja panostukset ovat keskeisessä roolissa ongelman vähentämisessä tulevaisuudessa.



# 1 Introduction

*“What we have believed immovable and permanent has shifted, and that a climate of vulnerability and fragility is what best characterizes the past decade.” – Sandra S. Phillips, SFMOMA, 2011.*

This extract, taken from Sandra S. Phillips, senior curator of photography, who presented her exhibition “Fragility” at the San Francisco Museum of Modern Arts, describes the vulnerability and fragility in society today. Conditions under which we live are precarious and obscure, and what we have believed to be immovable will change. Beliefs and certainties in our world have changed and we are united by uncertainties.

Uncertainties entail natural disasters such as floods, earthquakes, or tsunamis, or human-made crises such as financial crises, terrorist attacks, or even fires, and traffic accidents. The terrorist attack of 9-11 has kept disasters and catastrophes in the public awareness for the last decade. It is certain that these emergencies will occur and that they will be accompanied by negative consequences. What is uncertain is exactly where and when these emergencies will take place.

Governments are held accountable for their response to disasters, emergencies, and accidents. Governments are responsible for taking actions through public decision making and by public policies. However, disasters are unforeseen, and there are numerous other attributes that make public decision making less efficient than it theoretically should be. The governmental system and the decision making models are incoherent and much messier than these unforeseen events would require in order for them to be rapidly and efficiently solved, and responded to. However, governments are expected to take action.

Fire deaths are a case composed of mistaken human behavior connected to precarious but chosen individual conditions. A typical case of a fire death would be a middle-aged man or an elderly woman from the province dying in a fire under the influence of alcohol while smoking in bed and falling asleep. Typically, no fire alarm was on, and passers-by, or neighbors call out the fire brigade when it is too late. Even the generally good proven fire brigades are not necessarily able to save lives of these people in these tragic cases. This case connects several spontaneous events or transactions, and creates an intriguing case to study in more detail in the context of the political-administrative, decision making environment.

Performance management and decision making in the context of political-administrative environment and especially in the context of emergencies are in the focus of this research. Management in the Finnish central government administration has been directed towards management through performance targets for the last decade (Autero, 2009, 111; Meklin, 2009, 36; Vakkuri, 2009, 16).

Studying performance management and fire safety policy in the emergency context combines studying performance management and emergencies where change and uncertainties prevail, but where targets are supposed to be set. Performance management and the context of emergencies is an interesting research area because of the unexpectedness and unpredictability involved. How should agencies prepare and plan for action, set targets, and improve results when the events are not known? This is contradictory to performance management which is based on targets set beforehand (Autero, 2009, 117). Against which context can the targets be set if the events are not known beforehand? It is only known that in some unfortunate circumstances people die in fires. However, is it a relevant measure to set targets for the actions of the government, the Ministry of the Interior, the rescue services, or any of the publicly funded organizations?

Section 1.1 represents the phenomenon of public performance around the doctrine of new public management (NPM) in more detail. This section is not a prior research section, but it represents how NPM has been developed and studied in recent years and what the research “gap” is that this study attempts to fill.

Section 1.2 is motivated by the study of the specific policy cases relating to fire deaths, and how fire deaths have gained the attention of public and governmental decision makers. Section 1.3 describes the nature of emergencies surrounded by uncertainties and unexpected occurrences.

## 1.1 Motivation for researching performance management

Performance improvement has been a dominant feature in public administrations and public management in recent decades. The “age of performance” has increased attention on performance management and performance measurement, and on how governments should fulfill their obligations to citizens, and their representatives, by producing good results (Bouckaert & Halligan, 2008).

The phenomenon of performance has been widely studied in the research fields around the doctrine of NPM (Christensen & Lægreid, 2011; Bouckaert & Halligan, 2008; Van Dooren & Van de Walle, 2008; Bevir & Rhodes, 2003; Pollitt, 2003; Lähdesmäki, 2003). NPM has been an ongoing administrative reform since the late 1980’s.

One of its’ visionaries was the Prime Minister, Margaret Thatcher, in the UK, who promoted privatization, deregulation and an enterprise culture in the public administration (Telegraph 10.4.2008). Prime Minister Harri Holkeri launched a 24-item program in 1987 to develop the Finnish public administration. Criticism toward the ineffectiveness and

the expansion of the public administration had risen in the OECD countries in the end of '80s. (Autero, 2009, 113; Meklin, 2009, 35.)

NPM is oriented toward results and outcomes, and at improving effectiveness and efficiency, and managerial accountability. Pollitt (2003, 27–28) describes key elements of NPM as focusing on the management systems in terms of outputs and outcomes instead of in terms of inputs and processes, and focusing on performance measurement and quantification. NPM prefers more specialized, “lean,” “flat,” and autonomous organizational forms rather than large, multi-purpose, or hierarchical forms. Contract-like, market-type mechanisms, an emphasis on service quality and consumer-orientation, a broadening of the frontiers between the public sector, market sector, and voluntary sector, efficiency and individualism are all features of NPM.

The death of NPM has been declared by some following digital-era governance that is characterized by reintegration, needs-based holistic structures, and the digitalization of administrative processes (Dunleavy & al., 2005). However, NPM is still alive but a shift from NPM to a new era of “post-NPM” is currently under study (Lodge & Gill, 2011, 141).

The declaration of death and the shift from NPM to post-NPM is mostly due to a will to diagnose the failures and shortcomings of earlier NPM administrative reform attempts and to develop the “old NPM” (Christensen & Laegreid, 2008). In response to “NPM-failures,” post-NPM is associated with a strengthening of coordination through a more centralized or collaborative capacity, whether it is via what is called the “whole of government” or through a “joined-up government” (Lodge & Gill, 2011, 143–144; Hood, 1998).

Lodge and Gill (2011, 144) divide the periods of administrative reform into progressive public administration (PPA), new public management (NPM), and post-NPM. PPA places an emphasis on procedural controls and rules, and on public sector distinctiveness. NPM-related reforms are identifiable by their hands-on, professional management process with explicit performance standards, output controls, and private-sector-style management practices. Post-NPM reforms have returned to a mixed pattern of in-house and marketized services, delivery networks, a client-based style, boundary-spanning skills, joined-up targets, and procedural/centralized controls, and ethical rules.

The advantage of regenerating these administrative reforms is that it revitalizes public management. Performance and result-orientation are an important part of public management today. Public opinion in times of financial crises requires that the tax-payers should have a right to know where their tax-money has gone and how their money is being spent. How achievements and results in the public sector have been measured is a question that public managers have to face. Achievements in management are measured in order to know what the actual score is. Behn (1995) poses this as an essential question in management. Public actions should produce results, and results should be measured, and, eventually, that information should be used in decision making, and in the political decision making process.

However, considerably little attention has been paid to the ambiguities and dysfunctions of performance management and measurement from an analytical point of view. Vakkuri (2010) has analyzed the situations in which using NPM-oriented management instruments has led to intended, and desired, or unintended, and even dysfunctional consequences by using the conceptual framework of ambiguity. This is a research area or a “gap” that this study attempts to fill.

This research uses the bounded rationality framework and ambiguity as a methodological concept to illustrate the struggle that public managers have with performance management and problem identification, target setting and performance evaluation.

Ambiguity highlights the opaqueness in organizational decision making and behavior (March & Olsen, 1976). Decision making is constrained by cognitive capabilities and incomplete information. How, then, are public organizations and agencies managed and run if the results and the performance of their actions are constrained? One way to overcome this is to “muddle through” as opposed to employing rational processes (Brunsson & Olsen, 1993, 73).

Performance management is studied in the context of fire safety policy and fire deaths, because this policy case offers an interesting chance, and the appropriate interconnectedness to enable the exploration of ambiguities in the world of performance measurement and management, and in the multifaceted world of emergencies and safety research, where everything is uncertain and vulnerable, but, in practice, is linked and interconnected by several simultaneous events (Perrow, 2009).

Performance management in the special context of emergencies is studied through a performance management cycle. The Ministry of the Interior and the rescue services have a key role in fire safety policy in terms of fire deaths. Their actions are studied through the identification of policy problems, setting policy targets, through selecting policy actions, and evaluating policy performance. However, fire deaths are a question of life and death, and this makes target setting difficult. Even one person dying in a fire is a bad result. Can one then say that the rescue services and the key actors have succeeded in their work? What are, and are not the areas that authorities can influence, and who takes the credit, or the blame for the actual results?

Another interesting feature is how fire deaths come to the attention of the public and governmental decision makers overall. The Internal Security Program has been mandated by the government of Finland to prepare objectives and measures for internal security.

## 1.2 The government’s objective to reduce fire deaths

Fire deaths were originally put on the political agenda on 24 June 2003, when the government of Finland set up a project to prepare an Internal Security Program. This was mandated by the Government Program of Prime Minister Matti Vanhanen’s cabinet,

issued on 2 October 2003, which states that the government will determine the primary objectives and measures for internal security via an inter-agency Internal Security Program.

The government adopted a resolution concerning the second Program on 8 May 2008. The program extends to the year 2015. One of the indicators in the Program is the number of fire deaths. This is why the case of fire deaths is followed more closely as a policy case in this study.

Altogether, 379 people in Finland have died in fires from 2007–2010; 18 deaths per one million inhabitants. Accidental fire deaths have ranged from 52 to 139 through 1952–2010. Compared to other Western European countries, the level is high.

The government of Finland has set an objective in 2008 to reduce the number of fire deaths to 50 by the end of 2015. The first Program aimed at reducing fire deaths to 30 by the end of 2012. In 2010, the total number of fire deaths was 80 and in 2009 and 2008 the total number of fire deaths was 107. In 2007, the total number of deaths by fire in Finland was 85.

Compared to the population of Finland, the level is high. The average number of fire deaths per 100,000 inhabitants in Finland was 2.0 in 2004 with a population of five million people. In the USA, the comparative figure was 1.3, with a population of 300 million people. Russia, Estonia, Latvia, the Ukraine, Lithuania, Moldova, and Mongolia have the highest fire rates relative to population. Laos, Vietnam, and Singapore have the lowest rates. Some of the differences may be due to reporting standards, but typically, Laos and Vietnam are countries in Asia having unusually low fire rates relative to population size. (Brushlinsky, Hall, Sokolov & Wagner, 2006, 47.)

In comparison, in road traffic accidents in Finland, 279 people were killed in 2009, in 2008, 344 were killed, and in 2007, 380 people were killed (Road Traffic Accidents, 2009, 13). Road traffic accidents have varied from 113 to 1,072 from 1931–2009.

Concern over reducing the number of fire deaths has drawn attention to the problem. Smoking has been identified as one of the most common cause of fires leading to human casualties in Finland. In most cases, the victims were under the influence of alcohol, and, therefore, were helpless victims of fire (Kokki, 2011). Carelessness and lack of caution have been identified as important contributory factors. For reasons of such an etiology, even the generally good proven performance of fire departments and fire brigades is not enough to ensure a reduction in the number of fire deaths. It is widely supposed that fire deaths are also related to the greater problem of social exclusion. Fire deaths are a question of different policies and their connections, for example, social and healthcare policies, at the very least pertaining to alcohol policies.

### 1.3 The nature of emergencies

Emergencies and crises are familiar historical phenomena and are contemporary events (Rikoski, 2008, 6). The recent financial crisis in the EU, attacks in Norway, an earthquake and tsunami in Japan – all of these are just some examples of natural and man-made disasters, or a combination of both. The list could be continued endlessly. None of these disasters were certain to occur, but many of them did, with more than a minimal probability (Posner, 2004, 5). Crises always come as a surprise (Hellenberg & al., 2011, 9).

Emergencies and disasters can occur anywhere in the world, affecting human health, people's lives, and the infrastructure built to support those aspects of living (Wisner & Adams, 2002). The nature of an emergency is that the inevitable happens and that when it does, it should be managed rapidly. In case of emergency, the time to respond is limited and the decision making environment demanding. Prevention of accidents and operations beforehand are elementary. How to prevent accidents and make efficient and fast decisions in the case of emergencies are essential to damage limitation. There is not much that can be done once a fire is underway, especially in sparsely populated areas. No matter how accurately and rigorously the fire fighters operate, it takes dozens of minutes to drive from the nearest fire station to the scene of the accident in sparsely populated areas (Kokki, Jäntti, Rasmus & Tervo, 2008).

In terms of fire safety policy, resilience in the face of uncertainty is the greatest challenge (Handmer & Dovers, 2007). However, it is not always clear how to prepare beforehand for these situations. Risks should be identified and responses should be practiced (Whittingham, 2008; O'Malley, 2004; Posner, 2004; Davies & al., 2003).

What is the nature of an emergency, and what is the decision making and management like in a political-administrative environment, especially in the context of fire safety policy? These questions are studied further in this text. An interesting question arises as to how different policies “go together” and what the connections between different policies are when considering the case of fire deaths. This is elaborated on through the theoretical concept of policy coherence.

## 2 Setting the Research Problem And Research Task

### 2.1 The aim and research questions

The aim of the research is to explore performance management in the context of emergencies and especially in terms of fire safety policy. Performance management is analyzed in a cycle with three phases: identification of the policy problem, target setting, and performance evaluation. The first question concerns the nature and the scope of this policy problem (Rossi & Freeman, 1993, 5). What is the policy problem and how can it be identified? Technical elements of fire safety may as well be the core of the problem, rather than social behavior. Among the problems of policy identification, policy problems are multi-dimensional, and messy, as much as they are conflicting (Jochim & May, 2010, 304).

The second phase of the cycle is target setting. What ambiguities are there in target setting in the rescue services and in fire safety policy? In public policies, targets and indicators measuring and evaluating the achievements of public actions are usually less tangible. In addition, connections between actions and their consequences are difficult to understand. It is uncertain what the future consequences of a chosen action are. Fire deaths are also a question of life and death and even one person dying in a fire is a bad result. How should targets be set to produce good and measurable results?

The third research question concerns what ambiguities there are in evaluating the performance of the fire safety policy. It is not known who will take the credit or the blame for the intended results. Performance can be achieved with or without targets. Evaluating performance of the public policies and actions can be difficult.

All these questions are studied through the theoretical concept of ambiguity. Ambiguity relates to public management and public policies (Vakkuri, 2010; March & Olsen, 1976). Organizations are characterized by inconsistent and ill-defined objectives. Identifying policy problems, setting suitable policy targets, and selecting policy actions, measuring, and evaluating the performance of policy actions are all ambiguous. It is difficult to see the connections between organizational actions and their consequences (March & Olsen, 1979, 12).



Policy problems are messy and complex. Contemporary policy problems have no clear causes, but rather a host of loosely connected and interrelated factors. It seems the more we try to solve the policy problems, the further away we seem to move from the resolution. Disappointments and the inability to deal with urgent policy problems corrode trust in political and policy-making institutions (Ney, 2009, 1–5).

As a consequence of crosscutting multiple areas of policy and their policy subsystems, it is difficult to craft and implement coherent policy approaches. The goal of greater policy cohesion is the core element of various approaches to coordinated governmental actions (Jochim & May, 2010, 303). Coherence between governmental actors and policies is studied through the concept of coherence.

Coherence is a system based on beliefs and how well a body of beliefs “hangs together” (BonJour, 1985, 93). Policy coherence means how different policies “go together” and share a set of ideas and aims.

The bounded rationality theory is kept as an overall theoretical foundation to structure the organizational decision making environment. Decision making and choice have been studied widely in economic theories, but bounded rationality is an approach in decision making theory that acts to complete misplaced rational choice (Simon, 1957).

The concept of ambiguity is an extension to bounded rationality theory by Herbert A. Simon and James G. March. Ambiguity is used to explain constraints in decision making and choice in the performance management cycle. The garbage can model and the complete cycle of choice by James G. March and Johan P. Olsen (1976) are used to consolidate how organizations actually deal with flows of problems, solutions, and decision-makers. A decision is an outcome or an interpretation of several relatively independent “streams” within an organization: problems, solutions, participants, and choice opportunities (March & Olsen, 1979, 26–27).

How political-administrative organizations act and how decisions happen in the boundedly rational, decision making world are intriguing and topical questions in public management. Through this doctoral dissertation, the idea develops as to how decisions happen in the political-administrative environment where information is overloaded, where interests are conflicting, and where time is lacking.

The general research problem is to study performance management as an ambiguous management model in the context of emergencies and fire safety policy. Performance management is studied through a cycle and the broad aim of this study is as follows:

*This research seeks to study the ambiguity of performance management in the fire safety policy of Finland.*

Research questions are studied at the institutional level (public agencies and organizations), at the policy level (ministries, Parliament), and at the incident level (fire deaths). At the incident level, what is significant is that only the “unsuccessful” or unfortunate cases are studied. Cases classified as “saved” or “injured” are excluded from the study because of



the lack of available data. The data and methods are described in more detail in chapter 2.2. Institutional and policy levels are examined more precisely through documentary data and interviews with political-administrative decision-makers. At the incident level, fire deaths are studied through specific statistical data.

**Table 1.** Empirical context and data sources.

<b>Empirical context</b>	<b>Data sources/ informants</b>
Institutional level (agencies, organizations)	Civil servants
Policy level (fire safety policy)	Politicians, civil servants
Incident level (fire deaths)	Fire death data

The institutional level is the agency and organizational level where central government authorities and regional rescue authorities implement fire safety policy. At this level, all questions pertaining to ambiguities are relevant. What ambiguities there are relate to fire safety problem identification, setting fire safety policy targets, implementing fire safety policies, and evaluating the results and performance improvement. At the policy level, the same questions are studied, but the performance of the actions is emphasized. At the incident level, ambiguities in terms of problem identification are emphasized more fully. Questions of ambiguities in identification of the fire safety policy problem, in setting fire safety policy targets, implementing fire safety policies, and evaluating fire safety policies are the research questions of this study. Additionally, coherence between different but intercrossing policies is one of the research questions.

This research seeks to answer to more specific research questions:

1. What are the ambiguities in identifying fire safety policy problems?
2. What ambiguities are there in target setting in the rescue services and in terms of fire safety policy?
3. What are the ambiguities in evaluating the performance of the fire safety policy?  
Who takes the credit or the blame for the performance of the actions?
4. Are intercrossing policies coherent in the fire safety policy?

To achieve the aims and research questions mentioned above, this study analyzes performance agreements between the Ministry of the Interior and agencies, interviews with public managers in the Ministry of the Interior, Ministry of Finance, and representatives in Parliament, and statistical data considering fire deaths, especially from 2007–2010.

Fire death cases and the fire safety policy have been chosen for this research because of the continuation of the policy problem and because of the interconnections between different public policies especially safety policies. Continuation in this context means that

fires do occur across time. Fires change form and extent, but they will occur in the future and they will make fire prevention inevitable<sup>1</sup>.

Additionally, an influencing factor in choosing fire safety policy as a research context has been the willingness of the rescue services to be part of this research. The Emergency Service College has provided statistical data on fire deaths for this study, and the Ministry of the Interior and the Department of Rescue Services has welcomed me as a researcher to undertake interviews and let me study fire safety policy more detailed.

The state level government performance management is in the focus of this research. Performance management in the municipalities and the rescue service regions including fire departments is another perspective to study. This study touch on some of these perspectives through the research data especially in the fire death statistical data and through the description of the performance management system, but the focus is on the governmental level and in the role of the central government organizations such as the Ministry of the Interior and its' subordinate agencies.

## 2.2 Methodology

### 2.2.1 The scientific methodological approach

The theory of knowledge epistemology deals with what can be said about science (Kaplan, 1964, 20). The theory of knowledge epistemology deals with what is, or should be regarded as knowledge in a discipline, and whether the social world can, and should be studied with the same principles (Bryman, 2008).

Ontology is the study of being, the nature of existence. Ontology tries to represent what is, and epistemology tries to understand what it means to know. Epistemology provides a philosophical background to decide what kind of knowledge is legitimate and adequate for a given purpose (Gray, 2004, 13–16).

Epistemological nature entails ideas about what forms of knowledge can be obtained, and how one can sort out what is to be regarded as “true” from what is to be regarded as “false” (Burrell & Morgan, 1979, 1). Burrell and Morgan (1979) conceptualize social science in terms of four sets of assumptions related to ontology, epistemology, human nature, and methodology. Human nature describes the relationship between human beings and their environment, for example, through determinism and voluntarism. In determinism, every event is necessitated by antecedent events and conditions, together with the laws of nature, and with voluntarism, “free will” occupies centre stage. However, it is notable that Burrell and Morgan wrote sociological paradigms and organizational analysis at the end of 1970s and the debate in sociology is different today.

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<sup>1</sup> The first signs of fire prevention were in 1700 BC. Building constructs and instructions were included into the Code of Hammurabi (Tolppi, 2001, 64).

The philosophers distribute scientific approaches among, for example, positivism, scientific realism, constructivism, and their modifications. Objectivism stands for reality that exists independently of consciousness – that there is an objective reality “out there” and research is about discovering this objective truth (Gray, 2004, 16–17). Bryman (2008, 19) formulates this as: “objectivism implies that social phenomena and the categories we use in everyday discourse have an existence independent or separate from actors.” In natural sciences, objectivism and positivism are common positions.

Constructivism rejects the view that truth and meaning exist in some external world. Reality is socially constructed and the sociology of knowledge must analyze the process in which this occurs. Reality is a quality appertaining to the phenomena that we recognize as independent from our own will, and knowledge is the certainty that phenomena are real, and that they possess specific characteristics (Berger & Luckmann, 1966, 13). Subjects construct their own meaning in different ways (Gray, 2004, 16–17).

Constructivism implies that social phenomena and categories are not only produced through social interaction, but they are also in a constant state of revision. Constructivism in recent years has come to include the conception that the researcher presents a specific version of social reality, and there is not just one definitive reality (Bryman, 2008). Participants actively construct the world of everyday life and its constituent elements (Holstein & Gubrium, 2008, 3).

In subjectivism, meaning does not emerge from the interplay between the subject and the outside world, but is imposed on the object by the subject (Gray, 2004, 117). Subjectivism can be seen as an information-producing process in which subjects produce information, and in which the choice between subjectivism and objectivism in research lies only in accepting that knowledge is subjective and that there is no strictly objective truth.

Certain fixed or categorized assumptions of social science theorizations may lead to the suppression of their discourse (Ahonen, 1985, 15). However, something must be said about the epistemological, ontological, and methodological choices on which the study is built. In this research, truth and meaning are created by the subject’s interactions with the world. Despite the dictum that objective truth exists in some external world “out there,” this study pursues the truth by using a subjective research methodology and design. Subjectivity means that the researcher interacts with the “research subjects.” Political-administrative decision makers and managers, and internal safety policy producers in the Ministry of the Interior, in the Ministry of Finance, in the Parliament, in the National Audit Office, and in the Emergency Service College are informants producing information about the research subject so as and to create truth and meaning. The researcher in this study constructed the truth and meaning “in there” with the informants of the research. However, the truth and meaning were in a constant state of revision during the research process.

In order to make an inference on the performance management system and the context of emergencies, the Finnish public administration system needs to be understood. During the research process, the researcher worked in the State Treasury of Finland and in the Ministry of Finance, and learned about the administrative processes, financial management, and performance management that lay inside the research context. This helped to generate practical and theoretical truths about the public administration grounded in the realities of their daily existence (Jorgensen, 1989, 14).

Methodology is often indistinguishable from epistemology or the philosophy of science (Kaplan, 1964). In this research, theoretical models and perspectives such as the bounded rationality theory and ambiguity were chosen before conducting the research. However, they also guided the data collection and the research process. Some of the research data was also excluded from the study because otherwise the area it would have become too wide to study. In this respect, deductive and inductive approaches were both adapted (Gray, 2004, 25).

The role of the researcher in this study is to understand the Finnish public administration and the processes of socially constructing it by looking at meanings, metaphors, and perceptions of public managers by interviewing them (Apostol, 2011, 94). In order to defend the methodological choices made, the data collection and methods for analyzing data are presented in chapter 2.2. A summary of the research setting is presented at the end of the section.

### 2.2.2 Research method

The aim of research design is to provide a framework to collect and analyze data. The research method is a technique for collecting and analyzing data (Bryman, 2008, 31). Methodological communities can be categorized into quantitatively<sup>2</sup> oriented social and behavioral scientists, qualitatively<sup>3</sup> oriented social and behavioral scientists, and mixed methodologists (Tashakkori & Teddlie, 2009).

In this study, it is not intended that delimitations will be made concerning the research methodology. However, this research integrates quantitative and qualitative approaches and orientations, and in that sense, conducts the mixed-methods research design. Mixed methods integrate and do not segregate different orientations. Mixed methodologists are interested in both narrative and numeric data and their analyses, and this is well suited to the current research setting (Teddlie & Tashakkori, 2009).

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<sup>2</sup> Quantitatively oriented scientists use techniques associated with gathering, analysis, interpretation, and presentation of numerical information and use the postpositivist/-positivist paradigm.

<sup>3</sup> Qualitatively oriented scientists use techniques associated with gathering, analysis, interpretation, and presentation of narrative information. Qualitative orientation is subscribed to constructivism and its variants.

Interviews and documentary data are analyzed by using the qualitative approach and orientation, and statistical data are analyzed by using the quantitative approach and orientation. This study integrates different methods throughout the research process and could be defined as an integrated and holistic research design from a mixed-methods typology (Teddlie & Tashakkori, 2009).

Integration means integrating different methods throughout the research process as distinct from component design, where data-gathering methods are implemented as separate aspects, and where these aspects remain distinct throughout the research process. A holistic research design means the simultaneous integration of methods. The aim is to build one integrated explanation of results (Tashakkori & Teddlie, 2003, 496).

Fire deaths are an empirical case analyzed by using features of a case study research strategy. A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly evident (Yin, 2003, 13). However, the ability to investigate the context of fire deaths is limited to statistical data, and this limits the use of the case study method through which the purpose is to investigate the context more broadly. Nevertheless, statistical data provides some information about the geographical and residential circumstances where fires have occurred (the data is explained in more detail in section 2.2.3). The political-administrative decision-making context is studied through the interviews with the public managers. In this respect, the context is partly studied.

A case study is a comprehensive research strategy comprising an all-encompassing method covering the logic of design, data-collection techniques, and specific approaches to data analysis. Even if the research strategy has not been designed by strictly following the case study research strategy, it has followed the five research design components forming the research questions, directed attention to propositions, defining the case and the unit of analysis, linking data to propositions, and criteria for interpreting the findings (Yin, 2003, 21–28).

In important respects, this study involves of policy analysis in the established sense of regarding policies decided upon and possibly also carried out by public sector organizations (Weiss, 1992; Dunn, 1994; Parsons, 1995). However, this study is not a policy analysis as such. A major objective of policy analysis is to analyze and present alternatives available to political actors for solving public problems (Weimer & Vining, 1989, 3). This study aims at more the objective of academic social science research to construct theories for understanding society. Even if the purpose of this study is not to offer direct information or alternatives available to the political actors, this study analyzes the fire safety policy in Finland, and within this, there are features of policy analysis.

By mixing methods and features of case study research strategy and policy analysis, this study aims at as good as possible research results in terms of validity<sup>4</sup> and reliability<sup>5</sup>. The performance management model and fire deaths are the subjects of this research. Mixed methods, features of case study research strategy, and features of policy analysis are instruments to measure these subjects. This study also attempts to provide information supporting political-administrative decision-making.

Integration of the methods and the methods to collect and analyze data are presented in the following sections 2.2.3 and 2.2.4.

### 2.2.3 Data collection

The data collection strategy in this study includes different viewpoints. Data is gathered from different sources including qualitative and quantitative sources. Diverse research data is used in order to study an ambiguous research phenomenon. The idea in using various data is to strive for valid research results. Quantitative data sources covering numeric data are fire death statistical data and some of the budgetary and financial reports that are in numeric form. Qualitative data sources are interviews and documentary data (performance agreements).

The data-collection strategy covers different dimensions with various data. Different dimensions come from the research setting: identification of the policy problem, target setting, policy implementation, and evaluating policy performance. These dimensions are covered with various data to triangulate with the viewpoints of different actors. The dimensions are not restricted to certain data; they are used reflectively and interactively. Different data sources offer research results for various research dimensions (Vartiainen, 1994).

Politicians, civil servants, individuals (victims), and fire fighters are different actors representing various viewpoints. Politicians represent decision-makers, civil servants are executors of policies and also decision-makers, individuals are users of policies and services, but also subjects in the case of fire deaths, and fire fighters are operative actors. Politicians and civil servants were interviewed. Fire fighters were not interviewed, but fire fighters were questioned outside of this research work.

The researcher also participated actively into fire safety research conferences<sup>6</sup> to deepen her understanding of the national fire safety research work. These conferences and

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<sup>4</sup> Validity represents the extent to which an instrument measures what it is intended to measure (North & al., 1963, 42).

<sup>5</sup> The research results are valid when the same results are produced with different measures. When the same research process is repeated and it will reproduce the same results, the reliability is achieved (North & al., 1963, 42).

<sup>6</sup> The fire research conferences arranged by the Palotukimusraati Incorporated Association were held in Hanasaari in Espoo in 2009 and 2011. The Emergency Service College arranged a researcher meeting with the fire safety researchers in Kuopio in 2009.

meetings offered the researcher an opportunity to familiarize herself with the national fire safety research work.

The researcher also took part in a three-month visit to the University of Colorado at Denver (UCD) and to the School of Public Affairs in Denver, Colorado in 2008. The University specializes in studying public policies and emergency management and has some of the best scholars in the country. This visit led the researcher into the international research world and familiarized her with the international research field of emergency management.

The researcher arranged scientific colloquiums in UCD and in the School of Public Affairs in 2008, 2009, and 2010. These colloquiums developed and widened her research work year by year and offered her an opportunity to follow international research work and develop her own dissertation.

A four-month visit to Stanford University and the Scandinavian Consortium for Organizational Research (Scancor)<sup>7</sup> in spring 2011 deepened her theoretical understanding of organizational theories and improved her methodological skills in policy analysis.

Although the purpose of the visits to Colorado and California was not just to collect data, these visits also helped locating relevant theoretical literature and articles. Articles and theoretical literature were collected in UCD, which had a wide collection of literature on emergency management. The relevant research data was also discussed with scholars who specialized in emergency management.

The interview data (considering the third phase) was reanalyzed just before the visit to Stanford University. A policy analysis was produced, considering the Finnish fire safety policy, in Stanford University. This working method deepened the understanding of the interview data and connected the results into the fire safety policy analysis.

Fire death statistical data loosely covers the individual point of view. Statistical data offers only restricted material about fire deaths. Interviews with relatives of the victims were considered in the initial stages of the research. However, this idea was later discarded. One of the reasons was that the contact information of the bereaved is police material, and, considering the circumstances in that the victims had all perished, it would not have been natural to interview the families. Fire death statistical data has been, nevertheless, one of the most important research data sources throughout the research process. Even though the study is not statistical research, the significance of the statistical data has been emphasized.

Budgetary data, performance agreements, thematic interviews, and the fire death statistical data form the research material of this study. These materials are presented in more detail in the following sections.

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<sup>7</sup> Scancor facilitates inquiry in organizational social science among a transnational network of scholars in Stanford University in Palo Alto California.



### *Budgetary data*

Budgetary data has been used as research material considering that they are the main planning documents used in the preparation of the central government budget. In practice, budget proposals and justifications are the main content used. Performance agreements and budgetary documents are connected and therefore it is important to study both documents.

It is enacted in the Central Government Budget Decree, section 1b (7.4.2004/254) that: “Budget proposals shall comprise proposals for appropriations and revenue estimates, reasons for the appropriations, and other justifications intended to represent the views of Parliament and justifications in the explanatory parts of the Budget Proposal to be submitted to Parliament.”

Budget proposals comprise proposals for targets set by the government, including proposals for the effectiveness of central government activities and finances in the policy sector of the ministry in question. Budget proposals also include the ministry’s tentative performance targets for the effectiveness of central government activities and financing in its policy sector, and the ministry’s tentative performance targets for the most significant elements of operating performance of the most important government agencies in the administrative sector of the ministry.

The budget is a decision made by Parliament and it includes performance targets concerning operational performance itemized into targets concerning operational efficiency, outputs, and quality management, and, if necessary, the management, and development of human resources. Whenever possible, indicators are used in presenting the performance targets, and the indicators are supplemented with qualitative targets, as required. (Salminen & Viitala, 2006.)

A budget proposal is not a general strategy document. The effectiveness and performance targets included in the budget proposal must be clearly connected with the appropriations included in the proposal. How to formulate performance targets in the central government budget proposal is an important issue for the functioning and comprehensibility of the control system. Parliament has expressed a desire for performance targets to be based on simple indicators (Kertomusmenettelytyöryhmän mietintö, 2002). Using indicators to present outcome targets and operational performance targets is a guiding principle.

Justifications should be presented at the main title level, at the class level, and at the item level in the budget proposal. The main title level includes the entire administrative sector and operational branches, and contains general outcome targets. These targets are set for policy sectors and for major duty areas or performance areas, and they should be compact descriptions of the main policies and of the operational emphasis of the government and the Ministry of the Interior.

Targets included in the ministry strategy documents, especially the Internal Safety Program, and in the operational and financial plan of the rescue services should agree with the targets in the budget proposal. Targets presented at various levels in the budget



proposal should be logically related and their relationship should be easy to understand (coherence between lower-level and higher-level targets) (Salminen & Viitala, 2006, 38).

### *Performance agreements*

Performance agreements have been used as the main documentary data because performance contracting is an essential part of the performance management system (Salminen & Viitala, 2006, 43). Performance agreements are written agreements including expectations of attainable results (outputs and outcomes) and they should also indicate who is responsible for each target in each budgetary year.

The Ministry of the Interior makes performance contracts with regional state administrative agencies, the Emergency Response Center (ERC), the Emergency Service College, and the Finnish Safety and Chemicals Agency<sup>8</sup>. Performance agreements were collected and analyzed from the years 2001, 2005, and 2010.

Regional State Administrative authorities began to operate at the beginning of 2010. Their performance agreements were written for the very first time in 2010, thus it is not possible to examine any earlier agreements of the regional state administrative authorities.

The performance management, reporting style, and structure of the government budget were developed in the middle of the 2000s. Performance criteria including policy effectiveness (outcome targets) and operational performance targets (outputs) were defined in the Budget Decree in 2004. The outcome targets and performance targets should be presented in the central government budget proposal to the Parliament. The budget proposal is a proposition for the financing plan for central government finances submitted to the Parliament (Salminen & Viitala, 2006, 38).

Agreements from the years 2001, 2005, and 2010 were chosen for this study to see if there was any change or development before and after the Budget Law reform. Examination of these five-year periods makes for a better comparison.

The Ministry of the Interior delivered performance agreements for this study. Some of the performance agreements were available only in paper form. These agreements were rewritten into electronic form. Performance agreements were also partly available from the governmental Netra online information service. The Central Government Budget Decree (sections 14, 63, 65a, and 66i) stipulates that agencies and ministries must submit their operational and financial plans, final accounts, annual reports, and statements of the ministry on the final accounts to the Netra online information service. However, all this information is not available from the system when considering the years that have been studied, since the system is still in development. The Ministry of the Interior delivered all the missing material needed for the study.

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<sup>8</sup> Finnish Safety and Chemicals Agency Tukes operates under several government ministries. The Ministry of the Interior and the Rescue Service Department makes an agreement with Tukes on inspection of safety equipment, installation, and care and control. Tukes is responsible for preventing fires and accidents through different legislative sectors (electrical and pressure devices and industrial use of chemicals) and by providing guidance and support to rescue authorities.

*Interview data*

The interview data includes 24 interviews. 21 people were interviewed and some of them were interviewed twice. Interviewees were distributed across various agencies that implement fire safety policy such as the Ministry of the Interior and The Association of Finnish Local and Regional Authorities. The Ministry of Finance, the Parliament, the National Audit Office, State Treasury and the Prime Minister's Office and the Policy-analysis Unit were also interviewed in order to understand public management better and to understand the performance management practices in more detail. The interviewees were mainly high level public managers and some of them were experts or middle managers. The research setting was designed to focus into the management practices and ambiguities in the level of the central government, and, thus, the managers from the ministries and agencies were interviewed.

Research interviews were undertaken by using the qualitative thematic interview method (Hirsjärvi & Hurme, 2001). Interviews were conducted in order to get a better understanding of performance management (Wengraf, 2001, 3–4). It would not have been possible to obtain this information via a questionnaire, survey, or by the statistics. Communication and mutual understanding between the interviewee and the interviewer was essential. The interviewer had worked for some years developing performance management processes and also knew the processes inside the administration. The interviewer also knew most of the interviewees, and this increased mutual trust, and encouraged interviewees to answer the questions more critically and openly when compared to a situation where the interviewer would not have known the interviewees.

Interview data was collected from 2005–2010. The interviews were carried out in three phases. The first phase involved preliminary interviews with selected informants from the State Treasury, and from the Ministry of Finance. The goal was to survey the research subject and the possibility of studying the research subject. The second phase included interviews in the Ministry of the Interior, and the third phase, interviews with Director Generals in the Ministry of Finance, in the Parliament, and in the National Audit Office. This last set of interviews was undertaken to examine administrator's tasks in the Ministry of Finance in 2010.

The preliminary interviews were undertaken in 2005 with administrative developers from the Ministry of Finance and from the State Treasury. These interviews tested the actual research subject and the content. At the beginning of this dissertation, the research subject was the wider study of performance management in the Finnish public administration. This perspective was eventually narrowed down to the Ministry of the Interior and to the rescue services, and finally to fire safety policy and to the case of fire deaths. Preliminary interviews highlighted that the Ministry of the Interior would be a good target to be examined. They had already adapted their performance management and performance contracting processes already since the budget legislation reform in 2004 (Salminen & Viitala, 2006, 6) and their practices had been developed further. They were

considered as having good practice in developing performance management processes and performance indicators. In addition, their willingness to participate in the research process was considered as a positive factor.

Since the Ministry of the Interior was selected as the research subject in the first place, the head of the Ministry was contacted. A covering letter (see appendix four) in which the aim and content of the interviews was described was sent to the head of the Ministry. Their approval for the interviews was sought, and, finally, five Directors from the Ministry of the Interior were scheduled for interviews in January 2008.

The research data including the whole Ministry of the Interior, and the performance agreements and contractual practices between the ministry and all the agencies concerned was too wide to study. The performance agreements were collected from the whole Ministry of the Interior, but this data, excluding the data on rescue services, was later discarded, because it was too vast to study.

This selective narrowing down of research subject from a wider public administrative point of view, to the Ministry of the Interior, and to the fire safety policy, and eventually fire deaths was due to the fact that the research data would have become too wide to analyze, and, as a consequence of this, too superficial. It was considered reasonable to process one case that was more detailed than several larger cases.

Due to this, the research subject had to be marked off inside the Ministry of the Interior and eventually the rescue services were chosen as the research object. The case of fire deaths came forth clearly later in the research interviews. Ambiguity in the rescue services came forth clearly in these interviews and the final research subject was set.

The third interview phase was conducted in relation to administrator work<sup>9</sup> in the Ministry of Finance. The researcher was the administrator and interviewed developers, directors, evaluators, and academics in ministries, in the Parliament, in an evaluation company, and in a university. The main question asked was if there had been a change in the performance reporting and target setting in these selected sectors in the years 2006–2010. The second target of the work was what the NPM system should look like in the future. This interview data was used in this thesis and results of the work are elaborated on in the empirical chapters and conclusions.

Interview themes were defined beforehand and sent to the interviewees except in the last definitive interviews. In order to avoid biases the interview material was recorded with a tape recorder. However, tape recording was not undertaken in all interviews. The researcher considered what the appropriate use of the tape recorder was before the interviews. The decision depended on whether the researcher believed the tape recording would have disturbed the interviews, their progress, and, in the end, the results. Notes were carried out from each of the interviews. Notes were written with a laptop. The

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<sup>9</sup> The Ministry of Finance ordered assessment in 2010 to analyze the performance reports in three administrative sectors from 2006–2010. The Ministry of Education and Culture, The Ministry of Finance, and The Ministry of Transport and Communications were the selected sectors.

interview data was read and analyzed several times during the research process in order to find possible anomalies and generalizations.

### *Fire death statistical data*

Fire death statistical data covering the individual and victim's point of view was collected in the Emergency Service College from 2007. This specific data on residential fire deaths was collected from fire investigations. Finnish fire investigators from the fire brigades and from the local Finnish police had carried out fire investigations from 2007–2010. Each rescue service area (22) named their own investigators. The rescue services resource and accident statistics program, Pronto, completes this gathered statistical data. The number of fire deaths has been collected since 1952, but this specific data on fire deaths has been collected since 2007. It is unfortunate that the specific statistical data from 2007–2010 is limited to only a few years. However, this data includes more detailed information on the causes of the fire (ignition), the scene of the accident, housing types, in which storey the fire occurred, what time of the day the fire occurred, and what year it was, if there was a functioning fire alarm, who made the emergency call, how long the fire extinction took, the background factors of the victims (age, gender, socio-economic factors), and what the circumstances were before the fire. Previously, no data like this was available in Finland. The Emergency Service College provided the data for this research purpose.

These research materials are at the disposal of the study. Once the data and the data collection have been described, the following section will describe how the data was analyzed.

## 2.2.4 Methods for analyzing data

This dissertation applies both qualitative and quantitative methods. Qualitative content analysis is used to study the content of the documentary data and the interview data. Through content analysis, textual material can be classified and reduced to more manageable chunks of data (Weber, 1990, 5). Content analysis is a method used to analyse the content of documents, interviews, or written texts, and it can be used in all the varying traditions of qualitative study. Content analysis can be considered both as an individual method and also as a loose theoretical frame, which can both be connected to different analytical entities (Tuomi & Sarajärvi, 2006, 93).

Content analysis has its own approach to analyzing data, and it results from how the object of analysis – the content – is regarded. Content analysis is an instrument used to analyse data and produce repeatability<sup>10</sup> and valid inferences from the data. However, the purpose is to make conceptual assumptions and not to be limited to immediate

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<sup>10</sup> The main idea of repeatability is that at different points in time, perhaps under different circumstances, when applying the same technique to the same data, the results will be the same (Krippendorff, 1980, 21).

observations from the data. Conceptual assumptions require construction and knowledge of the studied phenomenon. Conceptual analysis is used as an instrument to analyze textual data and interview data to find certain repeatable and significant findings from the data.

It is important that findings or “messages” do not have a single meaning that needs to be “unwrapped,” and that those meanings may be different to another receiver. The data can be examined from numerous perspectives and phrases can be categorized, the logical structure of expressions can be described, association, connotations, and denotations may be simultaneously valid, but all of these may convey a multitude of different content even to a single receiver. Meanings are always relative to a communicator. Messages may convey different things to different people. (Krippendorff, 1980, 22.)

Fire safety statistical data is analyzed by quantitative data-analysis. The purpose of the analysis is to create a profile of fire deaths from 2007–2010. The number of cases (N) was 379 and the data was collected for the four-year period. Multivariate methods were considered at the beginning of this study. For example, regression analysis could have been used to model the dependency between different variables. However, this idea was later discarded, since the comparative data considering cases of injury and of survival cases was missing. The missing comparative data compounded the fact that it was not possible to attempt a regression analysis, since regression analysis is a statistical tool for the investigation of relationships between variables. Regression analysis seeks to ascertain the causal effect of one variable upon another. This causal effect was not possible, since the number of cases was still small.

### 2.2.5 Summary

A summary of the research settings is presented in table two (see below). The summary includes research areas, theoretical models, and conceptions that are presented more precisely in the next chapter (chapter three), and methodology including, the research methods, data collection, and methods for analyzing the data. The table highlights the main elements of the research settings.

**Table 2.** Summary of the research settings.

Research areas	Theoretical models and concepts used	Methodology		
		Performance management Fire safety policy	Bounded rationality Ambiguity Coherence Safety research	Research methods Case study

## 2.3 Structure of the study

This research consists of eight chapters. The first chapter is the introduction and the second chapter introduces the general scientific research setting and the research problem, with particular research questions, data, and methods for answering certain research questions, and, also, prior research that motivated the study and addressed the specific theme of the research.

Chapter three includes the theoretical framework and key concepts. The theoretical framework lays the foundation for the research work and for the empirical analysis of fire safety policy. The fourth chapter elaborates on the features of public administration and the context of Finnish public administration and the rescue services in Finland.

Chapters five, six and seven include empirical analysis and the main findings are summarized at the end of each chapter. Chapter eight concludes the theoretical and empirical findings emerging from the entire research process. This chapter links the research problem, questions, and the theoretical framework into research results and conclusions as the outcomes of the study.

## 3 Theoretical Framework

This research scrutinizes the ambiguity in performance management through a cycle in terms of Finnish fire safety policy. The performance management cycle describes the existing management model in the Finnish public administration. The aim of this chapter is to present the theoretical approaches and tools used to analyze the empirical data and to interpret the results.

The chapter is organized as follows. Chapter three includes two sections that are divided into several sub-sections. Part one conceptualizes the key concepts of ambiguity, rationality, and bounded rationality. The complete cycle of choice and the garbage can model of organizational choice are presented in order to understand how decisions are actually made during organizational decision making. In addition, the concept of coherence is presented in order to describe the relations between different phases in the performance management cycle and in order to study different but intercrossing policies that “go together.”

The second section presents the concepts of safety and security, certainty and uncertainty in the safety research discipline. In addition, prior research is presented on this relatively wide and pluralistic research area including examples of emergencies and accidents, disasters and crises, terrorism and attacks. These concepts are defined in the second section. At the end, a synthesis of the theoretical framework and essential concepts for this research are presented.

### 3.1 Ambiguity of decision making in public organizations

Organizational decision making is simply about making choices in an organization when attempting to reach goals or objectives. Herbert A. Simon (1997, 1) defines administration as the art of “getting things done.” Decision making and execution of decisions are the basic tasks administration has: “deciding” and “doing.” Nevertheless, large organizations and governmental organizations have generally been blamed for being bureaucratic and inefficient. The effects of governmental decision making and performance are actually obscure. This phenomenon is studied through ambiguity and decision making relating to public policies and organizations. This is the theoretical task of the research. Challenging decision making environment of the rescue services and fire safety policy are the empirical



research subjects of the research. Uncertainty is an overwhelming feature of decision making processes, especially in the rescue services, and in the generation of fire safety policy. It is uncertain where and when fires will occur, but it is an unfortunate certainty that they will happen, that the consequences are unwanted and that decisions have to be made.

Decision making is at the heart of the administration and the vocabulary of administrative theory must be derived from the logic and psychology of human choice. Attention should be paid to the choice and to the processes of decisions: what is to be done rather to the actual doing. The theory of administration involves both the processes around decisions and the processes of action (Simon, 1997). Simon identified decision making as the ultimate keystone for the reconstruction of administrative theory (Augier & March, 2001, 398).

### 3.1.1 Ambiguity as part of bounded rationality

Herbert A. Simon started to use bounded rationality as a concept to describe limits on rationality in decision making (Klaes & Sent, 2005, 30–37). Bounded rationality is an approach used in the decision making theory that completes misplaced rational choice (Simon, 1957). Ambiguity is part of the theory of bounded rationality in organizational research (Simon, 1957; 1978; 1997; Selten, 2002). Ambiguity is an extension to the concept of bounded rationality (Vakkuri, 2009, 20).

The conceptual history of bounded rationality goes back a long way historically. Limited intelligence was already used in 1840, finite intelligence in 1880, incomplete rationality in 1920, and approximate rationality in 1940. Simon began to use bounded rationality as a label for the things that economists needed to pay attention to (Simon, 1957; Klaes & Sent, 2005, 37). Rational choice and behavior were strongly attached to economic theory. Simon questioned rational behavior in human decision making. It became “a natural meeting ground” for psychological and economic theory (Simon, 1957, 261).

Simon suggested that no matter how adaptive the behavior of organisms in learning and choice situations is, adaptiveness falls far short of “maximizing” in economic theory. Simon used an example of an organism. In choice situations organisms do not, in general, “optimize” but “satisfice.” By satisficing Simon meant that the organism does not choose the best and the most optimal decision alternative. The best and the most optimal alternative is not necessarily even known. The most suitable and sufficient alternative is good enough. A great deal can be learned about rational decision making by taking into account the limitations of the capacities and complexity of the organism, and the fact that the surrounding environment allows for a further simplification of its choice mechanisms. The organism also possesses limited information and limited computational facilities (Simon, 1957, 261).



### 3.1.1.1 James G. March's definition of ambiguity

Professor James G. March from Stanford University and Herbert A. Simon's doctoral student in Carnegie Mellon University in the 1950s developed the bounded rationality theory and the concept of ambiguity in organizational research (Vakkuri, 2009, 21). Simon and March examined both the informational and computational limits on rationality by human beings and explored the consequences of simple payoff functions and search rules in an uncertain environment. March's school of bounded rationality identifies that there is a discrepancy between full rationality in decision making and in the world where the decision-maker actually lives (Simon & March, 1959; March, 1978; 1988; 1994; March & Olsen, 1979). Descriptions of decision making in terms of March conformed more to actual human behavior than descriptions built upon classical rationality.

The world where the decision maker actually lives has cognitive limitations that bounds rational decision making. Allocation of attention, problems of attention, and memory, and problems of comprehension and communication are all cognitive limitations (Kahneman, 1973). The decision-maker cannot observe and remember everything, and gets only partial information about decision alternatives and effects. Decision making information is never "perfect." Organizational learning and motivational boundaries also have an effect on decision making.

Understanding the decision making ecological environment within which we act is an essential part of decision making. Our understanding depends upon our reading of the context we work within (Forester, 1984, 23–31). Decision making is rational only in the present decision making environment. The decision making environment is crucial. In what context are decisions rational, in the past, in the present, or in the future, and what is the overall decision making environment?

The term "environment" is ambiguous. It is not some physically objective world in its totality, but only those aspects of the totality that have relevance for the "life span" of the organism being considered. An organism in this context refers to the decision maker. What we call the environment is dependent on the "needs," "drives," or "goals" of the organism, and upon its perception (Simon, 1957, 262).

In collective decision making there is a problem of conflicting interests and objectives representing the values of different participants. Members of organizations have different wants, motives, and drives (Cyert & March, 1963; March, 1978, 589). The decision making environment and the context is the second constraint in rational decision making.

Intention is one of the features found in the theories of boundedly rational decision making. Choices can be made deliberately or by trial and error (Elster, 1979, 13–19). In the species the pursuit of indirect strategies and waiting are impossible in the simple model. Man is distinguished from animals as taking one step backwards and two steps forwards. Human actors make mistakes. Human actors also do not only make choices on the basis of expectations about the future, but also on the basis of their expectations about the expectations of others.

Decision making in organizations is considerably *ambiguous*. Although choice opportunities may lead to the generation of decision alternatives, and then to an examination of the consequences of those alternatives, and then to the examination of the consequences as objectives, and finally to a decision, this model is not sufficient enough to describe what actually happens (Cohen, March & Olsen 1976, 26).

Ambiguity illustrates the complexity involved in organizational behavior and in choice situations (March & Olsen, 1976, 12). Ambiguity signifies four major kinds of opaqueness in organizations. The ambiguity of *intention*: organizations may be characterized by ill-defined and inconsistent objectives. The preference function as to what to pursue and how to gain objectives in organizations is often impossible to specify when satisfying both the consistency requirements of theories of choice, and the empirical requirements of describing organizational motives. The second lack of clarity comes the ambiguity of *understanding*. The causal world in which organizations live is obscure. Technologies are unclear; environments are difficult to interpret. Connections between organizational actions and their consequences are difficult to understand. The third lack of clarity concerns the ambiguity of *history*. The past is important, but history can be twisted. What happened, why it happened, and whether it had to happen are all problematic. The fourth lack of clarity concerns the ambiguity of the *organization*. Individuals vary in the attention they give to decisions. They vary from one time to another. Thus, the pattern of participation is uncertain and changing.

The concept of ambiguity is used in administrative, economic and organizational sciences, psychology, philosophy, and linguistics (Vakkuri, 2009, 18). Simone de Beauvoir (Ruonakoski, 2007, 23) used the concept *ambiguïté* when referring to the double aspect of the human being; the human being exists in the tension between two forces. The human being is mental but also belongs to a material reality. The human being is a free actor and a subject but also other actors' targets, an object. The human being is a thought directed to the world and at the same time part of this world. Ambiguity describes duality instead of indefiniteness.

English literary critic and poet Empson (2004, 22) conceptualizes seven types of ambiguity related to poetry and literature by using examples from Shakespeare. The next section looks at Empson's seven types of ambiguity.

### 3.1.1.2 William Empson's seven types of ambiguity

The concept of ambiguity is based on philology and linguistics (Vakkuri, 2009, 18). In this sense it is relevant to scrutinize English literary critic and poet Empson's definition of ambiguity (2004, 22). Empson conceptualizes seven types of ambiguity related to poetry and literature by using examples from Shakespeare. The first type of ambiguity is defined as: "I have already considered the comparison of two things which does not say in virtue of what they are to be compared. Of the same sort, though less common, is the ornamental use of false anthesis, which places words as if in opposition to one another

without saying in virtue of what they are to be opposed.” Empson uses an example from Peacock’s War Song. The example concerns killing people in a war, and there is a relation between heroes and cravens, and a relationship between their equivalent deaths. There is also a relation between eagles and heroes, ravens and cravens. These distinctions are emphasized differently. This example of ambiguity reminds us of *the fortuitous confluence* of March and Olsen (1979, 27) and the simultaneity of problems and solutions and their arrival (see section 3.1.4).

In the second type of ambiguity, in word or syntax, the ambiguity takes place when two or more meanings are resolved into one. These are alternatives, even in the mind of the author, not only different emphases, as in the first type of ambiguity (Empson, 2004, 48). The third type of ambiguity takes place when two ideas, which are connected only by being both relevant in the context, can be given in one word simultaneously. In this context, ambiguity is considered as a verbal matter (Empson, 2004, 102). Ambiguity of the fourth type takes place when two or more meanings of a statement do not agree among themselves, but combine to make clear a more complicated state of mind in the author (Empson, 2004, 133).

The fifth type of ambiguity occurs when the author is discovering his/her own idea in the act of writing. The author does not hold it all in mind at once. Empson (2004, 155) refers to “a simile which applies to nothing exactly, but lies halfway between two things when the author is moving from one to the other.” He uses an example from Shakespeare’s poetry:

*Our Natures do pursue  
Like Rats that ravyn downe their proper Bane  
A Thirsty Evil, and when we drink we die.*  
(Measure for Measure, I.ii.) (Empson, 2004, 155)

In this poem, “proper bane” becomes ambiguous, since it is water as well as poison. Poisons were designed to prevent rats from dying in the wainscot. Eating the poison corresponds to the “Fall of the Man,” and in this sense it is the drinking water, a healthy and natural human function, unavoidable in its nature, which brings death. This proper bane then becomes ambiguous. (Empson, 2004, 155.)

The sixth type of ambiguity takes place when a statement says nothing, by tautology, by contradiction, or by irrelevant statements. The reader is forced to invent statements of their own. Statements are liable to conflict with one another. (Empson, 2004, 176.)

The seventh type of ambiguity is the most ambiguous. It takes place when the two meanings of the word, the two values of the ambiguity, are the two opposite meanings defined by the context. The total effect is to show a fundamental division in the writer’s mind (Empson, 2004, 192).

Empson’s types of ambiguities are more illustrative in the literal context and March and Olsen’s ambiguities in the organizational and behavioral context. However, these different definitions assign that ambiguity includes more than two meanings and more.

Ambiguity is more than conciseness. In puns or puzzles, two things are said at once. However, ambiguity is constructed from more than this. If the pun or puzzle is quite obvious, there is no room for puzzling, and then there is no space for ambiguity (Empson, 2004).

### 3.1.2 Concept of rationality

The definition of bounded rationality requires the definition of what is meant by rationality. Sometimes it is better to define a concept by telling more of what it is not than of what it is (Bevir & Rhodes, 2003, 109). To understand boundedly rational decision making, one must also understand rational decision making.

There are plenty of connotations related to the term “rational.” Connotations range from formal notions of efficiency and consistency to the substantive notions of autonomy or self-determination. Rational action is action that stands in a certain relation to the agent’s beliefs and desires: that is, reasons. Reasons are reasons for the action. Reasons do, in fact, cause the action for which they are reasons, and the reasons cause the action in the right way (Elster, 1983, 1–3).

In traditional economic theory, “economic man” was economic and also rational. Economic man had the knowledge of the environment, if not absolutely complete, at least impressively clear, and voluminous. Economic man had a well-organized and stable system of preferences and skills in computation to be able to calculate the alternative courses of action available to him (Simon, 1957, 241).

This schematized model of economic man made Simon argue for the theoretical foundation. If an actor were a true rational actor, he would make “optimal” choices in a highly specified and clearly defined environment (March & Simon, 1959, 137). Full rationality would then require unlimited cognitive capabilities and capabilities to calculate the most suitable choice opportunities for each problem. In human decision making, full rational calculation is limited because of cognitive and decision making environmental bounds (Gigerenzer, 2002, 57–58). Simon suggested an alternative approach to the description of rational behavior that is related to psychological theories of perception and cognition (Simon, 1957, 273).

Does rational behavior mean that the agent is doing what he is told to do? In addition, would irrational behavior then mean that the agent is doing otherwise? There is considerable evidence that this is not the case. There are many cases in which rationality can do no more than exclude certain alternatives. Rationality and rational beliefs are grounded in the available evidence (Elster, 1983, 1–2).

March and Olsen (1979, 11) pointed out that ideas with a “decision” as an outcome and “decision making” as a process are already confused by a semantic presumption that decision making is connected to the decision in a self-evident way. Rational choice involves guesses about future consequences of current actions and guesses about future

preferences for those consequences. What will happen in the future as a result of our actions is a wild guess (March, 1978, 589; Thompson, 2004).

Elster (1979) refers to different explanations in science and behavioral models. All sciences use causal explanation. Physical sciences use causal explanation, in social sciences there is no place for functional sciences, and in biology there is no place for intentional explanation. Animal and human behavior should be studied with the notions of function and of intention as regulative ideas. Not all animal behavior is functional, not all human behavior is rational or intentional, but there is a presumption that this is typically the case. Human rationality is characterized by the capacity to relate to the future in contrast to the gradient-climbing that takes place in natural selection. Man is capable of taking the strategic nature of the context into account. In contrast to natural selection, man is capable of realizing the solution to games where no actor has a dominant strategy. A parametrically rational actor treats the environment as constant.

However, the decision-maker is capable of taking the strategic nature of the context into account, as Elster describes above. Limited cognitive capabilities refer to decision-makers' limitations in terms of attention and memory, and in their capacities to learn and to solve problems (March & Simon, 1959, 136; March, 1988). The decision making environment, the context in which decisions are made, is essential. We know the history but we can make our own interpretations. We do not know what the future will bring. Altogether, a decision is rational only in a certain decision making context (Gigerenzer, 2002).

Is failure a lack of rationality? Failure does not necessarily imply a lack of rationality (Elster, 1979, 41). Irrationality can be explained as contradictions of the mind (Pears, 1986). In the boundedly rational world people make decisions surrounded by contradictions in a short time and with a lack of knowledge. Decision making is constrained by cognitive problems of attention, memory, comprehension and communication (Vakkuri, 2009). Possibilities to observe and consider observable variables in decision making are limited. Our memory capacity and our understanding of transactions are limited. In addition, our communication skills are limited. Perfect information to make decisions does not exist, but decisions have to be made. Human behavior is intelligent, even when it is not obviously so (March & Simon, 1959, 136; Cyert & March, 1963).

### 3.1.3 Complete cycle of choice

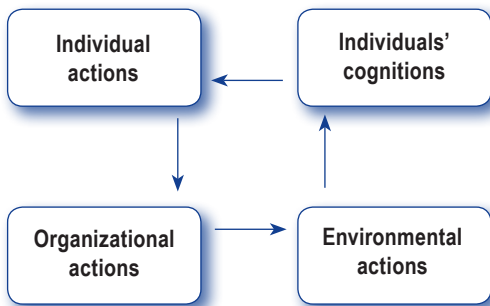
Ambiguity in organizational decision making refers to complex and uncertain choice situations. March (1978, 587–589) specifies that rational choice involves guesses about uncertain future consequences and a guess about uncertain future preferences. A decision-maker only tries to imagine what will happen in the future as a result of the actions, and imagines how to estimate what will happen. This definition sums up the struggle a decision-maker has to face with ambiguity and uncertainty in decision making (Vakkuri,

2010). The decision-maker has to struggle with the discrepancy between what they think the world ought to be and what the world actually is.

James G. March and Johan P. Olsen (1979, 13) specified this discrepancy as producing individual behavior, aggregating into collective choices, and the outside world responding to these choices in a way that affects individual assessments of the state of the world and of the efficacy of the actions. This conception of choice *the complete cycle of choice* to describe how choices are actually made, and how environmental actions affect individuals' cognitions, and their actions, and how this aggregates into the organizational level and actions, and overall, again into the environmental level.

Organizational choice includes four concepts:

- (1) The cognitions and preferences held by individuals affect their behavior.
- (2) The behavior (including participation) of individuals affects organizational choices.
- (3) Organizational choices affect environmental acts (responses).
- (4) Environmental acts affect individual cognitions and preferences.



**Figure 1.** *Complete cycle of choice by March and Olsen (1976, 13).*

Individual behavior is produced by the discrepancy between what individuals think the world ought to be and what the world actually is. Individual behavior is aggregated into collective, organizational actions and choices. In the end the outside world responds to this choice in some way that affects individual assessments both of the state of the world and of the efficacy of the actions (March & Olsen, 1976, 13).

The complete cycle of choice does not assume that behavior and attention would follow belief and attitude, as in most organization theories. Instead, people move in and out of choice situations. The flow of attention is dependent on scarce resources of time and energy. Practically, this means that involvement in a decision is not attractive for everyone in all relevant choice situations, all the time. Individuals do not act only in one arena (March & Olsen 1976, 14–15).

The connection between values and action is problematic in organizations. The decision process transforms the behavior of individuals into something called organizational action. Organizational choice is connected to individual action. Organizations could be seen as instruments of individuals. However, the connection between individual action

and organizational action can be loose. Policies can be selected, prices set, people hired, and other organizational actions can be done without being strongly related to internal decision making processes (March & Olsen, 1976, 16).

Actions and events in the environment may have a little to do with what the organization does. Environmental acts are relationships among events, actors, and structures in the environments more than responses to what the organization actually does. In other words, the same organizational actions will have different responses at different times, and different organizational actions will have the same response (March & Olsen 1976, 17).

Individuals and organizations develop myths, fictions, legends, and illusions and develop conflicts over these. Environmental actions and events are frequently ambiguous; it is not clear what happened and why it happened. Our interpretations are seldom based on our own observations and they rely heavily on the interpretations offered by others. Our trust in the interpretations is dependent on our trust in the interpreters. The degree of ambiguity will be dependent upon the efficiency of the channels through which interpretations are transmitted (March & Olsen, 1976, 18).

#### 3.1.4 Garbage can model of organizational choice

Organizations have inconsistent and ill-defined preferences. Preferences can be discovered through action as much as they are the basis of action (March, 1999). Organizations deal with flows of problems, solutions, and decision-makers in garbage can situations. A decision is an outcome or an interpretation of several relatively independent “streams” within an organization: problems, solutions, participants, and choice opportunities (March & Olsen, 1976, 26–27).

Problems indicate the concerns of people inside and outside the organization, and they arise over different, and independent issues of, for example, lifestyle, family, frustrations at work, career, ideology, or current crises of mankind. All these issues require attention, but they may not be resolved while choices are made. Solutions are somebody’s products. In spite of the idea that answers cannot be found until the right questions have been formulated, this concept does not prevail in a garbage can situation. Participants come and go in a garbage can situation. Every entrance is an exit somewhere else, meaning that these entrances or choices depend on the attributes of the choice being left behind as much as on the attributes of the new choice being made (March & Olsen, 1976, 26).

Choice opportunities refer to occasions when an organization is expected to produce decisions, for example, on contracts to be signed, people to be hired, money to be allocated. These four streams are not completely independent but their connections are random. The link between a problem and a solution depends heavily on the simultaneity of their arrival (March, 2006). An organizational choice is a fortuitous confluence (March & Olsen, 1979, 27).



### *Search rules, stop rules and decision rules*

Herbert A. Simon described decision making as a search process guided by aspiration levels (Selten, 2002, 13–14). The search process goes on until a satisfactory alternative is found. The aspiration level means the value of a goal that must be reached by a satisfactory decision alternative. In the context of the theory of the firm by Cyert and March (1963), goal variables could be profit or market shares. In the context of public administration, variables could be public services and societal effectiveness. The search for alternatives, satisficing, and aspiration adaptation are features characterizing Simon's view of bounded rationality (Selten, 2002, 13–14).

Cyert and March (1963, 115) identified two sets of variables affecting the goals of an organization: the dimensions of the goals and the aspiration level. The dimensions of the goals means viewing the things that are important. The aspiration level is influenced by the organization's past goal, past performance, and the past performance of other "comparable" organizations. The search goes on until a suitable choice is found and the decision is made. For example, a driver is searching for a parking place in a parking lot. The search process goes on until a satisfying alternative, a parking place, is found (Selten, 2002). It is not necessarily the perfect parking place, right next to the entrance, but it is quite close to it, only a short walking distance to the main entrance.

## 3.2 Performance management cycle

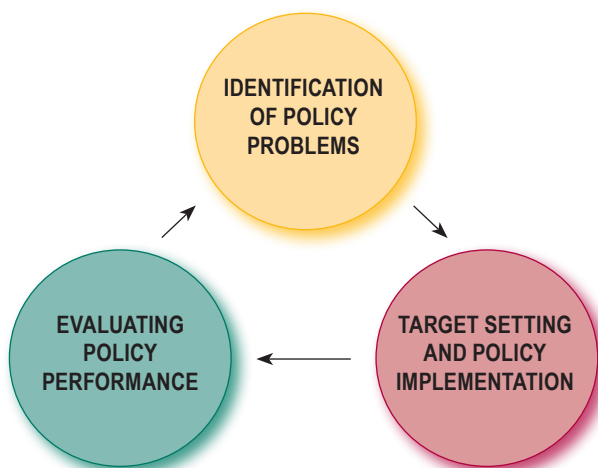
Management matters the most when the government or agency has a clear purpose and mission, when the government or agency has the flexibility to be able to pursue that purpose, when predictable action is valued for linking to results and performance, and where new leadership requires institutional strength and support for effective change (Ingraham, Joyce & Donahue, 2003, 123).

Performance management was created to respond to these needs, to set clear and measurable performance targets to clarify the purpose and the mission of the public agencies. The definition of objectives has been central in the Finnish performance management systems. Management by objectives has affected the formulation of Finnish performance management (Möttönen, 1997, 45; Salminen & Viitala, 2006; Joustie, 2007).

Governance by targets and measured performance indicators is a form of indirect control that is necessary for the governance of complex systems. The form of control that target system represents is a version of homeostatic control in which desired results are specified in a measurable form in advance, where some system of monitoring measures performance against that specification, and a feedback mechanism is linked to measured performance (Bevan & Hood, 2006, 519).



Identifying policy problems, setting policy targets, and choosing and implementing policy actions, and evaluating policy performance are parts of the performance management cycle, as described in figure two.



**Figure 2.** Performance management cycle.

Organizations, and especially administrative organizations such as central government ministries and agencies, are decision making bodies processing problems concerning making choices about goals. The decision making process is divided into planning and preparation (identification of policy problems), decision making and choice, implementation (target setting and policy implementation), and control and evaluation (evaluating policy performance). Planning and preparation should produce information to support decision making and the choice situation. In the implementation phase, decisions should be executed efficiently and effectively following the actual purpose of the decisions. In the supervision and evaluation phase the consequences and advantages of the decision are evaluated and controlled (Anthony & Govindarajan, 1995; Jones & Pendlebury, 2000, 21).

In the performance management cycle the decision-maker identifies policy problems rationally, sets policy targets properly, and chooses suitable policy actions to solve policy problems, and finally evaluates the effectiveness of policy actions. However, the world is much messier than this. Target setting, planning beforehand, and the reporting of results are ways to keep the managerial processes “neat” (Abrahamsson & Freedman, 2006). People distrust the idea that mess can work better than neatness. Moderately disorganized institutions and systems can frequently turn out to be more efficient, more resilient, more creative, and in general, more effective than when highly organized:

*If a cluttered desk signs a cluttered mind, of what, then, is an empty desk a sign?* –Albert Einstein (Abrahamsson & Freedman, 2006)

Due to ambiguity and complexity, the purpose and the mission of the organization are not necessarily clear, or there is no flexibility to pursue these purposes, as Ingraham, Joyce and Donahue (2003) highlighted. Often, public organizations have ill-defined and inconsistent objectives (ambiguity of intention), connections between organizational actions and their consequences are difficult to understand (ambiguity of understanding), and the pattern of participation in organizational decision making is uncertain and changing (ambiguity of organization) (Cohen, March & Olsen, 1976).

Ambiguities cause incoherence in obeying the performance management cycle as a compatible cycle where each section follows another. In the coherence theory of truth there is coherence with some specified set of sentences, propositions, or beliefs (Young, 1996). BonJour (1985, 93) defines coherence intuitively as a matter of how well a body of beliefs “hangs together.” One of the most characteristic features is the relationship between parts. When propositions cohere with a specified set of propositions and are not in contradiction, they are in coherence (Lammenranta, 1993, 134–136; Niiniluoto, 1997, 110). In linguistics, coherence is what makes the texts semantically meaningful between paragraphs.

However, the problem framing discourse is problematic. As Cohen, March and Olsen (1976, 27) identified, preferences may be discovered through action as much as them being the basis of action. Problems and solutions do not follow each other in a self-evident manner. In most cases, problem framing is an enlightened guess about the actual policy problem. An assumption that target setting will follow problem identification does not hold. Problem identification and target setting are consistent processes of success and failure and making changes. When problems are better identified, it affects target setting, and while targets are reached, or they are discovered, unattainable problems are identified again. In this sense, parts of the performance management cycle between problem identification and target setting are not in coherence.

Targets should navigate policies and lead actions in a desirable way. Targets should show results with measurable indicators and also show whether actions are performing or not. After solving policy problems, the decision-maker should choose suitable policy actions.

When performance of the actions is evaluated, it may turn out that targets were set for the wrong subjects, and the performance of the actions was caused by some other unintended measures and causes that were not even thought about. In this sense again, parts of the performance management cycle between target setting and evaluating performance are not in coherence.

### 3.2.1 Identification of the policy problem

Policy problems are complex and difficult to identify. Societal needs and problems are multi-dimensional and conflicting. The problem framing discourse is problematic. How

are policy problems identified, and what is the nature and the scope of actual policy problems (Parsons, 1995)? How do public policies come to be formed in a political-administrative system? These are all interesting questions in terms of identifying public policies.

Public policies are everything the government does and does not do. An interesting question is also what the government does not do. Preferences guide governmental decision making. However, what is ambiguous is that preferences may be discovered through action as much as through them being the basis of action (Cohen, March & Olsen, 1976, 27). This leads to the idea that we may have the solution even if we do not know what the actual problem is. In organizational decision making this means that you often do not know the question in terms of organizational problem solving until you know the answer. This causes ambiguity in problem identification and problem solving. In fire safety policy, this would mean that when fire deaths show a relative decrease in the number of fire deaths it may seem that the problem is solved. However, not until this point may the actual problem show itself as having been identified.

Identifying the policy problem, policy alternatives, and solutions are questions of policy agendas and alternatives. Why are some of the problems on the governmental decision making agenda and some of them not, and what mechanism brings problems to governmental officials' attention?

According to Kingdon (2002, 90–91) policy problems come to the attention of the public and governmental decision makers not through political pressure or perceptual sleight of hand, but because some more or less systematic indicator simply shows that there is a problem out there. These indicators abound in the political world because governmental and non-governmental agencies both routinely monitor them. One of the most common monitoring activities is to follow the patterns of expenditures and budgetary impacts. Problems are directly affected through the budget process and by the rise and fall of the budget. People in the government know when their budgets are rising or falling. (Kingdon, 2002, 91.)

In addition to monitoring, studies on a particular problem by a government agency or by non-governmental researchers or academics may suggest a problem needing governmental attention. Indicators or studies are not primarily used to determine whether or not a given problem exists. What matters is the interpretation. Decision makers use indicators to assess the magnitude of a problem, how extensive the problem is, and also to become aware of possible changes in the problem. (Kingdon, 2002, 91.)

Problems are not self-evident through the use of indicators. Usually, focusing events, crises, or disasters come along to call attention to the problem. A powerful event or even a symbol, for example, 9-11, can catch the attention of political decision makers all over the world. The function of a crisis is that it gets the attention of governments (Kingdon, 2002, 94). Crisis situations can create a political window of opportunity to certain agendas (Kingdon, 2002; Ahonen, 2009, 95).

Fire safety policy gets the attention of political decision makers because fires and fire deaths are crises and they are measured on the governmental Internal Safety Program. Interpretations of the decision makers are essential. How extensive the problem is seen to be, what the magnitude of the problem is, and if there have been changes in the problem are questions decision makers have to solve.

### *Connecting solutions to problems*

Policy problems may also be associated with different solutions. In that, the significance of the problems cannot be distinguished from the solutions (March & Olsen, 1979). Baumgartner and Jones (1993, 150) present an example of drug abuse. It is evident that drug abuse is bad; however, what is, essential is what the nature of the governmental response to this problem should be; the government decisions about the solutions to be adapted. Incarceration of users and dealers, interdiction, treatment, and education are various approaches to the problem. Baumgartner and Jones (1993) present that solutions are attached to problems and that they influence policy dynamics later. De Lint and Virta (2004) write about safety politics as “living with ambiguity,” meaning that safety politics always include ambiguity in terms of the problems and solutions that are raised.

Alcohol abuse has been a problem longer than, for example, illegal drug abuse. However, alcohol abuse is more easily accepted by the political system than drug abuse. One explanatory factor is that familiar, routine problems are more easily accepted than unusual or unfamiliar ones (Baumgartner & Jones, 1993, 6). An interesting question is how this is considered when formulating fire safety policy.

Fire deaths are a policy problem that is difficult to define, especially in the light of individual choice and the collective choice, but also in the light of responsibility between citizens and the government. Government represents the collective choice exercised through governmental actions. Government is responsible for providing rescue services and measures. An intriguing question is when is public intervention needed? When should citizens be held responsible for their own individual behavior and choice, and when should the government intervene and be held accountable for its actions. Collective choice offers at least the possibility of correcting the perceived deficiencies of individual choice (Weimer & Vining, 1989, 94). In some cases, society and governmental officials have a duty to intervene in citizen's behavior by limiting their personal freedom, for example by arresting and imprisoning while breaking the law or committing a serious crime.

### 3.2.2 Target setting in organizations

Target setting is a way to make organizations rational and functional. NPM represents this strong rationality and functionality in organizational behavior. However, a strong primacy of rationality, in relating consequences systematically to objectives, rejects other

procedures aimed at choice and excludes the processes of intuition, and the processes of tradition, and faith (March, 1988, 254–255).

Why are organizational targets set, and what purpose do they serve? Etzioni (1964, 5) identifies functions for organizational targets: to portray the future state of affairs to strive for; to set guidelines for organizational activity; to constitute a source of legitimacy, justifying the activities of an organization, and its existence; and to provide standards by which members of an organization and outsiders can assess the success of the organization.

March (1988, 254–255) identifies target setting as a way of expressing an organization's purpose and of how it intends to strive towards this purpose. Action in an organization is explained in terms of this purpose. Action should serve the purpose and it should be defined in terms of a consistent set of pre-existent goals or targets. The pre-existence of a purpose is one of the features in choice behavior and target setting. Targets are set by evaluating alternatives on the basis of the information that is available. Eventually, choice should be based on a consistent theory of the relation between action and its consequences.

If action in an organization is explained in terms of its' purpose what purpose is then actually served generally in organizations and especially in the rescue services? Organizational theorists claim organizations generally understood to be systems of coordinated and controlled activities (Meyer & Rowan, 1977). Organizations create order instead of stateless.

The new institutionalism (Meyer & Rowan, 1977; DiMaggio & Powell, 1983) proposes that formal organization structure is shaped by institutional forces; including rational myths, knowledge legitimated through the educational system, and by the professions, public opinion, and the law. Organizations are deeply embedded in social and political environments, and organizational practices and structures are often either reflections of, or responses to rules, beliefs, and conventions built into the wider environment (Powell, 2008).

DiMaggio and Powell (1983, 148) define organizations that, on the whole, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products, and the totality of the relevant factors. DiMaggio and Powell highlight the coercive, normative, and mimetic processes of reproduction. Coercive factors involve political pressures, the force of the state, and regulatory oversight and control. Normative factors are rooted in the influence of the professions and the role of education, and mimetic process draw on habitual, taken-for-granted responses to circumstances of uncertainty (Powell, 2008). Organizations are, for many people, a main source of their identity (Czarniawska-Joerges, 1992, 2), or social units devoted primarily to the attainment of specific goals (Parsons, 1966; Etzioni, 1961, xi).

Brunsson (2000, 4) identifies that organizations exist to coordinate action and to achieve results, which would be beyond the reach of unorganized individual actions. Brunsson and Olsen (1993, 4) identify organizations as institutionalized when their

behavior is determined by culturally conditioned rules, which manifest themselves in certain routines for action and which give meaning to those actions. According to Anthony and Govindarajan (1995, 5), an organization consists of a group of people working together.

Meyer and Rowan (1977, 340) distinguish between the formal structure of an organization and its actual day-to-day activities. The formal structure is a blueprint for actions including the manner of organization, listing of offices, departments, positions, and programs. These elements are linked by targets and policies and they create a rationally suitable theory as to how actions should be fitted together. There is a considerable gap between the formal and the informal organization. Formal organizations are often loosely coupled, and structural elements and activities are only loosely linked to each other (March & Olsen, 1976; Weick, 2001; Meyer & Rowan, 1977).

The formal organization structure requires the blueprint to express the aims of the organization. Through this, organizations express their purpose and aims, and how they intend to strive toward these purposes.

Organizations are oriented around goals or targets. Targets can be seen as providers to purpose towards decisions and activities (Simon, 1957, 112). In public policies, targets and indicators are usually less tangible. For example, an increase in a fire safety policy and in the welfare of society is difficult to measure, but operations are still more likely to be organized and the results are expected by the public.

However, all operations are not surrounded by targets. Operations outside the target-orientation can also lead to results. In addition, results can also be achieved in sectors for which the targets would not have been set at all (Kassel, 2008, 241–252; Autero, 2009, 118).

Target setting is a choice situation. Targets are made by evaluating alternatives on the basis of the available information. The pre-existence of a purpose is one of the features in choice behavior. Values, needs, wants, preferences, goals, and drives all reflect the tendency to believe in a set of objectives that are prior features or attributes of the system and make the observed behavior seem intelligent in terms of these objectives (March, 1988, 254–255).

In public policies, targets and indicators are usually less tangible. For example, an increase in internal security or in societal welfare is difficult to measure, but operations are still more likely to be measured.

As Meyer and Rowan (1977) described, organizations have their formal structure with targets in the blueprint and the actual informal day-to-day activities. Performance agreements represent the formal structure and the blueprint in the organization. However, this does not mean that the objectives defined in the agreement would be consistent with what the organization actually does in its day-to-day activities.

Besides, connections between organizational actions and their consequences are difficult to understand. An assumption about known future consequences is problematic. The future is uncertain and a decision-maker cannot know the exact future consequences

of a chosen course of action. The assumption that decision-maker would have known, coherent and stable preferences in decision making is difficult to sustain in practice. (Sjögren, 2006, 29).

*The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world – or even for a reasonable approximation to such objective rationality. (Simon, 1957, 198)*

As observed in the complete cycle of choice, individual preferences and cognitions are aggregated into organizational choices. This process can be bureaucratic-administrative or bargaining-political. The bureaucratic-administrative procedure is a process by which problems are solved, relevant solutions are associated with appropriate problems, and choices are made in order to resolve problems. The bargaining-political procedure is a process by which coalitions are formed and political bargains struck. Choices are made by forming a group with sufficient power to enforce a joint solution to a problem (Cohen, March & Olsen, 1976, 24). Fire safety policy target setting is more bureaucratic-administrative. This is studied empirically in chapter six.

### 3.2.3 Performance evaluation

Performance evaluation in this study refers to efforts that increase human effectiveness through systematic data-based inquiry. When one examines and judges accomplishments and effectiveness, one is engaged in evaluation, and when the examination of effectiveness is conducted systematically and empirically through careful data collection and thoughtful analysis, it is called evaluation research (Patton 1990, 11).

Evaluation and research are concepts that are closely related. The systematic inquiry of data gives feedback to management on accomplishing certain results. In the performance evaluations in public management, it is important to know what the outcomes of public policies are.

Outcomes are results gained due to public policies and to other actors. In performance evaluation, the focal question is who will take the credit for the intended results? The purpose of measuring outcomes is to assess the valuation placed on the activity (Smith, 1996, 1–2). Smith identifies an outcome as a personal valuation of a quality-adjusted output. Quality adjusted measures could be, for example, exam success rates in schools, or victims saved from fires. Output measures would be measures of process such as pupils taught, or safety measures performed. The value added by the schools or the rescue services would be more refined quality measures that were starting to take on the characteristics of an outcome measure. According to Smith (1996), there is a continuous spectrum between the traditional output measures and the pure outcome measures.



Outcomes can be distinguished from outputs of an activity, but measuring outcomes is an entirely different matter, entailing tracing ramifications or actions throughout society. Outcome measuring relates to, for example, measuring improvements in the health of the population instead of measuring hospital activity. Or measuring intellectual capital produced by schools instead of measuring the number of pupils taught (Smith, 1996, 2).

Measuring safety in society is an outcome measure of the internal safety policy, instead of measuring the efficiency of the rescue services. Another intriguing question concerns how to evaluate performance and measure the outcomes of the intended actions in the rescue services, fire brigades, ERC, or in the Emergency Service College. Who will take the credit or blame for the actual results? The state ensures protection for its citizens as a public service. Rescue operations and services are state provided public goods for citizens; however, the rescue services are provided by the municipalities. But the government is held responsible for the actions of fire safety policy and for reducing the number of fire deaths.

Thus, what makes performance evaluation ambiguous is that there are numerous actors affecting the policy problem. The government can be held responsible for the actions but the overall effectiveness is brought about through several actors and measures. Measures range from legislation, regulations and stipulating safety instructions, to buildings and fire-extinguishing equipment (alarms, sprinklers), to selling self-extinguishing cigarettes, producing rescue operations and services, supervising the services and the functions of the fire brigades, not to mention preventive measures such as chimney sweeping, or fire inspections. Increasing public awareness of fire safety and risky situations through marketing is also a measure affecting organizations and individuals in their decisions and preventing accidents. Who takes the credit or blame for the successes or failures in terms of these measures is a question that needs to be solved through performance evaluations.

Performance evaluations can be target based or non-target based. The performance management model is based on target setting and for this reason the performance evaluations are also based on targets. Were targets accomplished or not, and if not, why not, and how should targets be met better in the future are questions to be solved through evaluation. Additionally, what the intended effects and non-intended effects were and what any side effects were are questions to be solved via performance evaluation.

A closer understanding of what causes fire deaths, or causes changes in the decrease or increase requires evaluation in both the material and the social world. The material world refers to the world of technical devices from fire safety equipment, to fire-extinguishing systems, and to the operationalization of the entire rescue services that exist in the material world. The material world is real and can have real effects on the decrease or increase in fire deaths. The social world in which fires occur is real too, and it can have effects on the decrease or increase in fire deaths. The Government Program and the Internal Security Program are political and social programs attempting to address existing social problems and make a change at the social level in terms of these problems.



Pawson and Tilley (1997) termed realist evaluation as an approach grounded in realism, which asserts that both the material and the social worlds are 'real' and can have real effects, and it is possible to work toward a closer understanding of what causes change. Some of the implications that Pawson and Tilley raised for program evaluation fit well to fire safety policy. Social programs are an attempt to address an existing social problem and create some level of social change. Programs work if they enable participants to make different choices, although choice-making is always constrained by participants' cognitive abilities, previous experiences, beliefs and attitudes, and the decision making context. However, making and sustaining different choices requires a change in the participant's reasoning and the resources they have available to them. For example, a change in reasoning means values, beliefs, attitudes, or the logic they apply to a particular situation for example, in smoking and alcohol abuse. The resources they have available are, for example, information, skills, material resources and support (e.g. knowledge), fire alarms, and extinguishing systems. The combination of reasoning and resources is what enables the program to work and is known as a program mechanism.

However, programs work in different ways for different people and programs can trigger different change mechanisms for different participants. The contexts in which programs operate such as within social, economic, and political structures or in the organizational context, geographical, or historical context can make a difference to the outcomes achieved. Some factors in the context may enable particular mechanisms to be triggered. Other aspects of the context may prevent particular mechanisms from being triggered. There is always an interaction between context and mechanism, and that interaction is what creates the impacts or outcomes; that is, the context and the mechanism produces the outcome. As measures work differently in different contexts and through different change mechanisms, measures cannot simply be replicated from one context to another and automatically achieve the same outcomes. An understanding about what works for whom, in what contexts, and how, are important questions in public interventions. Therefore, one of the tasks in evaluating performance and outcomes is to learn more about these questions and also about what mechanisms are triggered by, and in what contexts.

Performance of public actions and operations is a construction of multilevel actors in the public and private sector and non-profit sector (the context). Allocating budget money into rescue services is a mechanism to effect fire safety policy at the political level. Public sector organizations such as emergency response centers and fire brigades are responsible for producing efficient rescue services. The Emergency Service College is responsible for educating professionally skilled firefighters and squads. Producing rescue services and educating firefighters is a mechanism and also involves resources. Making and sustaining different choices at the citizen level is also a mechanism and it requires a change in the participant's reasoning as to whether to smoke, use alcohol, and take care of fire alarm systems. The mechanism in fire deaths is a combination of reasoning and resources,

and the interaction between context and mechanism creates the impacts or outcomes of performance.

### 3.2.4 Ambiguity and coherence

What is the relationship between ambiguity and coherence? Why are these two concepts used in this study? These two concepts are used to study complexity in performance management and examine why it is so hard to “get things done” and to “decide and do” in public administration. These two concepts are used to study the world where the public manager actually lives and makes decisions.

As mentioned above in chapter 3.1.1, ambiguity illustrates the complexity in organizational behavior and choice situations. Ambiguity explains what makes problem identification, target setting, implementation, and performance evaluation problematic. Coherence explains what makes them inconsistent, but it is more elusive and difficult to define (Audi, 2001).

Shepherd and Sutcliffe (2011, 365) divide coherence theory into two main branches: perception and explanation. The coherence theory of perception explains how data, as quanta, is turned into a representation that is used to “see” objects or relationships between objects. What is essential is where people focus their attention. Attention is guided by knowledge based on past experience, for example, on preconceptions or the formation of a gist. A gist is a holistic representation of the environment that does not require attention to stabilize a subset of the environmental stimuli. The coherence theory of explanation explains how perception becomes represented in beliefs. People attend to data and then make inferences in order to tie the data into a coherent mental representation that can be used to explain the phenomenon.

The belief system is essential in coherence. Audi (2001, 24) uses an example of a fan running on the roof and making a whirring sound. The whirring sound implies that the fan is running, but it is not necessarily so. If someone is imitatively creating the whirring sound, the justification for believing that the fan is running is undermined by the incoherence in the belief system. Several beliefs are needed in order to achieve the relevant coherence. For example, hearing should be normal; there should be no other machine nearby making the same sound, and so on. It is not quite clear how far this goes on, and whether we form that many beliefs of the ordinary kind in question. However, justification concerns one’s beliefs about the world, even without being able to show them.

Another example of Audi’s (2001, 25) implies dependence in coherence. A job is the source of one’s income. The job is vulnerable to severe depression. Depression would eliminate the income. However, it does not follow that the absence of a depression is a source of one’s income. Positive economic conditions are not a source either, although one’s source depends on them. Without enabling conditions, nothing can be served as a source of anything. Conditions can be conceptual and psychological. For example, if a

child has no concept of an insurance inspector then seeing one examining a damaged car and talking to its owner is not a source of justification for the proposition.

Another relevance of coherence in this study can be defined as a political imperative that derives from the threat of appearing inconsistent in the electoral arena, and an economic imperative that arises from the need to organize a large, complex organization to conserve scarce public resources (Di Francesco, 2001, 105). To get things “done” and look compatible in the eyes of the electorate is one incentive.

Policy coherence is often taken to imply that various policies “go together” sharing a set of ideas or aims (Van Bommel & Kuindersma, 2008, 19). However, policy coherence is a relative concept, elusive, and difficult to define (Audi, 2001; Olsson, 2005, 12). Jones (2002, 391) segregates coherence from policy coordination and consistency with the argument that coherence goes further in the systematic promotion of mutually reinforcing policy actions. BonJour (1985, 93) defines coherence intuitively as a matter of how well a body of beliefs hangs together. Coherence becomes relevant once the reliability of informants is in doubt and we are unable to take that which is being reported at face value (Olsson, 2005, 10).

In policy coherence, “coherence” is taken to imply that different policies “go together” and share a set of ideas and aims. Policy coherence can be studied based on the policy sector, the target group, or geographic area. Policy coherence can be defined as a systematic promotion of mutually reinforcing policy actions across government departments and agencies, creating synergies toward achieving the defined objective (Jones, 2002, 391). Policy coherence is not about choosing between conflicting aims, but more about enabling the process through which both the aims and means can be redefined and achieve better outcomes. This study demonstrates fire safety policy and mutually reinforcing policy actions across governmental policy actors to study how different policies can “go together.”

Ambiguity and coherence are not concepts that are mutually exclusive. They are concepts that are proximal, but they have their own different theoretical tasks. Both concepts are used to study performance management in the context of fire safety policy but with different purposes.

The following section represents the conceptual framework of safety research. Essential concepts of safety are relative and bounded into context. This is examined further in the following section. Ambiguity and coherence construct the theoretical framework of organizational decision making and the safety research framework offers an approach to study fire deaths in the emergency context.

### 3.3 Conceptual framework of safety research

Besides the bounded rationality decision making theory and ambiguity (Simon & March, 1959), this study applies a combination, or a “weft” of emergency, disaster, and risk-management approaches to scrutinize the case of fire deaths (Davies & al., 2003).

This “weft” includes the human error approach and systemic error approach (Perrow, 1999; Bogner, 1994; Reason, 1990), meaning that accidents occur in systems with many components and complex interconnections. However, this study does not include technical approaches or models to explain huge disasters such as Three Mile Island in 1979 or the Chernobyl disaster in 1986 (Bogner, 1994). This research is more focused into a loosely coupled system of fire safety and other policies and their interconnections (Perrow, 1999).

### 3.3.1 Prior research

Prior research is elaborated on ahead of the context of safety research. Prior safety research is divided into the study of natural disasters and emergencies, and human-made attacks and accidents based on the research subjects. Classification could be done in many other ways, for example, based on different disciplines of science, for example, social sciences, political sciences, criminology, military science, engineering, economics, or organizational sciences. This is done more completely in the concept definitions of safety (3.3.2). The classification based on the research subjects describes the modern problems of safety research in society today.

Natural disasters can be global and effect wide areas at the same time. A disaster does not have to hit a home area for its effect to be felt there (Rikoski, 2008). This happened in the case of Indian Ocean Tsunami in 2004, which also affected Scandinavian tourists or hurricane Katrina in New Orleans in 2005, which affected numerous states in the USA.

In the 21<sup>st</sup> century, safety policy issues have varied broadly from international terrorism to natural disasters. The terrorist attacks of September 11, 2001 have kept attacks in the public awareness for the last decade. The responses of policymakers to these events have been under observation (May, Sapotichne & Workman, 2009, 797). An essential question concerns how governments will now respond to and prepare for these unpredictable disasters and attacks.

Collaboration between governmental and non-governmental organizations is necessary when dealing with disasters, attacks, and accidents. Governments usually have the leading role in cases of emergency, but the capacity to plan for disasters and their consequences is not purely the governments’ responsibility. In response to disasters, not only public organizations, but also non-profit and private organizations need to cooperate. Cooperation is necessary when dealing with natural disasters and attacks (Waugh & Streib, 2006; Moynihan, 2007; 2008; Rikoski, 2008).

As governments do not have the capacity to plan for disasters and their consequences in isolation, in most cases, multiorganizational and multisectoral cooperation is essential. The Red Cross, Salvation Army and churches are voluntary organizations working with crises and accidents. However, different accidents require different partners working in unison. In the case of the Indian Ocean Tsunami of 2004, important co-operational partners were travel agencies and also a local group of Finnish divers. Travel agencies

contacted tourist guides in resorts and a local group of Finnish divers supported rescue work and evacuation, advised on local circumstances, and passed on information regarding victims to relatives and families in Finland via a homemade web site.

Emergency management requires the participation of many governmental, voluntary, and private organizations. Consequently, much research has been done on social network analysis to map multiorganizational networks (Mattila & Uusikylä, 1999; Drabek, 2003; Rikoski, 2008). What is the best way to organize and manage the consequences of a disaster or an emergency? As mentioned, in most cases the government lacks the capacity to manage consequences alone, and needs collaboration. Mixed collaboration and hierarchical command structure serve the function best (Rikoski, 2008).

One way to scrutinize disasters is to break disasters into phases and view whose responsibility it is to correspond in each phase: pre-impact, impact, immediate post-impact, recovery, and long-term reconstruction; warning, impact, emergency and recovery; warning, evacuation, emergency response, and restoration. The Federal Emergency Management Agency of the United States divides disasters into mitigation, preparedness, response, and recovery. These specific phases overlap and boundaries may be indistinct, but the idea is to plan and to prepare whose responsibility it is to respond in each phase (Rikoski, 2008; 48–49).

Governmental organizations and officials typically have leading and coordinating roles in disaster response. However, many governmental and non-governmental organizations and individuals may be part of the disaster response without planning to do so. For example, in the Indian Ocean Tsunami case, Finnish government officials failed in terms of communication. Victims' relatives were not informed, and in the beginning, an official announcement claimed there were no Finnish victims, although the truth was crueler, and the total loss of lives was 178. The government failed to communicate. On the contrary, the group of Finnish divers passed information to relatives and families in Finland. Their ability to act and responded in the crisis was more resilient than the government's ability. Travel agencies also played an essential role in contacting passengers and tourist guides in different resorts and territories. They also began an evacuation process with the government officials.

However, residential fires and fire deaths studied in this research are accidents and continuous accidents of significance, in that fires do occur in time. They change form and extent, but their future existence cannot be removed, and this makes fire prevention indispensable (see chapter 2.1).

Perrow (1999) defines accidents as an interaction of multiple failures. Failures can be made by humans and systems. Humans making mistakes have been studied as the "human error problem" (Reason, 2003). This is a classic individualistic view of a person or an operator committing "errors." The human error problem has been studied widely in nuclear power plant accidents such as Three Mile Island in 1979 or the Chernobyl disaster in 1986, in medicine, and in aviation (Bogner, 1994; Perrow, 1999).

Reason (2003, 2) writes about the cognitive “balance sheet.” This automaticity means that slip-ups and actions-not-as-planned will be inevitable. Faultless performance and systematic errors are two sides of the same coin. Behavior can be non-intentional, unintentional, and intentional, but mistaken. The notion of intention and error is inseparable (Reason, 2003). Davies et al. (2003) found that one of the problems with ergonomics is that writers emphasizing the system aspects of error, also emphasized the “cognitivist” aspect. In other words, errors would be known aspects in systematic behavior, “in cognition.”

System error has been studied in terms of failures in the system such as mechanical errors, environmental errors, mistakes in system design, and procedures (Perrow, 1999, 7). Systemic error has been studied especially in fire safety research, material research, studies on fire physics, and in statistical research assessing fire risks (Tillander, 2004). Fire physics and safety systems are wide research areas, but this research digs into the public decision making problem and fire deaths as a political-administrative decision making problem, and in that context, particularly the human error aspect is emphasized.

However, fire deaths are a combination of human error and systemic error. Carelessness and lack of caution were contributory factors in most fire deaths during 2007–2010 in Finland (Kokki & al., 2008; Kokki & Jäntti, 2009; Kokki, 2011). Human behavior is essential in the further investigation on fire deaths and in considering the circumstances of fires, and whether preparations were made to prevent the accident, and what could have been done to prevent these accidents.

### 3.1.1.1 Emergencies and accidents

The evolution of emergencies and emergency management has transitioned from the civil defense focus of the Cold War to the all-hazards focus of the 1990s (Waugh & Streib, 2006, 131). Emergency management has risen in importance since the catastrophic hurricanes, tsunamis, and terrorist attacks of the first decade of the second millennium.

Catastrophes, disasters, terrorist attacks, and devastating accidents have become more common, and the daily news tells us about accidents all over the world. Accidents and disasters are no longer only a problem for certain countries in certain geographic areas, or countries with a risky political, or religious status.

In emergency management, it is not unusual that different government agencies, voluntary organizations, and organizations that have not worked together before come together when responding to the emergency (Rikoski, 2008, 9).

Emergency management is a broad set of functions such as hazard mitigation to prevent or lessen the impact of a disaster, disaster preparedness, disaster response activities, and disaster recovery (Waugh & Streib, 2006, 131). Being resilient in the face of uncertainty is the ultimate task for emergency management (Handmer & Dovers, 2007, 30; Weick, 2001; Perrow, 1999). Emergency management is the function that plans, coordinates, and



supports a wide range of activities to reduce vulnerability to hazards, to prepare for, and cope with disasters.

Emergencies, disasters, and accidents can be divided into human-made and natural disasters. This research focuses on fire deaths as accidents caused by humans. What sort of accident type are fire deaths? Accidents can be divided into *component failure accidents* and *system accidents* (Perrow, 1999, 64). Systems are divided into four levels: units, parts, sub-systems, and systems. *Incidents* involve damage to, or failures of parts or a unit only, even though the failure may stop the output of the system, or affect it to the extent that it must be stopped. *Accidents* involve damage to subsystems or the system as a whole, stopping the intended output, or affecting it to the extent that it must be halted promptly. *Component failure accidents* involve one or more component failures (part, unit, or subsystem) that are linked in an anticipated sequence. *System accidents* involve the unanticipated interaction of multiple failures (Perrow, 1999, 63–100).

Humans are part of systems, and a group of humans or a single human can constitute a subsystem. Damage to these will cause an accident (Perrow, 1999, 66). It is the character of systems that can cause the damage. This is why systems have catastrophic potential. Catastrophic potential systems can cause damage to a great many humans, first-party victims, second-party victims, third-party victims, and fourth-party victims.

First-party victims are the operators of the system (pilots, ship officers, nuclear plant officers). They run the system or attend on regular shifts. Second-party victims are non-operating personnel or system users without influence over the system, for example, passengers on a ship. They are not innocent bystanders, because they are aware and informed of their exposure. They choose to participate in the system. Third-party victims are innocent bystanders who have no involvement in the system. For example, living near a nuclear plant in the USA is not voluntary, because nuclear plants exist near all densely populated areas. There is no practical means to avoid them.

Fourth-party victims are fetuses and future generations. They are victims of radiation and toxic chemicals, would-be children whose damaged parents will not be able to conceive, stillborn children conceived after exposure, and people who will be contaminated in the future by residual substances (Perrow, 1999, 66–69).

In the case of fire deaths, first-party victims are firefighters. They are the operators of the system. Second-party victims are relatives, neighbors, and inhabitants in detached-houses if they are aware and informed of the exposure. Third-party victims are neighbors and inhabitants that have no involvement in the system and are not aware of the exposure. Fourth-party victims are the would-be children that damaged parents will not be able to conceive.

In spite of engineered safety features, accidents always happen. Humans also make mistakes and systems do fail. Human error spans the disciplinary gulf between psychological theory and the reliability of hazardous technologies (Reason, 2003). The interaction of multiple failures is one explanation for accidents (Perrow, 1999). It means

that a series of failures interact and become serious. However, the difference between human error and system safety error is that the failures are loosely coupled. Events in a system can occur independently, although they can be involved in the same production sequence, yet one event was not caused by the other. Tightly coupling means interactive systems that are tightly coupled together. Most of the time we do not notice the inherent coupling, because most of the time there are no failures, or failures that have occurred do not interact (Perrow, 1999, 7–8).

For example if the battery has not been changed or is missing, the fire alarm will not sound the alarm in the case of a fire and the victim will not notice the danger while asleep. Forgetting to change the battery or ignoring it is a human error. Mechanical failure would be a dysfunction in the fire-alarming system. The system would fail. This is dualism; separating human error and mechanical failure. Disconnecting human contributions from mechanical contributions requires deconstruction – the ability to disconnect the material and human cause. This is a demanding task. Additionally, with a growth of system size and complexity, the nature of accidents is changing all the time. Systems incrementally push their operations toward the edges of their dynamic environments (Dekker, 2005, 1–3).

The cause of the accident can be found in the complexity of the system, failures in design, equipment, operators, procedures, or environment. However, it is the interaction of the multiple failures that explains the accident (Perrow, 1999, 7).

### 3.3.1.2 Disasters and crises

There are differences in the conceptual use of “disasters” and “crises.” Disaster and crisis management literature uses concepts of crises and disasters. Instead, public policy theorists traditionally use concepts such as “external events,” “external perturbations” (Sabatier & Jenkins-Smith, 1993), “external shocks” (Ingram & al., 2007), “focusing events” (Kingdon, 2002), or “critical junctures” (Hogan & Doyle, 2009). Nohrstedt and Weible (2010, 5) divide external events, perturbations, and shocks, generally meaning broader processes of societal and or political development without analytical attention to actors’ reactions to these events. Focusing on events and critical junctures, Nohrstedt and Weible (2010, 5) identify capturing the impulse and the inherent parts of the societal and or political processes that are triggered by certain events including, for example, heightened attention.

Natural disasters such as hurricanes, tornados, floods, and wildfires, or, for example, the tsunami in the Indian Ocean 2004, have kept natural disasters in global public awareness. In the tsunami in the Indian Ocean in Thailand in 2004, 178 Finns and 543 Swedes were killed. In Finland, the Tsunami caused the largest number of lost lives after the Second World War. Most of the victims were on vacation in Thailand during the Christmas holidays. The estimation is that, overall, 150,000 to 300,000 people were killed



in the Tsunami. The exact number of victims is unknown (Yle, Elävä Arkisto, 1). Some estimations rise to more than 286,000 victims (Barnshaw, 2009).

The tsunami was one of the worst natural disasters in history. It hit the poorest people in the poorest coastline in the Aceh of Indonesia most heavily. Sri Lanka, India, and Thailand also suffered from losses in human lives. The tsunami affected the locals, and also a number of Christmas, and New Year tourists from other parts of the world. This addresses that natural disasters are global and can affect many countries at the same time.

Since large natural disasters and catastrophes usually happen abroad affecting mainly tourists and visitors, it makes emergency planning and international emergency planning, and cooperation between different geographical areas and between different organizations, public, non-profit, and private companies even more important.

Hurricanes and tornadoes are still quite distant from the Finnish context, but strong straight-line winds have also concerned Finland. Damaging thunderstorm winds caused storms called “Asta” and “Veera” in summer 2010 (Yle 30.07.2010). Storms cut down wide areas of forest, especially in Eastern parts of Finland, blocking roads, and causing power cuts, and the economic damage was substantial. Storms also caused substantial economic damage during the Christmas holidays in 2011. Entire population centers were without electricity for days, especially in parts of Eastern Finland and overall, 300,000 houses were estimated to have gone without electricity (Yle 27.12.2011).

### 3.3.1.3 Terrorism and attacks

The terrorist attack of 9-11 in 2001, school shooting attacks, and explosions have kept human-made attacks in global awareness. In the 9-11 attacks almost 3,000 people were killed in a series of suicide attacks by Al-Qaeda in the United States on September 11, 2001. Al-Qaeda hijacked commercial passenger airliners and intentionally crashed into the Twin Towers of the World Trade Center in New York and also hit the Pentagon in Arlington. The United States of America and the Bush Government responded to the attacks by launching a “War on Terrorism” and invaded Afghanistan in 2001 to find Osama bin Laden and other high-ranking Al-Qaeda members to put them on trial, and to remove the Al-Qaeda – supporting Taliban regime.

Terrorism and war has changed their format since the 9-11 attack, and since that point, the USA stated that it waging a “war” against terrorism, and has used methods of war to fight against this fragmented, global, and non-sovereign community (Huhtinen, 2005, 76). Later on, President Obama announced the war on terror to be no longer valid (Jantunen, 2010). US forces killed Osama bin Laden in Pakistan in 2011 (BBC 2 May, 2011). War is a question of life and death for the country concerned, and for this reason, it must be carefully studied. War or an armed conflict is not an occasional irregularity, but a repeated conscious operation (Sun Tzu, 1990, 49). Terrorism is ideologically motivated violence (Cole & Dempsey, 2006).

The 9-11 terrorist attack aimed at civilians and altered traditional warfare into abrupt attacks that can happen anywhere. America has great power, and is possessed of military might, and a wide-ranging economy (Bergen, 2006). World Trade Center and the Pentagon were symbols of economic and military might. The battlefield can be “traditional,” as well as involving business centers, and civilian environments. The discrepancy between terrorism and attacks is more in the depth and intention of the actions undertaken.

In Finland, the Myyrmanni shopping mall explosion in 2002 claimed seven lives, including that of the bomber himself. The bomber was a 20-year-old-chemistry-student, who was actively participating in the Internet bombing discussions (Yle, Elävä Arkisto, 2). School shootings in Jokela claimed eight victims in 2007, and in Kauhajoki, 11 victims in 2008. These examples have shown that disasters and attacks are no longer distant, are no longer not in Finnish society nor in the school environment either.

The Jokela school incident was reminiscent of the Columbine High school shooting in Colorado, USA in 1999. The Finnish shooter respected the Columbine shooters who fatally shot 12 students, one teacher, and then committed suicide. The Finnish school shooter shared the Columbine high school shooters’ glorified web sites with a student, who admitted planning a school shooting near Philadelphia in 2007. The Internet became a virtual meeting place for these teens who were a world apart (Rocky Mountain News 13.11.2007). This example is an opposition to the Indian Ocean Tsunami case, where The Internet became an information platform between the rescuers in Thailand and relatives in Finland.

Another atrocity in the Nordic and the Scandinavian welfare states occurred in Norway in Oslo and on Utøya Island in July 2011, when a mentally ill Norwegian shooter killed 77 people. These tragic attacks and many more have deeply struck the Nordic and the Scandinavian welfare state models.

What is common to these examples is that in human-made disasters, attackers and bombers may be organized terrorist groups or school children, but the disaster is the same, and requires a governmental response.

### 3.3.2 Safety, security, certainty, and uncertainty

There are several paradigms in safety research fields and there is no one holistic approach to safety research. Safety research is undertaken in multiple research fields in social sciences, in political sciences, criminology, economics, and organizational sciences. Safety research is as well known in military science, in engineering, and applied technical sciences. The safety research field is a multifaceted and a pluralistic discipline and there is a need for synthesis (McEntire, 2004, 196).

Synthesis can be developed by defining the key concepts, which sew the field of research together. Concepts of safety and security define the safety research discipline. A

conceptual division into safety as unintended damage and security as intended damage can be made. Security can be defined as follows:

*Security is the state of being secure, specifically freedom from fear, danger, risk, care, poverty or anxiety. Security also implies certainty. The roots of the term are in the Latin securitas/-securus, derived from sine (meaning without) cura (care, anxiety, pains, worry). Safety is closely related to security. Safety also means freedom from danger or risk. However, it has additional connotations which have more to do with physical conditions, e.g. freedom from injury, the safety of the body and of property. In this context certainty refers to certainty of order, assurance and predictability. (Virta, 2006, 371)*

The definition of safety is always relative and related to a certain context. The words *security* and *safety* in English, *securite* in French and *sicherheit* in German all include the word *certainty* (Virta, 2006). Certainty and *uncertainty* are essential safety concepts. Uncertainty generally means inability to predict the future (Hanén, 2010).

Congleton (2012, 401) denotes crises as unpleasant surprises that call for immediate, unanticipated changes in plans under three settings, and continues that in some cases, the possible range of outcomes and probabilities of those outcomes are unknown, some of them are considered so unlikely that they are not given serious attention, and in other cases, surprises occur because the world is so complicated that some events cannot be assigned meaningful probabilities with the data that is available.

This research refers to the latter. Social behavior is difficult to predict and submit into formulas or diagrams. The social reality is not necessarily exposed to risk analyses (Hanén & Huhtinen, 2011). However, we try to reduce uncertainty by trying to learn to predict and control it, but complexity makes social systems difficult to control (Raisio, 2009; Osman, 2010, 9).

The concept of resilience is essential in emergency recovery. Resilience applies to the minimization of losses and damages when a disaster occurs and indicates a similarity to the term “resistance.” Resilience implies the ability to recover to normalcy after a disaster occurs. Resiliency is a measure of how quickly a system recovers from failure (McEntire & al., 2002, 269).

Safety exists but it is continuously changing. The phenomenon of safety is complex and intertwined. By intertwining, Hanén and Huhtinen (2011) mean that predicting the results of different variables is usually not foreseeable, and the reasons leading to casualties are not usually inclusively clarified, because of the intertwined nature of the event. Osman (2010, 32) argues that causality is actually illusory and there is only a succession in the events we observe in the world.

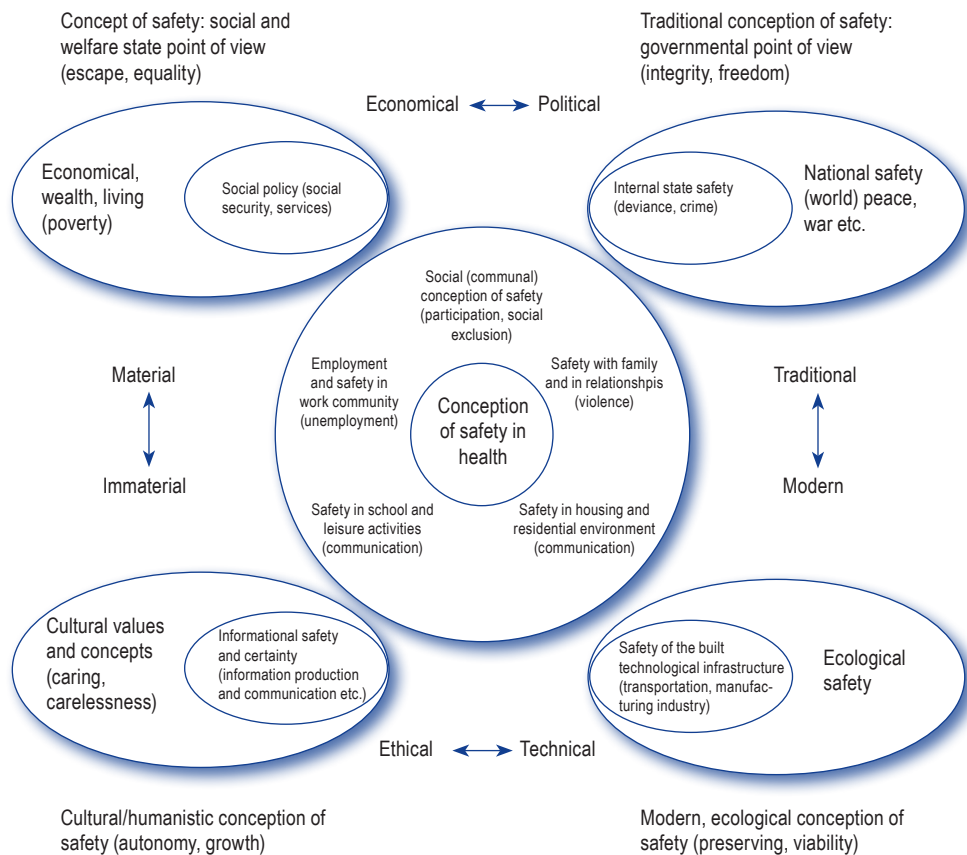
Laitinen (2003, 21) uncovers the conception of safety depending on the discipline. In international politics, safety is safety of the state. However, widely recognized thinking considering individuals, communities and societies as part of a totality has become commonplace. Safety is something good, such as the feeling of safety, or the absence of the threats to welfare, and, thus, the possibility of living well.

However, the instruments to measure the feeling of safety in society are ambiguous. One person or group can feel safe in society, whereas another can feel remarkably unsafe. Additionally, measures to keep society safe are ambiguous and even conflicting. For example, the retirement age of firemen has been a tense political question in Finland in recent years. The age of retirement was 55 years until 1989, when it was raised to 63-68 years with the general pension policy. Firefighters and the rescue field workers have complained continuously that the high retirement age weakens firemen's safety and protection, for example, in the demanding smoke-diving assignments. It is evident that a fireman's age and condition are effective factors in these physically demanding assignments. How does this affect the feeling of safety in society?

Safety can be defined through threats that are against the most important values and survival. In the Western countries, people, however, are looking for excitement and extremes in life, and in terms of relative significance, they may stand for measures weakening safety, but offering an opportunity to reach for some other important values at the same time (Forsberg, 1996, 20–21).

What can be said about the definition of safety is that it is always relative and bounded into context and the definitions can be classified differently by different disciplines. The definitions are often presented as dichotomies (subjective/objective, ontological/materialistic, and physical/emotional) depending on the actor or the target (whose safety), through opposites (threat, risk, danger, accident, catastrophe, insecurity) or as functional definitions of administration and politics (internal, external, national, global safety). Safety can also be a civil right, a value commodity, service, social, political, economic, human, general, or private commodity, etc. Furthermore, definitions can be presented as policy related definitions of safety; energy safety, traffic safety, food safety, industrial safety, border safety, etc. (Virta, 2011).

Safety is a multifaceted and a pluralistic research field. Niemelä (2000) conceptualizes the multifaceted safety research field into four dimensions and one core: *social and welfare conception*; *cultural, humanistic conception*; *modern, ecological conception*; and *traditional, political conception* (see figure 3). In the middle is the *conception of health* consisting of existence, capacity, and self-safety as the core of the conception.



**Figure 3.** *Conceptual framework of safety.* Source: Niemelä, Pauli, 2000, 27.

Safety is studied through these five ideas. Safety begins from the existence of an individual and the existence of health. This is the core of the safety framework, and it expands to areas of the social and welfare state point of view, traditional, national safety, the modern, ecological conception of safety, and into the cultural, and humanistic conception of safety.

In the background of the social and welfare state points of view economical wealth and income (poverty) is the basic principle of economic liberalism. Free means earning one's living, and free ownership, and, as a consequence of this, differences in welfare and income. The social and welfare state point of view has become important against this adjustment. Besides freedom, social security and equality are strategic values in the social and welfare conception of safety (Niemelä, 2000, 27).

The cultural, humanistic conception of safety concerns a human view of life and ideology, religious views, psychological (spiritual) safety, and the strength, and creation of identity. Safety is cultural in a sense that it is about human dignity and respect for the human being as an absolute value. Spiritual safety is linked into moral and ethical codes in the culture. Cultural and humanistic safety means human caring and taking other

people into account, and allowing the unlikeness of other people in society. Fanaticism, manipulation, and brainwashing are estranged conceptions to cultural and humanistic safety. In cultural and humanistic safety, the core is in the intellectual and mental growth, and in the possibilities of being able to fulfill oneself in an atmosphere of freedom. One of the features of cultural and humanistic safety is freedom of information. An alternate conception for this is a civilized state (Niemelä, 2000, 29–30). Safety defined as cultural meaning includes the idea that human dignity and respect for the human being as an absolute value, or a core value refers to survival and sovereignty in a context of the state, and to identity in the context of nations (Forsberg, 1996, 20).

The modern, ecological conception of safety means environmental safety in an industrialized and technical society. For example, traffic risks in the country, at sea, and in the air are a fairly new phenomenon. High technology includes unforeseen risks. A modern, industrialized society can be characterized as a risk society including risks and possible major disasters in the nuclear industry, or through genetic engineering. Concern about the environment is essential in this safety definition (Niemelä, 2000, 30–31).

The social and communal safety conception includes family community and social networks, work communities, school communities, habitation communities, and activity communities. These are the core areas of safety in relationships. Violence, mischief, and neglect in these areas cause insecurity. Social and relationship relative security is linked to all other paradigms of safety presented below. The traditional safety paradigm concerns being a victim of violence and also a victim of home violence. The welfare paradigm concerns compensating for risks in economic living and efforts to secure everybody's participation in work life and the work community as opposed to social exclusion (Niemelä, 2000, 31).

Health is the existence of safety. Diseases and illness are factors of insecurity. Medical science and health care fight against sickness and pain. In the background is the continuity of life and the quality of life. Besides sickness and disease, what is essential is how long the person will have to tolerate pain and distress. In an aging society, the ability to act is restricted because of sickness, disabilities, and old age. The ability to act is the essential source of security in terms of controlling the environment and one's own life (Niemelä, 2000, 32).

The traditional conception of safety relates to the defense policy, with different meanings at the institutional level in the military forces or in the defense counsel. Security policy has become common as a concept of foreign policy (Niemelä, 2000, 33). In the social and welfare paradigm, social security policy can be characterized as a safety policy, but also as an insurance policy. Regulating insurance companies is an insurance policy. A social insurance policy including basic security and a protection of earnings ideology are essential insurance policy topics. At the economic policy level, it is a question of securing the national economy, national property, and the owner's property. Banks and insurance companies aim to secure these.

Modern, ecological, and technological safety can be improved by protection. Protection can be environmental protection and civil defense including fire protection, and rescue operations. Fire protection and safety operations are operations built to protect the environment, cities, and houses from accidents, and disasters.

Cultural and humanistic safety can be improved by precautionary measures, for example, by freedom of speech. Securing education and learning for everybody secures growth. At the community level, family, work, school, home, and activities are “maintenance institutions,” and at the policy level, they are family, labor, habitation, and education policies. In health, it is about care, and at the policy level, it is about healthcare policy. Policy and institutional levels approve the pluralism of safety as a concept and as a function.

### 3.4 Summary of the theoretical foundations

This section collects the theoretical models and conceptions used to analyze the empirical data and to interpret the results of the study. The first section conceptualized the theoretical foundations of public management, and decision making, and the key concepts of ambiguity, rationality, bounded rationality, and coherence. The second section conceptualized the theoretical backgrounds and the concepts of safety research such as safety, security, certainty, and uncertainty.

Public management tends to strive toward rationality in decision making. However, rationality is bounded by cognitive limitations and limitations in the decision making environment. Bounded rationality identifies the discrepancy between full rationality in decision making and in “real life,” where the decision-maker actually lives.

The decision making model called the garbage can model describes organizational choices in “real life” where the link between a problem and a solution depends on the simultaneity of their arrival. Decision making in the garbage can model is a fortuitous confluence of problems, solutions, participants, and choice opportunities. The complete cycle of choice was also presented in order to understand how decisions actually happen in organizations. In the complete cycle of choice, individual behavior aggregates into collective choices, and the outside world responds to these choices in a way that again affects individual assessments of the state of the world, and of the efficacy of the actions.

The concept of ambiguity illustrates the complexity in organizational behavior and choice situations. Ambiguity, as espoused by March and Olsen (1976), refers to opaqueness in intention, understanding, history, and organizations. Ambiguity, according to Empson (2004), refers to the relation between opposites with different emphases, two or more alternative meanings that are resolved into one, two ideas connected only by being both relevant in the context, and which can be given in one word simultaneously, or two or more meanings that do not agree among themselves, but combine to make clear a more complicated state of mind in the author. Ambiguity occurs when the author has discovered



his/her own idea in the act of writing and does not hold it all in mind at once. Ambiguity takes place when a statement says nothing and the readers are forced to invent statements of their own. Statements are liable to conflict with one another. Ambiguity takes place when the two meanings of the word, the two values of the ambiguity, are the two opposite meanings defined by the context. The total effect is to show a fundamental division in the writer's mind.

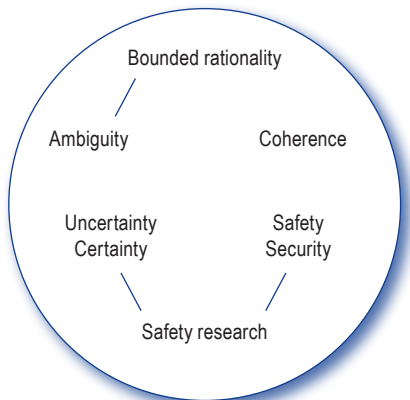
The concept of coherence describes the relations between different phases in the performance management cycle (identification of problems, target setting, and performance evaluation). The performance management cycle seems to be a compatible cycle where each section follows another, but ambiguities actually cause incoherence in the performance management cycle.

In 21<sup>st</sup>-century public management and in the context of emergency management these relatively theoretical concepts are useful to study issues that are complex, that vary broadly from international terrorism, to natural disasters, and that need cooperation between various policies, and actors. Fire deaths are accidents, and in the safety research literature, accidents are defined as an interaction of multiple failures. Failures can be made by humans and systems, and fire deaths are a combination of both of these factors. This research studies decision making and fire deaths as social behavior that people bring about. In that context, particularly the human error aspect is emphasized.

The definition of safety is relative and bounded into context. The definition can be classified differently by different research disciplines. The social and welfare conception; cultural, humanistic conception; modern, ecological conception; and traditional, political conception are the dimensions used as the theoretical conception of safety in this research. The core is the conception of safety as health.

The theoretical models and conceptions used in this study are presented in figure four below.

The empirical phenomenon is studied in order to find the sources of ambiguity and lack of coherence identified in the research literacy. However, all the sources of ambiguity and



**Figure 4.** *Theoretical foundations and conceptions.*



lack of coherence identified from the theoretical literacy are not exhaustively searched from the empirical data. However, the attempt to find them and interpreting them by using the theoretical findings will create the main results of this study.

In addition, key concepts safety and security, uncertainty and certainty are found from the pluralistic world of safety research. These concepts define the research field and they are used to study the empirical case of fire deaths.

One may ask why safety policy issues varying broadly from international terrorism to natural disasters are studied in the context of fire safety policy. However, from the vast theoretical literacy it was pointed out that fire safety accidents interacted with multiple failures that were made by humans and systems. This conclusion was found from the vast literacy and it helps to explain fire deaths.

## 4 The Institutional System of Finnish Fire Safety Policy

In this chapter, the institutional system of Finnish fire safety policy is introduced. The institutional system describes the political, economic, and social circumstances in the Finnish state level government, and also how governmental planning, budgetary planning, and performance contracting works in the central authorities, and in the rescue services. The organization of rescue services is introduced as a governmental and regional institution covering 22 rescue service regions. Rescue services consolidate planning and steering in the rescue service areas and in the central government. However, the budget of the rescue service areas consists of the budgets of the municipalities. The Ministry of the Interior and the rescue services are outside of this budget planning and, thus, outside of one of the most important management controlling instruments. Municipalities in Finland are also self-governed. These features make other policy instruments more intriguing to study in terms of how the rescue services actually guide and steer rescue service areas, and what policy instruments are used.

### 4.1 Introducing Finnish public administration and governmental planning

The government of Finland consists of the Prime Minister and the required number of ministers<sup>11</sup>. The government is also the decision making body composed of the government plenary session and the ministries. Ministries prepare political decisions to be taken by the government, and legislation to be adopted by the Parliament. Ministers are the political heads of the ministries (Finnish Government, 2011; Salminen & Viitala, 2006, 15).

The structure of the Finnish public administration consists of a central administration level, ministries, and agencies; at the regional level, and at the local level of municipalities. The central administration agencies and public bodies function under an administrative sector of each ministry. Twelve ministries and the Prime Minister's Office implement

<sup>11</sup> Ministers are appointed by the President of the Republic in accordance with a proposal from the Prime Minister. The maximum number of ministers is 18.

laws and decrees within their sectors of administration. Political decision making and the steering of implementation belong to the ministries. Agencies are in charge of the implementation. Agencies have statutory duties and their funding is granted by the Parliament in the central government budget. Normative steering and performance guidance are the central tools of the ministries in steering the implementation of government policies. Steering is based on the system of performance agreements. Performance agreements are explained in more detailed below (Salminen & Viitala, 2006, 15).

Regional state administrative authorities are new institutes in the Finnish regional administration. Six Regional State Administrative authorities began to operate at the beginning of 2010. Regional State Administrative authorities operate the former state provincial offices' duties and their areas of responsibilities are public services, legal rights and permits, occupational safety and health, environmental permits, fire and rescue services and preparedness, and police. Regional State Administrative authorities work in close collaboration with local authorities. Agencies execute legislative implementation and steering and supervision functions in the regions. This fosters the regional parity (Regional State Administrative Agencies, 2011).

Finally, with the provincial offices and the county structure Finnish local administration has become blurred. There are different structures for civic centers (general, specific, and the federation of municipalities) and the roles are structuring in nature.

However, the municipalities are responsible for organizing the majority of public services in Finland. Municipalities are responsible for two-thirds of public services, and the state is responsible for one-third. Local government in Finland is based on local self-government by the people. Local authorities can organize their services in different ways. Alliances between municipalities are common. In addition, joint authorities between two or more parties (local authorities, communities, and enterprises) for a specific task are common. In 2011, 184 joint authorities functioned in Finland. The most important joint authorities include regional councils, hospital districts, districts for care of the disabled, and joint authorities related to public health and education (Local Finland, 2011).

The responsibility for the Finnish rescue services is divided between the state and regional rescue services. The Ministry of the Interior and the Regional State Administrative authorities are the state rescue authorities. Regional rescue services are responsible for rescue services in their region. Finnish municipalities have a statutory duty to organize rescue services together in rescue service regions. The Ministry of the Interior and the Department for Rescue Services direct Finnish rescue services and maintain oversight of coverage and quality. Regional State Administrative Agencies direct and oversee rescue services in regions (Rescue Services in Finland, 2010). Organizational structure and the responsibilities of the rescue services are explained in more detail in chapter 4.2.

### 4.1.1 Government Programs

The Ministry of the Interior and the rescue services are part of the Finnish central government and follow the official governmental planning cycle. The official governmental planning cycle begins from the Government Program. This is an action plan agreed by the parties represented in the government and it defines the main functions of the government. In recent decades, the government has continued through the whole electoral period, even though the Prime Minister has changed. In principle, the Government Program has continued for the entire electoral period.

Implementation of the Government Program is monitored on the basis of an implementation plan. The implementation plan is a resolution focusing on the Government Program's main objectives, preparation responsibilities, and key measures and projects, turning them into strategic, inter-sectoral, and comprehensive policies. In accordance with the Government Program, the legislative projects included in the implementation plan constitute the government's legislative program (Finnish Government, 2012).

The Government Program includes focus areas in each policy field such as economic policy, foreign, and defense policy, EU policy, justice policy, and internal policy, etc. In principle, the Government Program implementation continues over the entire electoral period, and therefore maximally until the next election, to be held in 2015.

The Government Program of Prime Minister Matti Vanhanen's second Cabinet, issued in 2007, states that the government will determine the primary objectives and measures for internal security in an inter-agency Internal Security Program. Prime Minister Jyrki Katainen's Cabinet issued on 2 November 2011 to prepare the next inter-agency Internal Security Program for the year 2011–2015. The Internal Security Program stated the primary objectives and measures for internal security. One of the measures in the internal security policy is to reduce the number of accidents, particularly home and leisure accidents. The Internal Security Programme is explained in more detailed in section 4.2.1.

### 4.1.2 Performance contracting

Each ministry in Finland makes an agreement, a performance contract, with their subordinate agencies and institutes. Performance contracts include expectations of attainable results: outputs and outcomes for each budgetary year. Performance contracts include targets and performance indicators measuring each target and indicating who is responsible for each target. Performance contracting is based on the performance management system. However, performance agreements are not legally binding, thus obligations and sanctions under contract law do not apply to them. Performance management and performance agreements have a guiding role in managing the Finnish public administration (Salminen & Viitala, 2006, 43).

A standard model illustrating the content of performance negotiations and agreements and the principles of performance management as detailed by Salminen and Viitala (2006, 47–49) are summarized by ten points:

- *First, formulating the targets to be measured as concretely as possible, and binding their implementation to resources and schedule.*
- *Second, set operational performance targets applying to productivity, economy, outputs and their quality, the service capacity of the agency, human resources and effectiveness.*
- *Third, the implementor is free to decide what investments should be acquired and how they are allocated and in what amounts.*
- *Fourth, target implementor can influence the content of the production function so that it is possible to identify the quantity and quality of this influence. This involves the performance-specific and function-specific monitoring and calculation of various investments and costs, enabling the management of the relationship between investment and performances for the attainment of performance targets.*
- *Fifth, the guiding principle is that only one ministry guides each agency. However, Regional state administrative agencies are supervised by several ministries. This makes particular challenges for cooperation between the parties exercising performance management and for the agreeing of performance targets.*
- *Six, the implementor of performance targets participates in the setting of performance targets and in the decision making concerning the quality and quantity of the resources with his own proposals in the performance negotiations. Although these talks are specifically for negotiating, if consensus cannot be reached, the ministry can unilaterally determine the targets and allocate resources to them.*
- *Seven, performance negotiations end up with a written agreement which records the performance targets and the resources allocated to them. The ministry-confirmed performance targets for an agency or institution are contained in the performance target document (performance agreement) signed by both the ministry and the agency. This cannot be confirmed until Parliament has approved the central government budget proposal.*
- *Eight, the implementor of the targets is accountable to a higher level in the organization for the results. During and after the operating period, the implementor reports to the body setting the targets on how well the targets have been attained and what the performance has been.*
- *Nine, the attainment of performance targets is estimated jointly. If there is a performance-related pay system in use at the agency, attaining or exceeding the performance targets is rewarded: part of the resources saved can be used for paying a performance bonus to staff.*
- *Ten, how well targets are attained in one operating period affects the setting of targets and allocation of resources for the following, depending on how good the performance in the previous operating period has been. The aim is to improve the input-output ratio every year.*

*The standard model for the performance management and performance negotiations described should be adapted variably in different administrative sectors, in accordance with the practices of each ministry and agency. Thus, the practical impact, coverage and general guidance effect of performance management has been very different in the various administrative sectors.*

A performance agreement is a control tool that a ministry uses to agree with agencies on available resources and performance targets (Salminen & Viitala, 2006, 138). Performance agreements can focus on the most important points and the results of the budget year. The guiding principle is that performance targets apply to both the agency's basic operations and its development measures. Agreements do not need to cover the entire range of operations. They may define changing, situation-specified, and permanent targets. Targets based on permanent indicators assure that the agency's basic tasks are carried out when new things are planned and development projects carried out (Salminen & Viitala, 2006, 46).

Performance agreements include the approval and signature of contracting parties. The signature confirms the content of the negotiation, and as such the protocol does not constitute an agreement on the agency's performance targets or resources. The structure of performance agreements can be quite variable. They can be structured according to the strategy of respective administrative sectors. Agreements should include the general targets of the administrative sector but also the main point of focus of the agency over several years. Main points of focus must agree with the strategies outlined by the ministry. A one year longer planning period helps to develop results for the future (Salminen & Viitala, 2006, 46).

The Ministry of the Interior makes performance contracts with regional state administrative agencies, the ERC, the Emergency Service College and the Finnish Safety and Chemicals Agency<sup>12</sup>.

### 4.1.3 Budgetary planning

The central government (state) budget plays an important role in planning and implementing public policies and decisions. The budget could be said to be the binding planning instrument. This means that the parties to the budget decision making process are bound to the budget; there is no more budget money or resources to be used.

The budget is a document or a collection of documents that refers to the financial condition and future plans of an organization, including information on revenues,

<sup>12</sup> The Finnish Safety and Chemicals Agency Tukes operates under several Government ministries. The Ministry of the Interior and the Rescue Service Department makes an agreement with Tukes on the inspection of safety equipment, installation, and care and control. Tukes is responsible for preventing fires and accidents through different legislative sectors (electrical and pressure devices and industrial use of chemicals) and by providing guidance and support to rescue authorities.

expenditures, activities, and purposes or goals (Lee & al., 2008, 17). Menifield (2011, 1) defines the budget as a process that not only reveals national policy choices, but also provides evidence of governance. In this respect, the budget plays an important international role when examining how governments work. The term “budget” has two purposes; it is an abstract tool to guide the economy of the state and a document that is prepared and used in the official decision making process (Meklin, 2002, 108).

Finland has introduced performance guidance and performance budgeting as well as budget steering according to spending limits in the early 1990s. Commercial accounting was introduced in 1998. The current budgeting and financial administration systems are similar to other European economies such as Sweden, the Netherlands, and the United Kingdom. Within a broader international context, the Finnish system has adopted accrual-based budgeting, which is applied both in New Zealand and Australia. A formal decision to adopt this system has not been made in Finland, but in practice, accrual budgeting is applied to a large extent. This means that transfers are budgeted on a cash-basis, but the general principle applied in other expenditure is accrual-based budgeting. Moreover, commercial accounting produces accrual-based returns and expenses statements. (Ministry of Finance, 2011).

The budgetary planning, management, and control of government finance instruments are enacted by the Budget Law. Financial administration requirements and planning instruments are enacted in the Budget Act (13.5.1988/423) and in the Budget Decree (11.12.1992/1243). The following instruments are used in budgetary planning, management, and control of government finances:

- Multi-annual operating and financial plans of the ministries and government agencies (FOP);
- Overall spending limits set by the government for the ministries;
- Annual budget and supplementary budgets;
- Reporting and auditing of central government finances; and
- Report on the final central government accounts.

Ministries and agencies must design social effectiveness and economy into their branch of administration over a period of several years (Budget Act 12§; Budget Act 10§). Multi-annual operating and financial plans of the ministries and government agencies are generally four-year plans consisting of general operating guidelines, and priorities, and key targets for the development of social effectiveness, and efficiency. The basic idea is to plan for effectiveness and operational efficiency for a number of years in advance, and to provide a baseline for the central government spending limits, and the annual budget (Ministry of Finance, 2011).

The annual budget is the most important instrument in governmental planning. The formulation of the budget proposal begins in March, when ministries present their spending limit proposals to the Ministry of Finance. Ministries issue their own guidelines to their agencies and the agencies draw up their budgets. According to the guidelines,



agencies draw up their budget proposals in spring, and then ministries formulate a draft budget for the whole of their administrative branch. The Ministry of Finance will continue the procedure by processing the budget proposals and making a decision on a proposal for a budget submission, and then handing the decision to the ministries.

The Ministry of Finance will negotiate with each ministry over the spending limits and try to settle possible differences on the size of appropriations. After negotiations, the government will handle the draft budget drawn up by the Ministry of Finance. The government will handle the contents of the Budget proposal in a two-day budget session in August. After the budget session, the Ministry of Finance will finalize the government budget submission. Then the budget proposal is presented to the General Assembly of the Government and to the President of the Republic and is submitted to the Parliament. The Parliamentary Finance Committee discusses the budget proposal before its consideration in a plenary session of Parliament (Ministry of Finance, 2012).

The budget includes estimates for annual revenue and appropriations for annual expenditure. The revenue estimates in the budget must cover the appropriations in the budget. The budget consists of the general strategy and outlook, summary tables, the budget statement, and appendices. Supplementary budget proposals can be presented to Parliament with the same procedure used in formulating the budget.

The budget is divided into classes. The budget classes can be formulated on a broader operational branch, policy sector, or other obvious operational and functional entity. Policy-sector outcome targets should be presented in the budget justifications. Outcome targets and operational performance targets must be justified with intended effects. The justifications of the budget proposal and their indicators should give a true and fair view of the uses and targets of appropriations (Salminen & Viitala, 2006, 36).

In summary, governmental planning begins from the Government Program, the action plan agreed by the parties represented in the government. Implementation of the Government Program is monitored on the basis of the implementation plan. In accordance with the Government Program, the legislative projects included in the implementation plan constitute the government's legislative program.

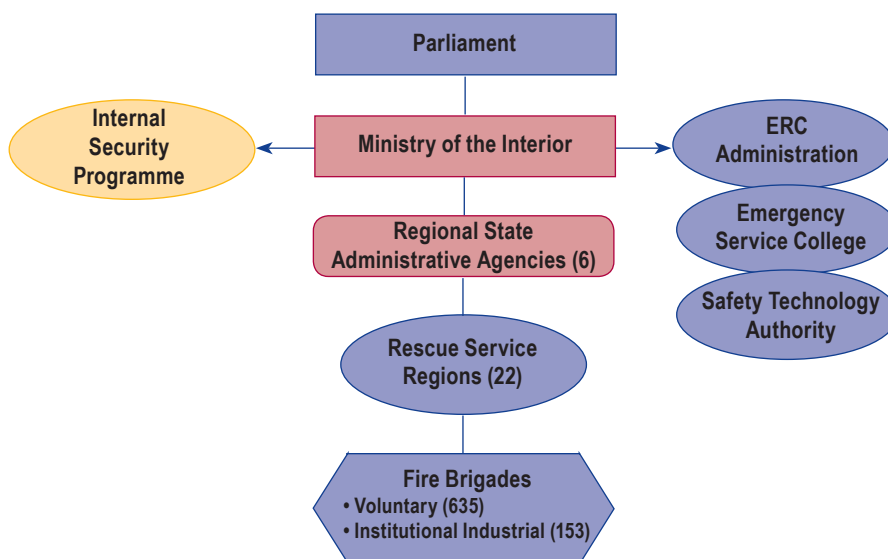
The Ministry of the Interior implements the Internal Security Program that states the primary objectives and measures for internal security. Ministries use performance contracts to negotiate with their agencies and institutes for results and outcomes. Contracts include targets and performance indicators for each budgetary year. The budget is the binding planning instrument including the resources for each budgetary year.

In the next section, the rescue service organization is introduced including its organizational structure, and what institutions, and organizations are part of the rescue service organization.



## 4.2 Rescue service organization

The Ministry of the Interior Department for Rescue Services directs and supervises rescue services. Rescue services have a duty to prevent fires and other accidents, to carry out rescue operations in the event of an accident, and to carry out civil defense work under emergency conditions, and maintain readiness for these duties.



**Figure 5.** *Rescue service organization in Finland.*

The Ministry of the Interior and the Department for Rescue Services makes performance contracts with their agencies and institutions. These agencies and institutions are Regional State Administrative Agencies, the ERC Administration, the Emergency Service College and the Finnish Safety and Chemicals Agency (Tukes).

Regional state administrative agencies execute legislative implementation, steer, and supervise in the regions. Regional state administrative agencies perform duties relating to rescue services and coordination of preparedness in their regions. This is a new administrative structure and regional state administrative agencies started operating at the beginning of 2010. Their tasks consist of former state provincial offices' duties. State provincial offices were replaced by state administrative agencies. Agencies operate in six regions: Southern Finland, Southwestern Finland, Western and Inland Finland, Eastern Finland, Northern Finland, and in Lapland. The State Department of Åland coordinates the activities of the Finnish state on the Åland Islands.

The ERC Administration deals with ERC activities and it is managed and directed by the Ministry of the Interior in cooperation with the Ministry of Social Affairs and Health. The Emergency Response Center Administration was implemented in Finland during the years 2001 to 2005. The reform involved combining the municipal emergency response centers of the rescue services and the emergency call centers of the police into a state organization of 15 ERCs. The Province of Åland also has its own ERC.

The Emergency Services College provides education and training in its special field under the supervision of the Ministry of the Interior. The College plans and arranges basic and advanced education and training in fire and rescue work, civil defense training and other training in emergency operations.

The safety technology authority maintains and promotes the technical safety culture and reliability. The authority's tasks are divided into surveillance of the products on the market such as fire safety equipment, fire alarms, and extinguishers, and into the supervision of in-service plants, installations, and technical services.

Municipalities are jointly responsible for rescue services within regions determined by the government. Based on a government decision, Finland is divided into 22 rescue service regions. Regional rescue services are in charge of rescue services in their respective regions. They perform their functions in cooperation with contract fire brigades. Fire and rescue services and preparedness is one of the areas of their responsibility. (Ministry of the Interior, 2012).

The Ministry of the Interior is the ministry responsible for internal security and migration. The Minister of the Interior and the Department of Rescue Services are responsible for the Finnish fire safety policy. The political head of the Ministry consists of the Minister of the Interior and the Minister of Migration and European Affairs. Both ministers work for the electoral period of four years. The highest official in the Ministry of the Interior is the Permanent Secretary. The Permanent Secretary assists the Ministers in directing and monitoring the activities of the Ministry and agencies and offices in its administrative sector (Ministry of the Interior, 2012).

The Ministry of the Interior is divided into four departments: the Police Department, Department for Rescue Services, the Migration Department, and the Border Guard Department. Besides these four departments, there are seven units that form the Ministry's Advisory Staff and these units report directly to the Permanent Secretary. The Office of the Ombudsman for Minorities and the National Discrimination Board of Finland are also part of the Ministry. Offices and agencies under the Ministry and the Department for Rescue Services are: the Emergency Services College, Emergency Response Center Administration, and Fire Protection Fund. Regional administration agencies under the Ministry considering fire safety policy are the regional state administrative agencies including rescue services and preparedness.

The Ministry of the Interior and the Department for Rescue Services sets annual service targets for rescue service regions, but the actual rescue work is done by the fire

departments in the rescue service areas. Rescue services are agreed between fire brigades and the region. Services can be provided by voluntary, institutional, or industrial fire brigades. Rescue services employ about 24,000 people, of whom some 5,000 are full-time, 4,000 are part-time and some 15,000 are voluntary (Ministry of the Interior, 2012).

The rescue services created a rescue service strategy to outline ties in with the government's Internal Security Program and its strategy for securing the functions that are vital to society. The rescue service strategy defines the main priorities for Finland's rescue services, sets strategic goals, and measures the achievements of the goals. The main objective is reducing accidents and injuries, and damage resulting from accidents. The main priorities in the strategy are to prevent accidents, pursue personnel performance, prepare for major accidents and emergency conditions, and to carry out research and development (Internal Security, 2008).

Rescue services have a duty to prevent fires and other accidents, to carry out rescue operations in the event of an accident, and to carry out civil defense work under emergency conditions, and maintain readiness for these duties. The Ministry of the Interior and the Department for Rescue Services influence the fire safety policy by undertaking performance contracts with agencies and institutions. Regional state administrative agencies execute legislative implementation, steer, and supervise in the regions. Regional State Administrative Agencies perform duties relating to rescue services and the coordination of preparedness in their regions. The rescue services and preparedness responsibility area in the Regional State Administrative Agencies leads the planning of the rescue operations, and consolidates the plans. Furthermore, it controls and estimates the availability and the quality level of rescue services.

Municipalities are responsible for maintaining the services in their rescue service regions. However, municipalities in Finland are self-governed and it is an essential feature in the Finnish public administration. In other words, the Ministry of the Interior can only affect municipalities through legislation and law-making. Overall, the Ministry of the Interior has wide-ranging possibilities in terms of affecting the fire safety policy development in the legislative and political decision making arena, but limited abilities to affect the efficiency of the work of rescue service areas and fire departments.

#### 4.2.1 Internal Security Program

The Internal Security Program is a government resolution that specifies the priorities, objectives, and measures for the inter-sectoral development of internal security. The Program specifies the key indicators that are used to report on a regular basis on the implementation and results of the Program to the government. These are part of the government's strategy document.

The Prime Minister's government launched the first Internal Security Program in 2003 and the second Program continued in 2008. The Internal Security Program is an

essential inter-sectoral organization or network that expresses the targets for the internal security policy. The primary objectives for the development of Finland's security policy are specified in the Government Report on the Security and Defense Policy. The targets for the internal security policy are officially set in the Government Program and in the Government Strategy Document, but also in the Internal Security Program.

The objective of the program is that Finland will be the safest country in Europe in 2015. The Program contains 74 measures intended to maintain and improve security that are based on estimates of future challenges and principal development needs in internal security. Fire deaths is one of the measures for improving internal safety. The Program has been prepared through cooperation between ministries, organizations and the business sector. The implementation and monitoring of the Program are coordinated by the Ministry of the Interior.

The Internal Security Program is valid for the current electoral period and it extends to the year 2015. The objectives of the program are set for the year 2015. The targets of the program relating to fire deaths will be reviewed in more detail in chapters six and the results in chapter seven.

#### 4.2.2 Budgetary process

The Ministry of the Interior's Department for Rescue Services directs, and oversees Finnish rescue services, but the regional rescue areas, and their operations are funded by the municipalities. The Ministry of the Interior does not fund the rescue service regions or the fire departments, and their ability to guide and steer the regional rescue service areas without the funding tools is therefore constrained.

The total number of allowances in the budget proposals has been rising since 2007. The total number of 40 billion euros in 2007 has risen in five years to more than 52 billion euros. The budget of the Ministry of the Interior has decreased since 2007 and was at its lowest in 2008 at 1,073 billion euros. The budget of the rescue services has increased since 2007 from 66,689 million euros to an estimated 87,256 million euros in 2012.

The national development of the rescue services and the operations of the Emergency Service College are funded from the state budget and the annual budget of the rescue services.

**Table 3.** Total number of allowances, allowances in the Ministry of the Interior, and in the Rescue Services from 2007–2012. (Source: Budget Proposals 2007–2012, budjetti.vm.fi).

Year	Total number of allowances (€)	Ministry of the Interior (€)	Rescue services (€)
2012	52 353 408 000	1 245 108 000	87 256 000
2011	50 269 322 000	1 323 799 000	86 738 000
2010	50 185 219 000	1 266 682 000	87 230 000
2009	45 908 348 000	1 168 899 000	86 881 000
2008	45 079 581 000	1 073 753 000	81 355 000
2007	40 481 758 000	1 584 356 000	66 689 000

The annual expenditure on state and regional rescue services amounts to more than 340 million euros. Additionally, the Fire Protection Fund grants approximately six million euros in assistance on an annual basis (Ministry of the Interior, Rescue Services, 2012).

Remarkable in the budgetary planning is that the Ministry of the Interior and the Department for Rescue Services sets the annual service targets for rescue service regions, but the budget money for the regional rescue departments comes from the municipalities. For example, the regional rescue department of Tampere is funded by 24 municipalities in the Tampere region. A portion of the payment is allocated by the number of inhabitants (Budget of Tampere Regional Rescue Department, 2010, 4).

Regional rescue departments are state-owned enterprises and are excluded from the state budget. The state rescue authorities are the Ministry of the Interior and the regional state administrative agencies. Regional rescue services are responsible for rescue services in their region. Finnish municipalities have a statutory duty to organize rescue services together in 22 rescue service regions.

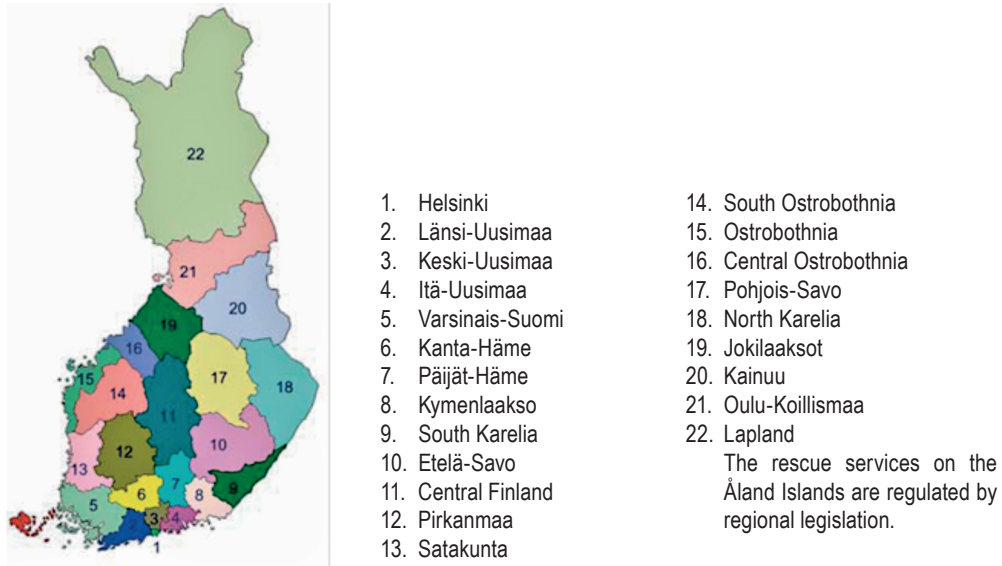
In comparison, the operation expenses of Tampere regional rescue services with 24 municipalities were 34 million euros in 2010, 32.9 million euros in 2009, and 33.9 million euros in 2008 (Financial statements of Tampere Regional Rescue Services, 2008, 2009, and 2010). The ministry budget for the rescue services is rather low compared to the regional rescue department budgets, and when considering their main overall task to reduce the number of accidents, especially the number of fires, and fire deaths (see chapter 6.2). However, the operational functions and the staff participating in the rescue operations are catered for in the budget of the regional rescue services.

### 4.2.3 Rescue services in regions

Twenty-two regional rescue services are responsible for performing rescue service functions, and maintaining a rescue service organization to carry out rescue service functions (Rescue Services in Finland, 2010, 4). Southwest Finland is the largest rescue

service area, with 56 municipalities. The rescue service region of Helsinki consists only of a single city, but it is large considering the population level.

The rescue service region of Lapland has the largest area and Helsinki the smallest area. The population of rescue service regions varies, from the approximately 90,000 citizens of Kainuu and Eastern Uusimaa to the approximately 560,000 citizens of Helsinki.



**Figure 6.** *Rescue service areas in Finland.* Source: Rescue Services in Finland, Ministry of the Interior, 2010)

Rescue units have been distributed to more than 700 fire stations in the municipalities of the rescue service regions. There are 635 voluntary fire brigades and 153 industrial fire brigades. Personnel in fire and rescue services were about 24,000, of whom some 5,000 are full-time employees, 4,000 are part-time and some 15,000 voluntary fire brigade members. Voluntary, institutional, and industrial fire brigades participate in the provision of rescue services as agreed between the brigades and the region (Rescue Services in Finland, 2010).

The municipalities were responsible for the rescue services until 2004, when the duties were transformed to the rescue departments that are co-operatively held by several municipalities (Kallio & Tolppi, 2008, 11). The responsibility of Finnish rescue services is divided between the state and regional rescue services. Nevertheless, safety involves cooperation between several authorities and agencies, also including voluntary actors. Numerous other authorities and bodies besides rescue authorities have a legal duty to take part in rescue operations and civil defense in Finland<sup>13</sup>.

<sup>13</sup> Authorities and bodies are listed in appendix three.

The Ministry of the Interior Department for Rescue Services directs Finnish rescue services and maintains oversight of coverage and quality. Six Regional State Administrative Agencies direct and oversee rescue services in the regions. Finnish rescue services are responsible for the active prevention of fires and other accidents. Accidents can be prevented by taking safety into account in all activities from the outset. Safety work is carried out in cooperation with other authorities, various organizations, and citizens.

#### 4.2.4 Finnish fire safety policy

Being resilient in the face of uncertainty is the ultimate task for emergency management (Handmer & Dovers, 2007, 30; Weick, 2001; Perrow, 1999). It is also the ultimate task for the Finnish fire safety policy. How to stay resilient in the face of uncertainty relating to how and when fires will occur, and how to understand the nature of risks and dangers of fires, and even reduce or limit the damage of fires are essential questions in fire safety policy.

Public policies are positions taken and communicated by governments as “avowals of intent” (Handmer & Dovers, 2007). Public policies recognize a problem and state what will be done about it. The Oxford English Dictionary defines policy as “political sagacity, statecraft, prudent conduct, course of action adopted by government.” Hogwood and Gunn (1984, 13–19) define policies as: a label for a field of activity, expression of general purpose or desired state of affairs, specific proposals, decision of government, formal authorization, program, output, outcome, or theory of model and process. Politics in ancient Greece was about “the right thing to do for the good of the polis” and that is the end objective of politics (Hinich & Munger, 1997).

The Finnish internal security and fire safety policy is defined in the Internal Security Program (2008, 6) as follows:

*Internal security is a state of society where everybody can enjoy rights and freedoms guaranteed by the rule of law and a safe society without the fear of insecurity caused by crime, disruptions, accidents or any other phenomena in Finnish society or the increasingly globalized world at large.*

Finnish rescue authorities are responsible for the safety of people in any kind of everyday incident, and in the unlikely event of a catastrophe, or war. The Ministry of the Interior sets annual service targets for the rescue service regions. Functions of the rescue services are divided into accident prevention, rescue operations, and civil defense (Ministry of the Interior, 2008).

There are many factors contributing to internal security. This makes fire safety policy work even more important. Safe homes, living environments and working environments, smoothly functioning basic services, well-designed traffic environments, obtaining help when needed, certainty that those who commit crimes will be brought to justice – all



these complete the internal security. Internal security also involves preparing for major accidents and other disruptions under normal conditions (Internal Security Programme 2008, 6).

Rescue services have a duty to prevent fires and other accidents. Rescue operations refer to carrying out rescue operations in the event of an accident in order to protect and rescue people, property, and the environment, to limit damage, and to mitigate consequences. Rescue services have to function in exceptional circumstances and take precautions to protect people and property in the event of an emergency.

#### 4.2.5 Legislation under the Rescue Law

Legislation and regulations are instruments affecting people's behavior. Reducing dangerous behavior related to alcohol abuse, increasing safety consciousness, and to increase anticipation are ways to reduce exposure to accidents and fire related deaths. Legislation is the strongest method of that the public administration can use to direct people's behavior.

The new Rescue Law (29.4.2011/379) was ratified on 29 April 2011 and became valid on 1 July 2011. The Rescue Law was revised as an objective to improve the accident prevention and safety in terms of housing. It is specifically emphasized in the law proposals that individual safety was the biggest problem in terms of fire safety policy. The number of fire deaths has been rising in spite of the measures of different authorities. The situation still threatens to worsen in the future because of the aging of the population and the growing number of socially excluded people. Additionally, measures improving safety in housing are not enough to raise the level of fire safety to a good Western European level (Rescue Law Reform Preliminary study, 2008, 5).

In the new legislation, an account on exit safety is required in hospitals and nursing homes. The local rescue authority is liable for estimating the sufficiency of the exit safety and can give orders to improve safety if necessary. The Rescue authority can demand the installation of a fire-extinguishing systems if it is considered to be necessary. (Association of Finnish Local and Regional Authorities, General letter 7/80/2011.)

The law also requires that the rescue departments have to monitor that property owners and actors obey the legislation, and follow the rules, and for supervision they have to perform fire inspections, and other measures to carry out their supervision tasks. According to the law, the rescue department can collect payments from the fire inspections that are in accordance with the supervision plan, or from performing well in regard to another supervision measure. Payment can also be collected from call-outs that have been caused by continually erroneous operating fire alarm systems that have been connected to the ERC and caused several false alarms (Association of Finnish Local and Regional Authorities, General letter 7/80/2011).



According to the new law, the duty to build bomb shelters applies to residential buildings whose common surface area is at least 1,200 square meters, and in the industrial, and production buildings, warehouses, and assembling buildings the limit is 1,500 square meters (Association of Finnish Local and Regional Authorities, General letter 7/80/2011).

The law explicitly states that flammable, explosive, or other fire hazard and dangerous material must be carefully handled. In addition, the sufficient care must be taken when working with fire, or while doing repair work that increases noticeably the danger of fire, or of another type of accident. Then one must take sufficient precautions. The scope of the law covers people, companies, and other communities, and legal persons (29.4.2011/379).

It is also explicitly stated that the holder of the apartment is obliged to make sure that the apartment is equipped with a sufficient number of fire alarms, or other devices, which, as early as possible, perceive the beginning of a fire and warn the people in the apartments. In accommodation, nursing homes, and sheltered homes the liability for equipment is in the hands of the executive house-holder (29.4.2011/379).

## 5 Identification of Fire Deaths as a Fire Safety Policy Problem

This chapter reflects on the ambiguity of the fire safety policy problem. What does this policy problem actually consist of and what ambiguities are there? Questions discussed in the chapter relate to what kind of policy problem fire deaths are and how fire deaths come to be formed as a policy problem. This chapter is focused on ambiguities in fire deaths, and on this account, the question of ambiguity in identifying the policy problem is studied as the main question.

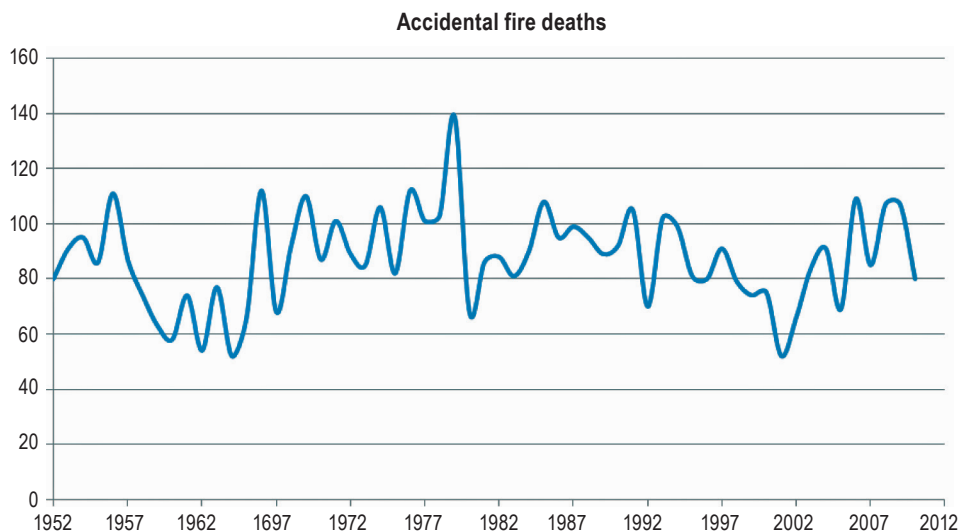
Specific features of fire deaths as a long term policy problem are studied in more detail in section 5.1. Fire deaths in 2007–2010 are studied in more detail in sections 5.1.1 and 5.1.2. By looking at the fire deaths in more detail in section 5.1.2, the analysis contributes to an understanding of the ambiguity of this specific policy problem. The results of the chapter will be summarized at the end of section 5.2.

### 5.1 Specific features of fire deaths

Fire deaths are a simple indicator showing that there is a problem out there. The number of fire deaths appears in the Finnish media every year. The number either increases or decreases (see, for example, Yle, 6.6.2011). Recently, news has been generated about the possible decrease in the number of fire deaths because of the following changes to legislation in 2010 that require all cigarettes sold in Finland to be fire safe, self-extinguishing cigarettes (Helsingin Sanomat, 20.4.2011). However, it is too early to evaluate the actual effects of the self-extinguishing cigarettes.

Fire death statistics have been gathered since 1952 (see figure 7). Accidental fire deaths have ranged from 52 to 139 during 1952–2010 and the average number of fire deaths was 87. The total number of victims from 1952–2010 was 5143.

In 1964 and 2001, the number of fire deaths was at the lowest level of 52. In 1979, the number of fire deaths was the highest at 139. The disastrous fire at the Virtain elderly home claimed 27 elderly people and raised the figure of fire deaths in 1979. The fire was caused by a match that had fallen into a bed at night from the sickroom where smokers



**Figure 7.** *Accidental fire deaths 1952–2010.*

were housed. Most of the victims were incapable of moving and the fire alarm did not alert people to danger (Investigation Report of Virtain Elderly Home Fire, 1979).

Between the years of 1958–1965, the number of fire deaths was lower than the average number of fire deaths, ranging from 52 to 77. Between the years 1976–1979, numbers were higher than the average, ranging from 101 to 139. Again, from 1999–2002, fire death figures were better and ranged from 52 to 75. In 2003, fire deaths began to increase slowly again (84), and 109 people were killed in fires in 2006. However, the year before, in 2005, only 69 people were killed in fires. Besides accidents, 20–30 people per year died by suicide involving fires or as a consequence of unclear premeditation per year. In 2007, 85 people were killed, in 2008 and 2009, 107, and in 2010, 80 people were killed.

Considering the variation in fire deaths and the objective to reduce fire deaths to 50 by the end of 2015 that is, 37 victims less than the average number of fire deaths in the last fifty years – the target can be considered as challenging. However, in 2010, only 80 people died in fires, in 2009 and 2008, 107 people died in fires, and in 2007, 85 people died in fires in Finland. The number of victims varies constantly.

The '70s seem to be the highest period for the number of fire deaths. 1005 people died in fires in the '70s. The '80s is the second highest in the number of fire deaths at 899 victims. However, real safety cannot be evaluated by the number of victims because the figure as to how many accidents almost led to deaths is not known. Additionally, the number of injured is also outside of this scrutiny, because the statistical data for injuries was not collected for these years.

As a comparison, in road traffic accidents a total of 6,072 road traffic accidents involved 7,673 personal injuries, and of them, 272 people were killed in 2010. In 2009,

a total of 6,414 road traffic accidents involved 8,057 personal injuries, and in them 279 people were killed. In 2008, 344 were killed, in 2007, 380 were killed and in 2006, 336 were killed (Official Statistics of Finland, Traffic accidents, 2011). Road traffic accidents have varied from 1931–2009 from 113 to 1,072. The development of the car industry has affected the increase in accidents since the beginning of the century.

### 5.1.1 Intensive case analysis of fire deaths in Finland 2007–2010

The purpose of the intensive case analysis of fire deaths from 2007–2010 is to outline a typical case of fire deaths. Additionally, an important purpose is to define the essential features and factors of these fatal accidents. As the theoretical framework offers a combination or a “weft” of emergency, disaster and risk-management approaches including *human error*, *systemic error*, and *loosely-coupled approaches* (Bogner, 1994; Perrow, 1999; Davies & al., 2003; Reason, 2003), this model provides the possibility of being able to classify the results. The role of human error in fire deaths is an important and continuous theme, with 28% of fire deaths being caused by human error from 2007–2010.

Whittingham (2008) has classified strategies to prevent corporate accidents into safety culture, understanding the risks, safety regulation, safety management, learning organizational and corporate social responsibility. These strategies are loosely utilized in the analysis. The conceptual framework of safety with different dimensions in chapter 3.2.2 is used in the analysis in more detail. The existence of an individual and the existence of health are the core of the conceptual framework of safety expanding to areas of the social and welfare state point of view, traditional national safety, the modern, ecological conception of safety, and into the cultural and humanistic conception of safety.

Analysis begins with a general review of fire deaths; how many victims were lost in fire deaths per year; and what kind of fires were the most common ones. Risky structures of habitation, for example, environmental factors and building types are examined. The basic profile is created by examining times of the day, days, and months when most of the accidents happened. The riskiest areas for fire deaths are examined through a risk area classification of 1–4. Additionally, the geographical examination is done by examining the number of fire deaths in the 22 rescue service areas.

Causes of fire and contributory factors are examined by analyzing where the fire started, from which room, and what was the spot that caught fire first. The ability to react, and why the victim did not leave the site of the fire, and whether the fires were caused intentionally are all analyzed. Whether the victim was alone, whether the victim had abused alcohol or other drugs, and whether the abuse had an effect on the ignition of the fire are also analyzed in this section. Some of the materials are restricted from this analysis because they are classified police material.

Specific statistical data on residential fire deaths from 2007–2010 is remarkable data because previously no data like this has been available in Finland. Data includes detailed

information of each of the 379 fire deaths. However, mistakes in the data collection are possible. There are also differences in compiling the statistics. Thus, the figures are indicative, but this elaborate data offers a better understanding of what factors influenced these fatal fires from 2007–2010 and possibly in the future some fires could be better prevented.

### 5.1.2 Fire deaths<sup>14</sup> from 2007–2010

Altogether, 379 people in Finland died in fires from 2007–2010 (see table 4). In 2010, the total number of fire deaths was 80 (16 victims per million inhabitants). In 2009, the total number was 107 (18 victims per million inhabitants), and in 2008, the total number was the same. In 2007, the total number of fire deaths was 85 (16 victims per million inhabitants). The forecast to the year 2020 is 90 accidental fire deaths, unless some change occurs.

In 2010, fire brigades reported 14,992 call-outs to extinguish fires, that is 13.5% of all alarm assignments (total assignments per year 110,387.) (Statistics of the Rescue Services, 2006–2010).

**Table 4.** Fire deaths from 2007–2010.

Year	Victims
2007	85
2008	107
2009	107
2010	80
Total	379

The most common type of fire was construction fires (see table 5). The total percentage of 90.5 of fire deaths occurred in buildings, while 6.9% of fire deaths occurred in vehicles,

<sup>14</sup> Fire death in this research refers to a death that has resulted from the injuries directly caused by an event considered to be a fire, or from the poisoning, and when the death has followed within 30 days. The Finnish central organization of rescue services, SPEK, registers fire deaths through media follow-up. A person who dies in a fire and is mentioned in the media is registered as a fire death. In the media follow-up, it is not analyzed if the person died during the fire or after it. Delayed fire deaths will not be registered either if they are not mentioned in the media. Victims who died from carbon monoxide poisoning without a fire will be registered in the SPEK statistics. Statistics Finland does not record fire deaths as a consequence of vehicle fires caused by traffic accidents. Statistics Finland's follow-up time lasts until the actual death. If the person has died due to injuries in, for example, 33 days, or 365 days after the accident, it will be considered as a fire death. Statistics Finland records fire deaths according to the day of death, not the day of the fire. Additionally, Statistics Finland records people abroad if they had a domicile in Finland at the time of the accident. Different ways to record data can lead to differences in the statistics (Kokki & Jäntti, 2009, 19).

and only two of the cases occurred in the terrain as country fires. As most of the fires occurred in construction sites and in buildings, it is interesting to examine in more detail the building types, and the risky structures of areas, and housing in Finland.

**Table 5.** Types of accident from 2007–2010.

	Frequency	Percent
Construction fire	343	90.5
Country fire	2	.5
Vehicle fire	26	6.9
Other	8	2.1
Total	379	100.0

### 5.1.2.1 Risky structures of areas and housing in Finland

Finland has been divided into risk areas starting from one and ending in four. In risk area one, at least ten squares that are 250 times 250 square meters size that touch each other, and in which the number of inhabitants is more than 250, or the floor space is 10,000 square meters exist. This sort of risk areas is in centers of towns and in residential areas consisting mainly of apartment buildings. Risk area two forms at least ten squares that touch each other and do not belong to risk area one, and in which the number of inhabitants is more than 60, or the floor space is bigger than 2,500 square meters. The third risk area is at least ten squares that do not belong to the previous risk areas, and in which the number of inhabitants is more than ten, or the floor space is more than 250 square meters. Risk area four includes those squares that do not fill the required conditions of risk areas one, two, or three (Kokki, 2011, 38). Area four is the riskiest area when considering the number of fire deaths of 41.2% in this risk area.

However, most of the fires, in which people were saved, were in risk area one (49%: see table 6), 33% of the fires were in the risk area two, 10% in risk area four, and 9% in risk area three. The fire departments have placed their resources on the basis of risk analysis into areas with the biggest risk (risk area one) (Kokki, 2011, 38).

**Table 6.** Fire deaths in risk areas 1–4 from 2007–2010.

	Frequency	Percent
I	72	19.0
II	103	27.2
III	48	12.7
IV	156	41.2
Total	379	100.0

Buildings are divided into three classes in Finland depending on the building materials and construction method (see table 7). In class P3, the instructions for construction requirements are loose. Interior surface materials are usually wooden and there are no requirements for the supporting structures. Most of the one-family houses (terraced houses and detached houses) are in class P3. Most of the fire deaths occur in class P3 buildings with 66.8% of fire deaths in these buildings.

In class P2, interior surface materials are strictly regulated and the construction element must withstand fire for 30 minutes. Only some houses in Finland are in class P2. Only 1.6% of fire deaths were in P2 buildings.

In class P1, the buildings will withstand material fire without collapsing and without the fire spreading from one compartment to another for 30 minutes. Most two-storey houses are in class P1. The time before the fire spreads between apartments is 60 minutes: 22.2% of fire deaths in Finland were in class P1 buildings from 2007–2010.

**Table 7.** P-classification of buildings and fire deaths from 2007–2010.

	<b>Frequency</b>	<b>Percent</b>
P1	84	22.2
P2	6	1.6
P3	253	66.8
Missing	36	9.5
<b>Total</b>	<b>379</b>	<b>100.0</b>

Almost half (49.9%) of the fire deaths were in one-family houses (see table 8). Apartment buildings are the second most typical, with 21.4% of fire deaths being in apartment buildings. Only some of the fire deaths were in terraced houses, summerhouses, rental cottages and outbuildings. Outbuildings are separate buildings outside the (residential) main buildings.

**Table 8.** Building types by use and fire deaths from 2007–2010

	Frequency	Percent
One-family house	189	49.9
Terrace house	30	7.9
Apartment building	81	21.4
Summerhouse	21	5.5
Rental cottage	1	.3
Outbuilding	4	1.1
Other	4	1.1
Missing	49	12.9
Total	379	100

Most residential fires in Finland occur at night, at weekends, and during winter months. The riskiest time of the day was at night between midnight and 3am, and between 4am and 7am, and between 8pm and 11pm.

December and February were the most risky months and most of the fires occurred on Saturdays. Thursdays, Fridays, and Mondays were also risky days of the week.

#### 5.1.2.2 Fire deaths in the rescue regions

When examining the figures for fire deaths in the 22 rescue regions, most of the fire deaths occurred in the Varsinais-Suomi, Helsinki and Pirkanmaa regions. However, these are the most populated areas in Finland, therefore, fire deaths have to be proportional to the population<sup>15</sup>. The number of fire deaths is proportionated to a number of one million inhabitants per year in the rescue service areas. Most cases of fire deaths from 2007–2010 were in Kainuu, Pohjois-Savo, Pohjois-Karjala and Kymenlaakso (see table 9). These are the gloomiest areas when considering the number of fire deaths. In addition Satakunta and Päijät-Häme, more people died than on average. Proportionally to the habitation level, the fewest people died in Keski-Uusimaa, Jokilaakso, Pohjanmaa and Keski-Pohjanmaa (Kokki, 2011).

<sup>15</sup> Population as of 31.12.2009.



**Table 9.** Fire deaths in rescue regions from 2007–2010.

Region	Frequency	Percent	Fire deaths/ inh.
Kainuu	14	3.7	169
Pohjois-Savo	27	7.1	108
Pohjois-Karjala	18	4.7	108
Kymenlaakso	19	5.0	104
Satakunta	22	5.8	96
Päijät-Häme	19	5.0	94
Varsinais-Suomi	40	10.6	86
Etelä-Karjala	11	2.9	82
Lappi	15	4.0	81
Etelä-Savo	12	3.2	77
Etelä-Pohjanmaa	15	4.0	77
Kanta-Häme	11	2.9	63
Pirkanmaa	31	8.2	63
Oulu-Koillismaa	17	4.5	63
Länsi-Uusimaa	26	6.9	61
Helsinki	31	8.2	53
Itä-Uusimaa	5	1.3	53
Keski-Suomi	14	3.7	51
Keski-Pohjanmaa	5	1.3	50
Pohjanmaa	7	1.8	47
Jokilaaksot	5	1.3	40
Keski-Uusimaa	15	4.0	36
Total	379	100	

However, on the basis of the fire death data, it is difficult to say why most fire deaths happen in these particular areas. Socio-economic variables were excluded from the statistical data. However, Kokki (2010, 54) has analyzed that 67% of fire deaths were in low-income households in 2010, and 61% from 2007–2009. Eastern Finland has faced changes in winding up industries in recent years and this affects employment. This specific statistical data does not include employment or unemployment figures.

### 5.1.2.3 Safety culture

Considering the factors that are related to safety culture and what can be done to prevent fires, it is important to examine what caused the fire. The most common cause of fire was cigarettes, with 24% of fire deaths caused by smoking (see table 10), 17% caused by arson,

17% by another cause, and 16 % were unknown, and in 11% of cases, fire deaths were caused by electricity, or carelessness with an open fire.

**Table 10.** Causes of fire deaths from 2007–2010 (Kokki, 2011, 22).

Cause of fire	Fire deaths	
	n	%
Smoking	44	24
Arson	30	17
Electricity	20	11
Carelessness with open fire	20	11
Wrong use of equipment	7	4
Other cause	31	17
Unknown	28	16
Total	180	100

Fire safety requirements for cigarettes entered into force on the first day of April in 2010 by a Parliamentary decision to amend legislation on measures to reduce smoking. All cigarettes are self-extinguishing and are evaluated to make them less likely to cause fires if used carelessly. Finland is the first European country to enact fire safety requirements for cigarettes. The number of fires and fire deaths is anticipated to decrease now that regular cigarettes have been replaced by self-extinguishing ones. In addition, compared to earlier years, it is decreasing. In 2010, the number of fire deaths caused by smoking was 16 (23%) of all causes of fire deaths. In 2007–2009 it was 28 (35%) of all causes of fire deaths. However, it is too early to evaluate these effects.

The spots that caught fire first were chattels (24%), for example, furniture, the interior furnishing, clothes, and textiles (see table 11). Supporting structures (7%) such as structures and coverings, were the second typical spot that caught fire first. The room where the fire started first was typically the living room (20%), then bedroom (17%) and third, the kitchen (14 %).

**Table 11.** The spot that caught fire first from 2007–2010.

	Frequency	Percent
Supporting structure	25	6.6
Chattel	90	23.7
Unknown	54	14.2
Missing	210	55.5
Total	379	100.0

#### 5.1.2.4 Human error

Most of the fires were caused by the action of people either accidentally or on purpose (see table 12). Carelessness and lack of caution were contributory factors. From 2007–2010, 28% of fire deaths were caused by human error.

**Table 12.** Cause of fire from 2007–2010.

	<b>Frequency</b>	<b>Percent</b>
Human error	106	28.0
Device failure	23	6.1
Inflammable material	1	.3
Other	5	1.3
Not possible to evaluate	51	13.5
Missing	193	50.9
<b>Total</b>	<b>379</b>	<b>100.0</b>

In 19% of cases, fire deaths were a consequence of carelessness and lack of caution (see table 13). In 15% of cases, the fire was caused deliberately, and in 14.8% of cases, it was an accident. In 12.7% of cases, the intention was not known.

**Table 13.** Estimation of deliberateness of fire ignition from 2007–2010.

	<b>Frequency</b>	<b>Percent</b>
Intentional	57	15.0
Carelessness	72	19.0
Accident	56	14.8
Unknown	48	12.7
Missing	146	38.5
<b>Total</b>	<b>379</b>	<b>100.0</b>

Due to the rapid development of fire, there is typically not much time left to save the victim unless the victim is able to save their own life. The ability to react and function is essential in the case of fire. From 2007–2010, the ability to react of those who died in a fire had reduced in 60.7% of cases (see table 14). This is a significant finding. The ability to react in the case of fire had reduced in 230 cases from 2007–2010.

**Table 14.** Ability to react to fire from 2007–2010.

	Frequency	Percent
Normal	38	10.0
Reduced	230	60.7
Unknown	111	29.3
Total	379	100.0

Why the person did not exit to save themselves in time was in 35.1% of cases, due to the person not reacting in time (see table 15). A reduced ability to react is related to the cause as to why the victim did not escape in time from the scene of the accident.

**Table 15.** Why the person did not exit to save their life from 2007–2010.

	Frequency	Percent
Did not perceive the fire	55	14.5
Did not react in time	133	35.1
Did not know how to operate	38	10.0
Did not find a route to save	12	3.2
Reduced ability to move	42	11.1
Lived by others help	5	1.3
Obstacles at emergency exit	2	.5
Not an accident	40	10.6
Unknown	52	13.7
Total	379	100.0

In most cases, the victims were under the influence of alcohol. In 63.1% of cases, the victims had abused alcohol (see table 16). An estimation of the effects of alcohol, drugs or medicines in terms of the accident was 49.9%. Again, this is a remarkable finding considering that fire deaths are connected to alcohol abuse and a reduced ability to react in time.

**Table 16.** Had the victim abused alcohol (2007–2010)?

	Frequency	Percent
No	140	36.9
Yes	239	63.1
Total	379	100.0

### 5.1.2.5 Protection and rescue operations

Saving people from fires requires successful protection systems, successful rescue performed by the victim or by external agents. The fire alarm is one of the most essential pieces of protection equipment. It warns the victim or the rescuers to perceive the fire and to save victims by moving them away from life-threatening conditions. A fire alarm went off in 15.6% of cases from 2007–2010 (see table 17). However, the victims were lost. A significant finding is that in 28% of cases there was no functioning fire alarm, and 106 people died in conditions in which there was no fire alarm at all.

**Table 17.** Functioning of the fire–alarm system in fire deaths from 2007–2010.

	Frequency	Percent
Fire alarm operated	59	15.6
Fire alarm was not operating	22	5.8
Operation of fire alarm is unknown	73	19.3
No fire alarm	106	28.0
Fire alarm system	2	.5
Automatic fire detector	5	1.3
Unknown	70	18.5
Missing	42	11.1
Total	379	100.0

In 33% of cases from 2007–2010, a third person or a bystander made the emergency call (see table 18). In 18.7% of cases the informer was a person from the same building, in 13.7% of cases they were from another building, and in 9.2% of cases they were from the same room. Automatic announcements only occurred in 2.4% of cases. In 8.7% of cases, the victim was alone and the person closest to the victim was, in 25.6% of the cases, in the same building. In 13.7% of the cases, the person closest to the victim was in a nearby building. In 25.1% of the cases, the informant was unknown.

**Table 18.** Person who informed about the fire from 2007–2010.

	Frequency	Percent
Automatic machine	9	2.4
Victim	13	3.4
Person from the same room	35	9.2
Person from the same building	71	18.7
Person from another building	52	13.7
Passer-by	36	9.5
Third person/ bystander	125	33.0
Other	38	10.0
Total	379	100.0

#### 5.1.2.6 Development of the fire

The development of a room fire is distinguished from that of an open fire. In an open-state fire, there is more burning air without restrictions and smoke escapes well. In a room fire, the availability of burning air is restricted and the building parts that constrict the space prevent the smoke and heat radiation from escaping. Usually, room fires begin to develop from the ignition of furniture and interior furnishing. The ignition may follow a smoky fire that is small in effect and may go out by itself. Properties of burning material and the amount of susceptible surface essentially affect the development of the fire. When there is enough material to burn in the vicinity of the fire and the flames reach a height of 30 centimeters, it can be called a settled ignition. After this, the fire continues to develop typically at an accelerating pace (Kokki & Jäntti, 2009, 41; Sikanen & Keski-Rahkonen, 2011, 17). The development degree of fires was 69.1% at the burning stage in the case of fire deaths (see table 19).

**Table 19.** Development stage of the fire from 2007–2010.

	Frequency	Percent
Ignition stage	42	11.1
Burning stage	262	69.1
Cooling stage	22	5.8
Extinguished	39	10.3
Unknown	12	3.2
Missing	2	.5
Total	379	100.0

### 5.1.2.7 Age and gender

Mostly victims of fire deaths were male (see table 20). Middle-aged men and middle-aged, and elderly women are at the greatest risk of dying in a fire. On average, more people that are elderly die in fires. The average age of dying in a fire is 55 years. From 2007–2010, 278 victims (73.4%) dying in fires were males and 101 victims (26.6%) were females. The risk of dying in a fire is 2.5-fold for men compared to that for women.

**Table 20.** Gender of fire deaths from 2007–2010.

	Frequency	Percent
Male	278	73,4
Female	101	26,6
Total	379	100,0

The risk of dying in a fire for males and females is highest in the age group 60 to 69 years (64 victims per million inhabitants) with 26.7% of all victims being in the age group 60–69 years. In one of the cases, the age was not known.

**Table 21.** Victims according to gender and age groups from 2007–2010 (percentage of total in brackets).

	Male	Female	Total
0–9 years	2 (0.5%)	2 (0.5%)	4 (1.1%)
10–19 years	9 (2.4%)	2 (0.5%)	11 (2.9%)
20–29 years	10 (2.6%)	8 (2.1%)	18 (4.8%)
30–39 years	19 (5.0%)	4 (1.1%)	23 (6.1%)
40–49 years	46 (12.2%)	12 (3.2%)	58 (15.3%)
50–59 years	69 (18.3%)	19 (5.0%)	88 (23.3%)
60–69 years	<b>81 (21.4%)</b>	<b>20 (5.3%)</b>	<b>101 (26.7%)</b>
70–79 years	27 (7.1%)	17 (4.5%)	44 (11.6%)
80–89 years	13 (3.4%)	16 (4.2%)	29 (7.7%)
90 years	1 (0.3%)	1 (0.3%)	2 (0.5%)
Unknown age	1		
Total	278	101	379 (100%)

The men's share is considerably higher than in females with 21.4% of the male victims being in the age group 60–69 years and 5.3% of female victims being in the same age group. 18.3% of male victims were in the age group of 50–59 years and 12.2% were in the age group of 40–49 years. Five percent of female victims were in the age group of 50–59 years, 4.5% were in the age group of 70–79 years, and 4.2% were in the age group of

80–89 years. Therefore, middle-aged men and middle-aged, and elderly women are at the greatest risk of dying in a fire.

## 5.2 Summary and conclusions

The purpose of this chapter was to analyze fire death data to seek an answer to the fire death problem: what kind of problem it is and what makes the problem identification ambiguous. The actual policy problem is difficult to define. Fire deaths are an ambiguous policy problem and loosely connected and interrelated with different factors. The fire death policy problem aggregates from individual behavior, to a collective level, and to the outside world. Fire deaths are also interconnected and interlinked between different policies, and this makes the policy problem identification even more ambiguous. However, the political-administrative actors are aiming to define fire deaths as a safety policy problem. Fire deaths are a safety policy problem, but also a problem of social and alcohol policies. This makes the problem identification ambiguous.

Fire deaths are a collective problem of social responsibility and a problem of inappropriate individual behavior. Fire deaths are, at the same time, a private misfortune, and a public problem (Baumgartner & Jones, 1993, 164). This can be seen by examining the profiles of the cases that are summarized in the table below (see table 22).

**Table 22.** Profiles of the cases from 2007–2010.

N	379
Areas	Kainuu, Pohjois-Savo, Pohjois-Karjala and Kymenlaakso
Age	60–69 years
Gender	Male (73.4%)
Ability to react	Reduced
Type of fire	Construction fire
Risk area	IV
Building type	P3
Time of day, day of week, month	Night, weekend, winter months
Cause of fire	Smoking
Cause of fire	Human error

Table 22 collects basic features that appear on average in 379 cases of fire deaths from 2007–2010. Each case is critical, definite, and irreversible. Most fire deaths occurred in Kainuu, Pohjois-Savo, Pohjois-Karjala, and Kymenlaakso. The victims were aged 60–69 years, were mostly male, and their ability to react had been reduced. In 62% of cases, the victim's ability to react had been reduced due to alcohol abuse or the use of other drugs.



This figure demonstrates how significant people's individual behavior and choice actually is in causing these fatal accidents. The possibility of the government being able to reduce the number of victims is limited.

The type of fire was usually a construction fire in risk area four in the remote district areas where, 17% of the Finns live in one-family houses of building type P3 where the instructions for construction requirements are loose, and interior surface materials are usually wooden, and there are no fire-specific requirements for the supporting structures. Most fire deaths occur at night, at weekends, and during the winter months of December and February. The riskiest time of the day was at night between midnight and 3am, and between 4am and 7am and between 8pm and 11pm. Most of the fires occurred on Saturdays. Additionally, smoking was the common cause of the fire and human error was also considered as a consequential cause of fire in one-third of the cases. The second common cause of fire was arson. The number of arson attacks has been growing in recent years and it is an alarming sign. It can be a signal of negligence and a laissez-faire attitude toward those living -nearby and neighbors, and it should be studied further. One hundred and six people died in conditions in which there was no fire alarm at all. In one-third of the cases, a third person or a bystander made the emergency call.

What sort of accident type are fire deaths? According to the analysis, fire deaths are accidents caused mostly by humans and system accidents in the sense that they involve the unanticipated interaction of multiple failures such as non-operating fire alarms or missing fire-extinguishing systems. Fire deaths are a mixture of human error and system safety error. These failures are loosely coupled. Events in a fire can occur independently, although they can be involved in the same sequence. However, some events are not necessarily coupled, or caused by the other, for example, smoking and alcohol abuse. They can be separate events that are not necessarily caused by each other, but they can also be in the same sequence causing fire deaths.

Fire deaths can have a catastrophic potential that can cause damage to a great many humans, first-party victims (fire death victims, firefighters), second-party victims (relatives, neighbors, and inhabitants in detached-houses, those who are aware and informed of the possible exposure), third-party victims (innocent bystanders that have no involvement in the system), and fourth-party victims (fetuses and future generations) (Perrow, 1999).

If the fire deaths were an unambiguous policy problem, it would be easy to define the cases and then respond to these accidents. In most cases, problem framing is an enlightened guess of the actual policy problem. This is the case in fire deaths as fire safety policy is an ambiguous policy problem and the actual problem needs closer examination. It is ambiguous as to how much the risk areas or building types have effects on fire deaths. More significant can be the circumstances before the fire and the social environment where inhabitants live.

Humans also make mistakes and systems do fail. Human error spans the disciplinary gulf between psychological theory and the reliability of hazardous technologies (Reason, 2003). Interaction of multiple failures is one explanation for accidents (Perrow, 1999). A series of failures interact and become serious.

Alcohol abuse and smoking are chosen behavioral effects increasing the chances of fire. Flammable furniture, interiors and building materials endanger even more if they are also connected to alcohol abuse, smoking, and a reduced ability to react. Missing or non-operating fire alarms connected to the factors mentioned above reduce the probability of being saved from the fire even more. The fire will become perilous in a few minutes. Not to mention that the victims, in most cases, were alone. These particular features were described repeatedly in fire deaths.

Human behavior is essential in terms of further investigation on what could be done to prevent these accidents. Human contributions and mechanical contributions to fire deaths require deconstruction. Additionally, with the growth of system size and complexity, the nature of fires is changing all the time.

An intriguing question relates to the identification of the fire death policy problem in terms of how fire deaths come to be formed as a policy problem in the first place. How do fire deaths come to the attention of public and governmental decision makers?

The fire death indicator simply shows that there is a problem and that it has the attention of governmental decision makers. This is why the case of fire deaths is followed more closely as a policy case. According to Kingdon's (2002, 166) types of policy agendas, the governmental agenda, as a list of topics to which people in, and around government are paying serious attention, would be the entire internal security policy, and the decision agenda, as a smaller set of items being decided upon, would be the problem of fire deaths.

Policy problems come to the attention of public and governmental decision makers because some more or less systematic indicator shows that there is a problem out there (Kingdon, 2002). This is the case in fire deaths. The figure for fire deaths is a simple indicator showing a problem, and this specific figure has got the attention of public, and the attention of governmental officials'. The figures are gathered, analyzed, and published in the media, and they get the attention of the public. Publicity is a considerable factor. The Ministry of the Interior is responsible for the internal safety policy, and the external pressure from the media is high toward the rescue services because of their main duty of maintaining fire safety, and, in a sense, it is "a matter of life and death." This conclusion came up in the interviews with public managers in 2008.

Reason (2003) defined that human error spans the disciplinary gulf between psychological theory and the reliability of hazardous technologies. A series of failures interact, and become serious, and eventually become accidents. Alcohol abuse and smoking are chosen behavioral effects endangering lives through fires. Flammable furniture, interior furnishing, and building materials endanger lives even more if this is also connected to alcohol abuse, smoking, and a reduced ability to react. Missing or non-

operating fire alarms connected to the factors mentioned above reduce the probability of being saved from the fire.

Thus, the cause of fire deaths is the interaction of the multiple failures with human contributions and mechanical contributions. The policy problem is nevertheless evident, as 379 people died in fires from 2007–2010 and that is a problem in society. However, fire deaths are an ambiguous policy problem since it is difficult to identify because of the combination of human contributions and mechanical contributions. Fire deaths are a fire safety problem related to alcohol abuse and precarious conditions. Fire deaths are also related to social and healthcare policies. These different policies are not planned, organized, or implemented as mutually reinforcing policy actions, and this causes incoherence between different policies. Links and connections between different policies are important in solving these policy problems.

What does the decision-maker think about the problem formulation and what can the decision-maker do to solve this policy problem? Simon (1957) wrote about understanding crucial decision-making environments. By this, Simon meant aspects that have relevance to the life span of the organism being considered. The aspects that have relevance for the life span in fire deaths are considerable. These features are human behavioral aspects and fire safety technological aspects. What is essential are the connections between different policies that require collective decision making.

However, there are conflicting interests and objectives representing the values of different policies and participants (Cyert & March, 1963). Choices can be made by deliberately or by trial and error (Elster, 1979). Human actors can also make choices on the basis of the expectations of others. There is a discrepancy between the rational decision making world and the world where decision makers actually live (March & Simon, 1959; March, 1978; 1988; 1994; March & Olsen, 1979). However, these choices affect human lives and the effects are considerable.

The government represents the collective choice and social responsibility exercised through governmental actions. The government is responsible for providing rescue services and measures as public goods or services. Individuals are responsible for their individual choice and behavior. Alcohol abuse and smoking are individual choices and the government has limited abilities to affect these choices. Legislation and taxation are policy instruments to constrict abuse. However, history indicates that individuals will invent their means, as during the Prohibition in the 1920s when alcohol was illegal, and in spite of the Prohibition citizens bought their alcohol on the illegal market (see Kyvig, 2000). These behavioral effects should be examined further.

If an individual behaves in a way which cannot be intervened in, for example, when the person smokes in bed at night under the effect of alcohol, falls asleep, and eventually fire breaks out and the fire alarm does not function. Whose responsibility it is for all the possible consequences, in the end, the victim perishes, or the fire spreads to the neighborhood? Authorities can regulate smoking and enforce self-extinguishing

cigarettes, control alcohol abuse, and regulate the use of fire safety equipment such as fire alarms, extinguishers and sprinkler systems. However mandatory, when these measures are not followed there is not much for the authorities to do.

Policies crosscut multiple areas of policies and subsystems. In addition, an alteration in one policy will affect another. Policy interfaces or regimes have been studied from different perspectives. One aspect in dramatic events is to study how shocks disrupt policy agendas and policy change (Kingdon, 2002; May, Sapotichne & Workman, 2009, 793). The basic argument in this type of research is that there is a link between crises and policy change (Nohrstedt & Weible, 2010, 4). Social and healthcare policy, alcohol and taxation policies are interconnected with fire safety policy. In most cases, victims in fire deaths were under the influence of alcohol and their capacity for normal interaction was impaired. Middle-aged and elderly people constitute the greatest risk group. The risk of dying in a fire will increase when people lose social contacts and drift away from society.

## 6 Target Setting in Fire Safety Policy

This chapter analyzes administrative target setting in the fire safety policy and in the fire safety organizations. The analysis concentrates on what ambiguities there are in target setting in the rescue services and in the fire safety policy.

The chapter begins with a short definition of organizational targets, in terms of what functions they serve according to the theoretical framework and literature. The second section handles target setting and ambiguity in fire safety policy, exploring how targets are set in the political-administrative processes in the Internal Safety Program and in the rescue services and agencies.

The government of Finland has set overall objectives for the Finnish internal safety policy in the Internal Safety Program. Performance targets for the rescue services and agencies are set by the Ministry of the Interior. Regional state administrative agencies, the ERC, and the Emergency Service College are the agencies that are analyzed.

Targets in these organizations are reviewed partly in 2001 and mainly in 2005 and 2010. These three periods were chosen because of the change in the budget legislation being implemented in practice since 2005. The budget legislation defined how to set performance targets and how to set indicators measuring performance in the public sector.

Therefore, periods before the change and after the change are interesting. Some of the data was not available for 2001 and thus was not analyzed. Regional state administrative agencies are only reviewed in 2010 because they were established in 2010. Additionally, the Finnish Safety and Chemicals Agency is not included in the analysis. The focus of the analysis is how targets are set in these years, and, most importantly, what ambiguities there are in target setting.

### 6.1 Target setting in the Internal Safety Program

Performance agreements represent the choice situation in which targets are made by evaluating based on the available information. Targets should focus on the most important targets and the attainable results for each budget year in ministries and agencies. Performance targets should express the ministries and agencies basic operations and the purpose of their existence. However, target setting and the purpose of existence

in the rescue services is ambiguous. This is elaborated on by examining the content and the structure of performance agreements.

At first, the governmental level and the goals that the Finnish government has set for Finnish fire safety policy in the Internal Safety Program are analyzed, and then we move on to the more detailed performance agreements between the Ministry of the Interior and the Regional State Administrative Agencies, the ERC, and the Emergency Service College.

The objectives for the rescue services and for the fire safety policy are set in the strategy for the rescue services, in the multi-annual operating and financial plans of the Ministry of the Interior and government agencies (FOP), in the budget and in the performance agreements.

The Internal Safety Program identifies the priorities, objectives, and measures for the cross-sectoral development of internal security. The Program also specifies the key indicators to report on the implementation and results of the Program. The Program extends to the year 2015 and the objectives are set for the year 2015. The overall target for the Program is that Finland will be the safest country in Europe in 2015.

There are six common targets and ten special targets to improve internal safety. Improvement of safety at home, during leisure time, and in traffic are one of the targets in ten special targets. Fire deaths are one of the indicators measuring the actual objective:

“To reduce the number of victims in accidents and the number of serious accidents systematically. Improve citizens’ consciousness of the accident risks and increase information about the prevention of accidents” (Internal Safety Program, 2008, 23).

The prevention of accidents is directed by eight cross-sectoral strategic definitions of policy that focus on increasing the importance of safety by standardizing methods to prevent accidents, increasing knowledge, offering expert services for safety planning, carrying out local safety work, improving habitation safety by developing risk management and improving inhabitants’ ability to identify and prevent risks, ensuring operational preconditions to prevent domestic accidents, improving measures to prevent the harm caused by alcohol abuse and other intoxicants, and by affirming independent initiatives of citizens by calling their attention to risk management and offering them the basic knowledge (Internal Safety Program, 2008, 23).

Measures to achieve the objective are divided into eight procedures. Objectives and operational principles are specified to prevent accidents and defined by establishing a common forum of the authorities. The Ministry of Social Affairs and Health is responsible for organizing this and the participative ministries are the Ministry of the Interior, the Ministry of Transportation and Communications, the Ministry of Employment and the Economy, the Ministry of the Environment, and also non-profit organizations from the field (Internal Safety Program, 2008, 23).

All of these eight measures are not summarized in detail here, because they are not all relevant when considering fire safety policy. There are two relevant measures considering fire safety policy. The first of these two measures is to improve information about the

accidents and utilize this information in better cooperation between the rescue service areas and the National Institute for Health and Welfare. This information should be better used in safety planning. This information is used as part of risk management in the fire departments and local safety planning. Fire departments use this information in evaluating the performance of prevention work and to steer the collection of the information to utilize this better at the local level. The Ministry of the Interior is responsible for the measure, and the National Institute for Health and Welfare and the rescue service areas are participants.

The second measure considering fire safety policy is that hospitals, nursing homes, and care institutions should be protected with automatic sprinkler systems unless another method to attain a sufficient safety level is in place. Financing the system and the participation of the state in the financing is clarified. The Ministry of the Interior is the main responsible author along with the Ministry of Social and Healthcare, the Ministry of the Environment, the Association of Finnish and Regional Authorities. The following indicators are used to monitor these targets and objectives.

**Table 23.** Indicators used to monitor improvement of safety at home, during leisure time, and in traffic (Source: Internal Safety Program).

Indicator	2007	Mid-term target 2011	Target 2015	Source
Accidental deaths at home during leisure time (number)	2710 (in 2006)	2440	2200	The National Institute for Health and Welfare
Deaths by falling	1178* (2006)	1060	950	The National Institute for Health and Welfare
Alcoholic poisoning and deaths caused by accidents under alcohol abuse	1177** (2006)	1060	950	The National Institute for Health and Welfare
<b>Number of fire deaths</b>	<b>90</b>	<b>65</b>	<b>50</b>	<b>Resource statistics and accident statistics of the rescue operation Pronto</b>
Damage caused by the fire damage €	150 M€	150 M€	150 M€	Federation of Finnish Financial Services
Hospitals, nursing homes and institutions that have been protected with an automatic fire-extinguishing system	13%	20%	50%	Report by the Ministry of the Interior
Number of deaths by traffic accidents	378	250 (2010)	200	Liikenneturva, Organization for Traffic safety
Number of drunken drivers per 10,000 drivers	15	11	10	The National Institute for Health and Welfare and Police

\* Cause of deaths statistics, Statistics Finland

\*\* Cause of deaths statistics, Statistics Finland

The number of fire deaths is taken from Pronto resource statistics and from the accident statistics of the rescue operations, and the data varies from the specific data gathered from the rescue service areas. The difference is due to another measurement in the statistics. Additionally, human error is not excluded, leading to different figures. Difference in fire death figures is a not, however, that significant that analysis would become too complicated.



The number of fire deaths has been set by the Finnish Government in the political-administrative Internal Security Program to state the primary objectives and measures for internal security. The indicator measures the victims of fires and it has ranged from 52–139 from 1952–2010. The objective is to reduce the number to 50 by 2015. The first Internal Security Program aimed at reducing fire deaths to 30 by the end of 2012 (Martiskainen, 2009, 9). An interesting question is how the target levels are constructed. Where does the target of 30 or 50 come from?

In 2010, the total number of fire deaths was 80, in 2009 it was 107. In 2008, the total number of fire deaths was the same, and in 2007, the total number was 85. In 1962 and in 2011 the number was closest to 50, at 52. The average number of fire deaths from 1952–2010 is 87. The objective of 50 is 37 deaths less than the average and, therefore, is ambitious. Attention must also be paid to the statistical variation.

The dimension of the goal, viewing the things that are important –reducing the number of victims –and the aspiration level influenced by the organization’s past goal, past performance, and the past performance of other “comparable” organizations are the ways in which targets are constructed (Cyert & March, 1963). Zero would be the optimal level of fire deaths. Unfortunately, this level is not possible or achievable, because accidents always happen. Fifty would be the safest level in Europe when taking into account “other comparable” countries. If we examine the world fire statistics<sup>16</sup> Finland is the highest ranked of the European countries after the Baltic States. Proportional to the population, the level is high. Hungary, Bulgaria, the USA, Poland, and Norway come after Finland when we compare the population level to the number of fire deaths.

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<sup>16</sup> Centre of Fire Statistics (CTIF) gathers world fire statistics. In 2005 world fire statistics included 85 countries and 90 cities.

**Table 24.** World fire statistics in 2004. (Source: Center of Fire Statistics, 2006).

Country	Population	Number of fire deaths	Average number of fire deaths	
			Per 100000 inhabitants	Per 100 fires
Russia	144000	18377	12.8	7.9
Estonia	1347	127	9.4	1.1
Latvia	2319	195	8.4	2.0
The Ukraine	47517	3784	8.0	7.9
Lithuania	3500	233	6.7	1.4
Moldova	4400	222	5.0	8.9
Mongolia	2650	57	2.2	2.6
<b>Finland</b>	<b>5220</b>	<b>103</b>	<b>2.0</b>	<b>0.9</b>
Hungary	10117	157	1.6	0.7
Bulgaria	7761	105	1.4	0.4
The USA	293655	3900	1.3	0.3
Poland	38175	486	1.3	0.3
Norway	4577	55	1.2	0.5
Slovakia	5200	45	0.9	0.4
Croatia	4437	39	0.9	0.6
Ireland	4044	35	0.9	0.1
France	61000	500	0.8	0.1
The UK	60000	508	0.8	0.1
Slovenia	2002	17	0.8	0.3

As the world fire statistics show target levels are usually set by comparing other comparable organizations and their performance, which are, in this case, other countries. To halve the number of victims is a good target: however, it is ambitious. The Minister of Justice estimated already in 2011 that Finland is not likely to reach the objective to be the safest European country in 2015. Even though alcohol consumption would decrease and thus violent crimes would decrease, new property crime has increased regardless of the Schengen Agreement that allows transiting from one country to another within the Schengen area without border controls. Therefore, the Ministry of Justice argues that Finland is not likely to be the safest country in Europe in 2015 (HS 20.7.2011).

This example indicates the ambiguous format around safety. Even though alcohol consumption or violent crimes may decrease there is always some other form of insecurity that increases. This example also indicates the ambiguity in the time dimension. Target setting was put in place prior to the establishment of the Internal Safety Program in 2008. So the decision-maker should have already known, in 2008, what the world would be

like in 2015. Even though there are still some years left to be able to reach the objective, the Ministry of Justice has already estimated that the objective will not necessarily be achieved, or that it is not likely to be reached. However, the trend and the development of safety can change.

As observed in the complete cycle of choice by March and Olsen (1976), individual preferences and cognitions are aggregated into organizational choices. This process can be bureaucratic-administrative or bargaining-political. The bureaucratic-administrative procedure is a process by which problems are solved, relevant solutions are associated with appropriate problems, and choices are made in order to resolve problems. The bargaining-political procedure is a process by which coalitions are formed and political bargains struck. Choices are made by forming a group with sufficient power to enforce a joint solution to a problem (Cohen, March & Olsen, 1976, 24).

Target setting in the Internal Safety Program is a classic bureaucratic-administrative process where problems are solved, associated with appropriate problems, and choices are made in order to resolve problems. The logic of problems, choices, and solutions is written in the Internal Safety Program resolution. It begins with the background and purpose of the program, continues to the overall objective of the program including the definition of what is meant by internal safety, and in the end, defines the challenges (problems), aims to improve the situation (choices), and special targets to create solutions. Monitoring and evaluation of the program is achieved by reporting on the implementation and results of the Program to the government through the key indicators (table 27).

However, the large outcome targets that consider the whole of society such as the target that *Finland will be the safest country in Europe in 2015* indicates that these large outcome targets are possible to set, but difficult to divide into a smaller chain of results. One of the interviewees described this as:

*The perceiving and conceptualizing of outcomes is difficult or actually the conceptualizing is not difficult, but what is difficult is to break the effects into chains of results. If we have a general target such as to reduce fire deaths, what is left undone is who can influence this and how. The analysis of the causality chains is left undone, not the conceptualizing, and this leads to, that from this "business idea level," a jump is made into such concrete outputs that the fire department should be at the scene of the accident in five minutes on average. That space will remain unanalyzed. And then this kind of style to work horizontally, even though this is a horizontal program, the internal safety program, how genuinely others are formulating this together is actually a big question. (Interviewee, 2010)*

In the next section, performance targets are reviewed from the performance contracts of fire safety organizations, the organizations that are officially defined as being responsible for fire safety policy, and accountable for producing performance as outputs and outcomes.

## 6.2 Performance targets in the rescue services

According to the strategy of the rescue services, the main strategic goal in 2015 is to prevent accidents (Strategy of the Rescue Services 2015, 2007, 9). The main outcome target in the rescue services is to reduce the number of accidents especially the number of fires and fire deaths. In the case of emergency rescue services, they should provide aid fast and efficiently, and reduce the damage level.

Overall performance targets for the rescue services from 2010–2014 are:

- Reduce the number of fires
- Reduce the number of fire deaths
- Reduce the damage of construction fires
- Develop a safety culture in society
- Trust in rescue services remains at a good level

(Source: Multi-annual operating and financial plan of the Ministry of the Interior 2010–2014, 2009, 47)

**Table 25.** Outcome targets for the rescue services for 2010–2014 in the Multi-Annual Operating and Financial Plan.

Outcome targets	Score		Estimation	Target (budget proposal)	Targets (multi-annual operating targets)			
	2007	2008			2009	2010	2011	2012
Fires max. (exc. forest fires and wildfires)	11340	11480	12000	<12000	<11000	<11000	<11000	<11000
Of which construction fires	4030	4490	6000	<5600	<5400	<5300	<5200	<5200
Fire damage caused by construction fires (M€)	193	190	<160	<160	<150	<150	<150	<150
<b>Number of fire deaths</b>	<b>91</b>	<b>104</b>	<b>&lt;95</b>	<b>&lt;73</b>	<b>&lt;65</b>	<b>&lt;60</b>	<b>&lt;56</b>	<b>&lt;56</b>
Value of saved property in building fires (M€)	15110	16780	<10100	<10050	<10000	<9950	<9950	<9950
Confidence in rescue services % of population	–	94.0	–	–	>95	–	–	>95

Again, the number of fire deaths is different from the figure in Pronto (90), and the figure collected from the rescue service areas (87). The difference can be put down to the different compilation methods involved in the statistics.

The target in the budget proposal for the year 2010 is less than 73 people dying in fires. The realized number in 2010 was 80 fire deaths. For the years 2011–2014, the target is less than 237 fire deaths. The number is divided across four years. The Internal Safety Program set the target for the year 2011 and for the year 2015. In the Multi-annual Operating and Financial Plan, targets are set for each year. A longer planning period in target setting helps to develop results for the future.

As mentioned earlier in chapter four, the Ministry of the Interior makes performance contracts with regional state administrative agencies, the ERC, The Emergency Service College, and Finnish Safety and Chemicals Agency. Targets with regional state administrative agencies, the ERC, and the Emergency Service College are elaborated on below.

Regional state administrative agencies are an exception, because they make a strategic performance agreement with the Ministry of Finance for four years covering the governmental term. The strategic performance agreement sets its focus areas, priorities, and forms of cooperation and frame. The Ministry of the Interior makes an operational performance agreement with the agencies. The operational agreement is more detailed including more precise focus areas, policies, and targets.

### 6.2.1 Regional State Administrative Agency

The strategic performance contract of the Southwestern Regional State Administrative Agency includes targets and preventive actions in line with the Internal Security Program. The strategic performance agreement includes the following targets:

- The agency participates in the implementation of the Internal Security Program and its objectives;
- The agency strengthens preventive actions; and
- The agency improves safety in the changing circumstances of people and society. (Strategic Performance Agreement with the Ministry of Finance, 2010).

The operational performance agreement includes slightly more precise targets:

- Organize cross-sectoral cooperation of internal security in the agency;
- Create procedures to assure cooperation in internal safety matters between the Centers for Economic Development, Transport, and the Environment;
- Support the local safety planning and operations by arranging training and also by gathering reports and other information to utilize in local planning; and
- The focus of the local safety planning is to diminish violence and accidents and prevent alcohol disadvantages. (Operational Performance Agreement with the Ministry of the Interior, 2010.)

Operational targets are mostly pursuant: “to organize,” “to create,” and “to support.” Targets are not concretized by specific performance indicators or measures such as the number of committed cross-sectoral organizations, or a list of procedures to assure cooperation between centers for economic development, transport, and the environment. However, the regional state administrative agencies are fairly new and this might partly explain the character of the targets.

### 6.2.2 Emergency Response Center

By contrast to the performance targets of the regional state administrative agencies, the ERC has set more concrete performance targets and indicators such as: “90% of emergency calls are answered in less than 10 seconds” and “90% of cases requiring a call-out were responded to in a maximum of 90 seconds.” Additionally, costs of emergency actions have been set as a target: “8.9 euros per inhabitant per year.”

The ERC Administration is a nationwide public sector organization consisting of administrative headquarters and ERCs located throughout the country. The ERC Administration is managed and directed by the Ministry of the Interior in cooperation with the Ministry of Social Affairs and Health. The task of the ERC Administration is to receive emergency calls from all over the country that fall within the scope of the rescue, police, social and health services, as well as other information relating to the safety of people, property, and the environment, and to forward their content to the appropriate authorities or partners (ERC Administration, 2011).

**Table 26.** Targets and indicators of the Emergency Response Center Administration measuring effectiveness for 2001, 2005, and 2010 (Source: Performance Contracts).

Emergency Response Center			
Year	2001	2005	2010
Target	90% of emergency calls are answered less than in 10 seconds.	90% of emergency calls are answered in 10 seconds. • Score 2003: 8.6 seconds • Score 2004: 8.4 seconds	90% of emergency calls are answered in 10 seconds. • Score 2006: 71% • Score 2007: 77% • Score 2008: 87% • Forecast 2009: 90%
Target	90% of cases that needed an assignment were responded in a maximum of 90 seconds	90% of cases that needed an assignment were responded to in maximum of 90 seconds	In urgent cases, time from the emergency call to the assignment is responded to in the required time 70%. • Rescue services 55% • Health services 75%
Target	Costs of emergency actions 8,9 € /inhabitant/year	Costs of emergency actions 8,9 € /inhabitant/year	Costs of emergency actions max. 11,2 € /inhabitant/year Costs of emergency actions max. 14,0 € /emergency call
Target	Emergency number 112 is well recognized.	94% of population knows emergency number 112 • Score 2003: 93% • Score 2004: 92%	95% of population knows emergency number 112 • Score 2007: 95% • Score 2008: 95% • Forecast 2009: 95%
Target	–	ERC work is reliable. Utilization rate is 99.99% Score	ERC works is reliable. Utilization rate is 100%

The compact and concise targets such as in the ERC are easier to follow than broad and pursuant targets from the regional state administrative agency. However, the behavioral effects following these compact targets are ambiguous. Two ERC operators got a ticket from the District Court in 2010 regarding breaking a duty. Three calls were made over an hour in August 2009 concerning the same man's threatening behavior. Some hours later, the man kindled his former lady friend's house into a fire. The lady was saved, but six neighbors were hospitalized. In court, the second operator appealed that one emergency call should last only for a maximum of 90 seconds, and with this customer, it was used for four minutes (Helsingin Sanomat, 6.10.2010).

This indicator led into negative behavioral consequences. The call lasted longer than it had been set as the target time. Considering the targets and the scores of the ERC administration, the numbers look good. It does not matter if 90% of calls are answered in 10 seconds, the 10% of cases that are not answered within that time allocation can include

fatal consequences. Due to the character of the operations (saving lives), one case can be crucial, and only the best performance is good enough. Even though the numbers look good in the performance reports, performance is much more ambiguous than can be judged from the figures involved. As the example above showed, where the ERC operators hung up the phone, one case can be crucial, and can cause damage to a larger number of people.

Performance indicator awareness of the emergency number 112 is a question of marketing and informing. The reliability of ERC work is a question of image – how the rescue operations are viewed by the public and in the media. Publicity was mentioned in the interviews with the Ministry of the Interior as one of the considerable factors influencing public management and for estimating the success of an agency from outside the organization. External pressure from the media is considerably high towards the police and the rescue services. Due to the nature of rescue operations, the ERC's operations are always under close scrutiny. Saving human lives is a crucial assignment.

*Also the publicity much specifies public management, it is estimated through the publicity whether the branch of administration has succeeded in its task or not. (Interviewee, 2008)*

### 6.2.3 Emergency Service College

From the tight and crucial targets of the ERC Administration, the Emergency Service College provides education and training to supply labor for the rescue services and emergency response centers. The college provides training for fire fighters, ERC operators, sub-officers, and fire officers. The college also provides preparedness training for disturbances during normal conditions and emergency conditions, as well as for international, civil crisis management tasks. The college is involved in the research and development functions in the field. The College is also responsible for maintaining the assignment register of the rescue services called Pronto (Emergency Service College, 2011).

The Emergency Service College has set targets to measure concrete outputs such as degrees gained, training days, and courses. The Emergency Service College also measures the current prices of the courses and training days, the number of teachers per student and also the quality of education (professional skills of the teachers, teaching material, course management, and contents of the courses).



**Table 27.** Targets and indicators for the Emergency Service College to measure effectiveness in 2001, 2005, and 2010 (Source: Performance contracts).

<b>Emergency Service College</b>			
<b>Targets</b>	<b>2001</b>	<b>2005</b>	<b>2010</b>
Degrees	171	244	250
Training days	70180	97680	93840*
Vocational education	51680	68020	54720
Vocational supplementary education	18500	19660	11400
Preparation training	11500		5000
From which obligatory civil defense education	7000		2250
Supplementary education (subject to public law)	1700		1400
Supplementary education (non-profit)	5300		1000
Supplementary education (profit)			4000

\* Target has been revised to match better the actual amount of training days in the beginning of 2009 (now 180 days, earlier 190 days)

The number of teachers and the quality of teaching indicate the resources and internal success of the Emergency Service College. Service ability and quality measures of the college are assessed through quality indicators on a scale from one to four. The quality target for degree education in 2010 was set as 3.00. The quality target for supplementary education in 2010 was set as 3.50, and for preparation training at 3.50. In previous years, the service production (degrees and training days) and quality measures were merged and a comparison between these years is not possible. Nevertheless, in 2009, the quality score in degree education was 3.06, and in 2008, 2.96, and in 2007, 3.01; thus the level of quality has been around three. The target for the year 2011 is 3.08.

However, an indicator measuring the educational need compared to the actual training is missing. There are 635 voluntary fire brigades and 153 industrial fire brigades. Regional rescue services have approximately 5,000 full-time employees and approximately 14,300 part-time employees and voluntary fire brigade members. What are the future number of employees, part-time employees and voluntary fire brigade members, and how is it taken into account considering the targets for the year 2015?

Neither are targets for research, or targets for the use of the rescue service register Pronto included in this table.

### 6.3 Summary and conclusions

Fire safety policy is about preventing accidents and acting in the case of an emergency. Reactions have to be made, otherwise human lives may be lost. "Solution salience" is an

essential feature of fire safety policy. A solution needs to be found and action has to be taken. Therefore, the objective-orientation fits well for the rescue services.

However, no matter how fast and vigorously fire safety actors act, rescue measures alone do not reduce the number of fire deaths. Many of the actions with respect to threatening fire deaths are preventive, for example, installing fire alarms and sprinklers, conducting fire inspections, taking care of chimney sweeping in the houses, and increasing people's safety awareness, events that happen before the fire brigades are even needed. These measures are not included in performance contracts between the Ministry of the Interior and the agencies that are scrutinized.

There should be targets largely indicating preventive measures. Otherwise, rescue services are reviewed by acts that are beyond their sphere of influence. People's lack of carelessness caused the accidents in 19 % of the cases, and the risk became a reality. It is difficult to affect people's behavior, or predict their behavior, or their lack of care. However, following the level of awareness toward safety is an essential feature in target setting.

Additionally, the performance of the measures requires cooperation between several policies, their planners, and various implementing agencies. Fire safety policy is as much as about social and healthcare policy as safety policy. However, targets and measures are set for each ministry and agency, although cooperation is enacted between the ministries and agencies, and the Internal Safety Program. However, crosscutting policy targets are not set. Linkages or the connections between fire safety organizations are not explicit. Measures are divided into responsible authorities and each authority is responsible for each measure, although the cooperation model is pioneering in nature. Crosscutting policy targets would be targets that aim at a collective goal.

As the Minister of Justice stated, alcohol consumption and violent crimes may be replaced by other different social problems in the future, and these may cause insecurity in society. The changing format of safety makes target setting ambiguous. Who is "mostly" responsible for each policy field in each time and who is mentioned as the main authority responsible for reducing or improving each policy problem?

In target setting, the optimum level is impossible to reach. According to Simon (1957), this would mean a stable system of policies (preferences) and skills in computation to calculate the alternative policy choices. Cognitive limitations and the allocation of attention to different problems and policies at the same time is bounded, and there are no "perfect" solutions available, only the "best possible" solutions (Vakkuri, 2009b).

It is also interesting how the target levels are constructed. The number of fire deaths has ranged from 1952–2010 from 52–139 and the average number of fire deaths from 1952–2010 was 87. The objective is 37 deaths less than the average. Zero would be the optimal level, but it is unattainable. The dimension of the goal and the aspiration level influenced by past goals, past performance, and the past performance of other "comparable" organizations affects the target setting (Cyert & March, 1963).

Safety is overall, a multifaceted and pluralistic discipline to set targets and it will change over time. This should be perceived in target setting. Annual targets may not be relevant for reviewing, for example, fire deaths. Annual variation may be considerable. For example, in 2001 only 52 people died in fires. What does this tell us about the change in 2002, when 66 people died in fires, or in 2006, when 109 people died in fires? It is not known exactly what caused the increase or decrease in the number of victims.

Altogether, a fire death is not a good indicator for objectives. Authorities' ability to prevent accidents and fires is restricted. Individuals have their own will and freedom to choose their way of life. A better measure would be the success in saving people's lives; how many people were saved from fires compared to the actual number of victims.

However, all operations are not surrounded by targets. Action and operations outside the target-orientation can also lead to results (Kassel, 2008, 241–252; Autero, 2009, 118). Results can be achieved in sectors for which the targets would not have been set at all (Kassel, 2008, 241–252; Autero, 2009, 118).

In the rescue services, reducing fire deaths has been identified as a need and an objective has been set to reduce the number of victims. In performance evaluation, an interesting point of view is whether the number of fire deaths begins to decrease or increase according to the objectives. What is also interesting is whether the rescue services had an effect on the decrease in fire deaths. How much have the rescue services affected the objective, and how many other operations and measures were affected outside of fire safety authorities?

In the next chapter, this is studied from the point of view of performance evaluation. What is interesting here are the effects that were generated, effects that were generated without intention, and the effects that effect society overall.

## 7 Evaluating Performance in Fire Safety Policy

This chapter analyzes ambiguity in evaluating fire safety policy. Evaluation means a systematic investigation of the effectiveness of social interventions (Rossi, Freeman & Lipsey, 1999, 4). In the case of fire deaths and fire safety policy, an interesting question is whose performance should be evaluated? Fire brigades are the operating units responding in a case of emergency. Rescue services are the legislative actors giving guidance and steering fire safety policy guidelines. Municipalities are the funding parties paying the costs of the rescue service regions, not to mention individual behavior and action that plays an important role in causing fire deaths. Dangerous situations, in most cases, are caused by individual choice and behavior. So who should take the credit or blame for the actual results?

The main focus of this chapter is that evaluating performance of the fire safety policy is ambiguous. The chapter begins with a short definition of what performance evaluation is and why it is ambiguous. The chapter reflects ambiguity in evaluating performance of public policies as social interventions in the fire safety policy. The second section handles evaluating performance in the fire safety policy and in the rescue services according to the current model.

The analysis has been carried out based on the literature, interviews, and performance management documentary data, and on the statistical data for fire deaths. Interviewees were asked how they knew whether their organization was performing or not, and what they knew about social effectiveness and outcomes in public interventions. Interviews were undertaken in 2008 with directors from the Ministry of the Interior and with directors from the Ministry of Finance, the State Treasury, and National Audit Office, and members of the Parliament in 2010.

## 7.1 Evaluating performance in fire safety policy and in the rescue services

### *Whose performance should be evaluated?*

In fire deaths, the problem is people dying in fires, and solutions to prevent fires and save lives is somewhere within the ambiguous mixture of safety, alcohol, social, healthcare, and housing policies. These several relatively independent policies formulate the performance of fire safety policy. However, the performance of the actions is evaluated only through the functions of a few organizations; the regional state administrative agencies, the ERC, the Emergency Service College and the Finnish Safety and Chemicals Agency. These organizations have signed performance contracts with the steering Ministry of the Interior for results in terms of fire safety policy. These organizations are only one aspect of carrying out fire safety policy. Many organizations outside these organizations affect the performance of the fire safety policy. This causes ambiguity in performance evaluation. One of the interviewees described the ambiguity of performance as:

*Many actors influence carrying out performance. Also individual behavior affects and the people's safety consciousness. No individual actor can put their hand on their heart and say we achieved this alone. (Interviewee, 2008)*

Thus, we do not know the results, in terms of who has performed their duties well: the Rescue Services, the ERC, or the Emergency Service College? Has their performance of the actions had an effect on the number of fire deaths? Evaluations can be made from several points of views. The accountability perspective measures the results or the value for the money expended; the knowledge perspective generates insights about public problems, policies, programs, and processes; and the development point of view aims to strengthen institutions (Chelimsky & Shadish, 1997, 21).

From the accountability perspective, evaluating the performance of a fire safety organization is done by evaluating performance reports and possible external evaluations. The basic idea is that billions of euros of tax money are spent and it has to produce some results and effects in society. However, how to evaluate the effects is another ambiguous question.

*Tax-payers should have a right to know where their tax-money goes. Tax authorities levy a remarkable amount of money and go really deep into tax-payers' pockets. So tax-payers should have a right to know where their tax-money actually goes. (Interviewee, 2010)*

Financial statements and annual reports are the reports where the performance of the actions is assessed and the basic criteria for the performance of central government

finances and operations are defined in the budget legislation with the criterion divided into social effectiveness, cost effectiveness, and operating performance<sup>17</sup>.

According to the financial statements, the performance of the actions of safety authorities is good. According to the financial statements, performance is at a good level; however, this does not tell us about the actual performance of the actions. It is ambiguous: are the targets measuring the right actions, and what is a good level for performance?

As in the previous chapter examining objectives, it was noticed that the number of tasks, duties, actions, and measures is enormous, and the targets have been reached, or even exceeded in most of the result areas. In 2010, the number of fires was 11,994 and the target was to constrain fires to a maximum of 12,000 fires, the number of fire deaths was 80, and the target was 73, the damage caused by construction fires was 156 million euros, and the target was a maximum of 160 million euros. The saved property value in construction fires was 6,638 million euros and the target was 10,050 million euros. Trust in the rescue services was 96 % in 2008, for the latest year that has been reported.

According to these targets, the number of fires and the damage caused by construction fires achieved the set target level. Targets were not reached in the number of fire deaths and in the saved property value in construction fires. The damage by construction fires was reduced and the number of fires was lower than was set as a target. However, more human lives were lost than what was estimated. What does this tell us about the performance of the actions, or the outcomes, or effectiveness of the fire safety policy?

In the central authorities' interviews the ambiguity of performance evaluation was considered evident. Interviewees were asked how they knew if their organizations had been successful or not. Interviewees emphasized certain "hunches" in estimating the success in their agency and how things were done in their organization. These hunches were verified through different sources outside the organization. Sources were signals and messages from official and unofficial sources of information. Official signals and messages were feedback from other state agencies such as controlling authorities, the National Audit Office, and the Ministry of Finance.

*One could say roughly that with a certain hunch it is done. But from where will this hunch then come from and what will it consist of, from sources outside, messages and many kinds of signs from the outside. It consists of these; through these signals it forms.*  
(Interviewee, 2008)

Professionalism was also emphasized as a feature in public management and the certain hunch in decision making is surely a part of this professionalism. An interesting remark was that public managers are not afraid to say that they do not necessarily know how

<sup>17</sup> The bookkeeping unit must draw up the financial statements from each financial year. The financial statements of the bookkeeping unit contain an annual report, a realization estimate considering the budget, a return and expense estimate, a balance sheet describing the economic position, and the appendix information for information (Budget Decree 63§ 1992/1243).

to measure performance. The ability to manage performance and the ability to manage practical matters were considered more important.

*The management ability of performance and of practical matters is central. Personal character, ways to lead performance, the manager has to know what the management ability of performance requires. (Interviewee, 2008)*

Professionalism and certain mind-set were preferred as being more meaningful than gathering information and measuring performance. Interviewees were asked how organizations are managed and run if the performance of the actions is obscure. One of the interviewees' distinct responses was:

*Easily. It makes management easier if you do not get any measures. More valuable is the way of thinking in public management. It is easier to give a statement that is not based on anything but knowledge and experience. (Interviewee, 2010)*

This response captures an aspect in public management: managers do not necessarily want or feel the need for performance information. Managing public policies is so wide ranging that the way of thinking and a certain mind-set is preferred as being more meaningful than gathering specific information and performance measures. On the other hand, they do not necessarily have any better alternatives. Measuring processes makes public management more complicated and also possible errors and mistakes may become more visible. Despite the reluctance or even fear of making and showing mistakes publicly, managers do work hard with their organizations and their goals. The ambiguity between measuring performance and using this specific performance information in management is evident.

Different numerical and statistical figures were considered problematic in measuring and evaluating performance. Expressing figures for certain crimes or accidents do not tell us much about societal effectiveness. These factors are deep in society and will affect society no matter what is decided. Indicators measuring the number of crimes or accidents are not based on the consciousness, or knowledge of the society, or the phenomenon.

*This takes place by examining different statistics and others; it is extremely problematic that the results are hit numerically. There should be, for example, less than a hundred murders or manslaughters; this is not based on social knowledge. The factors are deep in the society, for example, in home violence, and they prevail in the society no matter what is decided. (Interviewee, 2008)*

The basis for public policies is to achieve societal outcomes. However, the outcomes are not really measured in the Finnish state level government, or the processing of these objectives is loose. Defining outcomes was experienced as artificial in the sense that there are always issues that cannot be affected by public policies. Legislative power and budget



resources are means to affect these things; however, it is ambiguous as to what can actually be affected and what cannot.

*It is a little artificial to try to define social effectiveness and outcomes. There will always be so many other factors that cannot be influenced.* (Interviewee, 2008)

It is regarded as good that performance targets are in the budget, but they were experienced as being broken into small pieces that are impossible to measure and to evaluate, and that their significance is difficult to understand from the public policy point of view. Building indicators like this seems apparent. On the other hand, perceiving and conceptualizing the outcomes is considered difficult. The analysis of the causality chains is difficult to define and thus the outcome targets will become more like mission statements than actual outcome targets. Usually, the action level is an easier step to follow, and the analysis between the outcome and output objectives is not processed.

*Analysis of the causality chains and actually conceptualizing the outcomes is not done; these will stay as mission statements and from the level of effectiveness it will be jumped up to concrete objectives such as the fire brigade must be there in five minutes on average. The link between the causality chains is not analyzed.* (Interviewee, 2010)

It is remarkable that systematic targets for improving performance and indicators measuring performance have not been set until 2005. Performance reporting has been developed since 2005, and it is still developing, especially considering the societal effectiveness and outcome measures. The material through which to evaluate the performance of the fire safety policy is nevertheless limited and describes mostly the performance of the few organizations that have signed performance contracts with the Ministry of the Interior, not the fire safety policy as a whole, or the outcomes of the whole policy.

It is also remarkable that some of the performance areas are totally excluded from the examination. For example, the regional rescue departments are funded from the budget of municipalities, and an essential part of the rescue operations is outside the investigation. On the basis of this, material conclusions cannot be made of what the actual performance of the actors and actions is. Yet, the task of this study is to point out the reasons as to why it is ambiguous to evaluate the performance of governmental actions.

In the end, the interesting and fundamental question is who will take the credit or the blame for the actual performance? Who is responsible for bad performance and who should be credited with the good results?

*A decrease in the number of accidents and damage in large societal objectives is a long-term objective and one year tells nothing actually. Long time spans must be followed, and how they go. Many actors influence carrying them out. Also, the individual behavior of*



*people affects this, but the alcohol policy, social policy, and people's safety consciousness affect the decrease of fire deaths. (Interviewee, 2008)*

In spite of the ambiguities, performance evaluations have to be done. In the annual report of the financial statement, the accounting unit has to report on the most important information on evaluating effectiveness, if the evaluation has been made during the present financial year (Budget Decree 65§).

The next section describes the current system of evaluating performance in the fire safety policy. The analysis is carried out on the basis of financial statements and annual reports of the organizations that have signed performance contracts with the Ministry of the Interior. Describing the current system of evaluating performance through financial reports strengthens the view that performance evaluating is ambiguous. However, somehow, performance should be measured and evaluated in public management, and the public managers have to bear this contradiction.

## 7.2 How to evaluate the performance of the actions in fire safety policy

Emergency management comprises planning, response, and recovery responders (Subramaniam, Ali & Shamsudin, 2010, 572). The success of the emergency management operation requires collective and cooperative emergency teamwork between different actors. Emergency response preparedness is a critical element in any emergency management system for emergency mitigation and makes planning an essential phase of emergency management.

A considerable additional factor relates to how the rescue services are organized. Twenty-two regional rescue services produce rescue services, and municipalities are responsible for maintaining these services in their rescue service regions, and are also responsible for financing the services. The Ministry of the Interior and the Department for Rescue Services direct and supervise rescue services. The regional state administrative agencies coordinate preparedness in their regions and ensure cooperation. In addition, the Internal Safety Program plays an important role in fire safety policy.

The systematic examination of performance in fire safety policy and the rescue services begins from the overall objective, which the government of Finland has set in the Internal Safety Program. The objective is that Finland will be the safest country in Europe in 2015. This overall aim embodies the Finnish internal safety policy. However, it is ambiguous to improve safety and security at this level in society. As described in the conceptual framework of safety in chapter 3.3, safety begins from the individual conception of health when considering safety at home, in housing, school, work, and overall in the community, and it spreads into national, ecological, cultural, and economic dimensions. Safety is a mosaic of individual and communal dimensions of welfare (Ranta-Tyrkkö & Ropo, 2003).

The emphasis on the social context in evaluation is important (Rossi, Freeman & Lipsey, 1999, 397). The plural nature of safety and the collective and cooperative characteristics of emergency work have to be considered when evaluating performance in the rescue services. Crucial attention must be paid to emergency preparedness and planning as one of the critical elements in the success of the rescue services.

### 7.3 Performance in the rescue services

The main outcome target of the rescue services is to reduce the number of accidents, especially the number of fires, and fire deaths. In the case of emergency rescue services, they should provide aid rapidly and efficiently, and reduce the damage caused.

In 2005, there were no quantified effectiveness indicators reported in the financial statement. It is mentioned that the rescue services had operated in the Internal Safety Program, especially in projects considering accident prevention work at home and during leisure time, and in the expansion of local and regional safety plans considering especially accident prevention work. The data collection concerning accidents has been improved and the rescue services have launched a regional study on fires. Furthermore, the rescue services have participated in developing the statistical system of accidents, which has been given as a task to the National Institute for Health and Welfare.

The rescue services have prepared a strategy for protecting the population on the basis of the safety and defense policy report. To prepare for unusual conditions and catastrophes, the rescue services have intensified the development of the management system in the rescue services. As part of this development work, a population warning, and alarm system, and follow-up system will be renewed. The rescue services have supported the new regionally functioning organization by arranging regular meetings with rescue institutions, rescue leaders, the management of the county, the ERC, and the Emergency Service College four times a year to agree on a common policy and definitions. The maintenance of the rescue services resource and accident statistics system, Pronto, has been transferred to the Emergency Service College since the beginning of 2006.

Contrary to that, in 2010 there are indicators considering the social effectiveness of the rescue services. The indicators are taken from the rescue services resource and accident statistics system, Pronto, and the numbers vary compared to the numbers gained through the specific data on residential fire deaths collected from fire investigations. This is due to different recording systems for statistics.

**Table 28.** Indicators of the social effectiveness of the rescue services (Source: Financial Statement of the Ministry of the Interior, 2010, Pronto)

Indicator	Target 2010	Score 2010*	Score 2009	Score 2008
Number of fires (excluding wildfires)	<12,000	11,994	12,248	11,483
• Number of construction fires	<4,400		6,233	4,485
Number of fire deaths	<73	81**	108***	107
Damage by construction fires (million €)	<160	156	124	197
Saved property value in construction fires (million €)	10,050	6,638	16,837	2,796
Trust in rescue services (percentage of the population****)	–	–	–	96

\* Estimation

\*\* According to the specific data on residential fire deaths 80 people died in fires in 2010.

\*\*\* According to the specific data on residential fire deaths 107 people died in fires in 2009.

\*\*\*\* Gallup study carried out every 3rd year. Realization in 2005 was 97% of the inhabitants.

The low numbers of construction fires in the target in 2010 (4,400) and in the score in 2008 (4,485) resulted from the compilation of statistics. Since the beginning of 2009, an accident type, “building fire risk,” was brought into use. The old accident type, “construction fire,” was divided into two. Some of the tasks that would have been earlier recorded as construction fires, were recorded as building fire risks at the beginning of 2009. In the score for 2008 and in the target for 2010, the building fire risks were not included.

The number of fires excluding wildfires and terrain fires decreased during the year 2010 compared to the previous year; however, the number in 2008 was lower than in 2010. Fifty-five percent of construction fires were residential fires and almost a half of the fires took place in one-family houses. In a third of the cases, the fire alarm required by law was missing (in 28% of cases from 2007–2010). Changes regarding cigarette legislation came into effect on 1 April 2010. According to the legislation, the cigarettes sold in markets must be self-extinguishing. This decreases the probability of fires caused by carelessly handled cigarettes.

The worst individual fire that claimed three victims in Tampere spread from business premises into an apartment house. This fire was caused deliberately and with the purpose of insurance fraud (Helsingin Sanomat, 22.11.2010).

The material damage from construction fires and building fire risks was estimated altogether at 156 million euros and it was 32 million euros more than for the previous year. The estimated material damage caused by residential fires remained nearly unchanged (50 million euros). The estimated damage to production, business, and storage spaces increased to 56 million euros. The value of saved property from construction fires rose by approximately 137%. The financial statement does not specify where this vast change resulted from.

The confidence toward the rescue services is measured every third year with a Gallup poll -study. The next inquiry will be made during the year 2011. In 2008, 96% of the population considered the rescue services as reliable.

Fires caused by cigarettes were estimated to be reduced by 14% in 2010 compared to the previous year. Eleven percent fewer fires were estimated for construction fires than in 2009, with 7% fewer in residential fires. The information was gathered following police investigations. The number of fires estimated to be caused by a cigarette from April–December 2009 was 774, and the figure was 668 in 2010.

**Table 29.** Number of fires estimated to be caused by a cigarette from April–December 2009 and 2010 (Source: Financial Statement of the Ministry of the Interior, 2010, Pronto/ Esa Kokki).

	<b>2009</b> <b>(95 % confidence interval)</b>	<b>2010</b> <b>(95 % confidence interval)</b>	<b>Difference</b>
Construction	227 (198–259)	203 (176–232)	-11%
Residence	173 (148–201)	161 (137–188)	-7%
Vehicle	8 (3–16)	9 (4–17)	+13%
Terrain	286 (254–321)	265 (234–299)	-7%
Other	253 (223–286)	191 (165–220)	-25%
<b>Total</b>	<b>774 (720–830)</b>	<b>668 (618–721)</b>	<b>-14%</b>

In addition to effectiveness objectives, performance in the rescue services and in the ERC Administration has been reported in seven sections: prevention of accidents, rescue operations and preparing, support services of the rescue operation, emergency response operations, results and profitability of the chargeable operation, and the jointly funded operations (Financial Statement of the Ministry of the Interior, 2010, 50–62). These sections are each evaluated with the criteria of productivity and economy, number of public goods, service ability, and the quality of public goods.

The regional rescue service areas are mostly responsible for the prevention work in terms of accidents, together with non-profit organizations in the field. Due to the present bookkeeping systems, it is not possible to report costs relating to directing accident prevention. The Ministry of the Interior has actively participated in the development of bookkeeping systems, so that it would be possible to get cost information about the accident prevention work in the future. The municipalities are also responsible for funding regional rescue departments. Indicators describing the productivity and economy of operations have not been set, because the systems of financial management do not enable the specification of costs yet.

The figures for performance and public good in terms of the accident prevention relate to the number of fire inspections, the proportion of the population that received advice and guidance, the proportion of changes to automatic fire detectors in relation to the

alarm call-outs, and nurse and care homes protected by automatic fire-extinguishing systems.

The rescue departments carried out a total of 35,000 fire inspections for special targets in 2010. That was 85% of the target figure. The previous year, rescue departments carried out 35,800 fire inspections for special targets, with 36,570 in 2008. In 2005, rescue departments carried out fire inspections for 85% of the target group.

The proportion of the population that received advice and guidance relates promoting safety work. There is considerable variation in the results between different rescue departments. Five of the rescue departments exceeded the target of 20% and the best rescue department exceeded the target, with a percentage of 28.1. The lowest percentage was 6.9%. However, there are differences between the manner of compilation of the statistics.

The proportion of the changes to automatic fire detectors in relation to the alarm call-outs relates to erroneous automatic fire announcements compared to the actual alarm call-outs. In 2010, the number was 20.2%. There is not a comparative percentage in 2005; however, in 2006 the percentage was 21.7, in 2007, 20.3, in 2008, 19.6, and in 2009, 19.1. Almost a fifth of automatic fire alarms were false and took resources from the rescue departments.

Nursing and care homes that have been protected with automatic fire-extinguishing systems amounted to 23% in 2010. In 2009, the percentage was the same, and in 2008 it was 14%, and 2007 it was 13%. Thus, the number of protected nursing and care homes is improving.

**Table 30.** The number of performances monitored for 2007–2010 (Source: Financial Statements of the Ministry of the Interior).

Indicator	Target 2010	Score 2010	Score 2009	Score 2008	Score 2007
Number of fire inspections (%)	100	85	89	92	89
Proportion of the population that received advice and guidance (%)	20	15	16	20	14.5
Proportion of changes to automatic fire detectors relation to alarm call-outs (%)	16.5	20.2	19.1	19.8	20.3
Nursing and care homes protected by automatic fire-extinguishing systems (minim.)	16.5	23	23	14	13

The number of fire deaths per construction fire is defined as an indicator for service ability and the quality of public goods in the financial statement. In 2008, the number was 41.5, in 2009, 58.3, and in 2010, 78.3. The target for 2010 was 60. There was no target for fire deaths in the financial statement in 2005. The target was mentioned as significantly exceeding the requirements because the number of fire deaths reduced by a fifth in 2010

(80) compared to 2009 (107). In addition, the number of construction fires was the same in 2010 and 2009. The number of missing fire alarms reduced relatively compared to the previous year according to the financial statement. However, in 28% of fire deaths from 2007–2010, a fire alarm was missing.

The rescue services continued cooperation with the safety in housing program. The program has clarified fire safety in nursing and care homes and housing units for special groups. Additionally, the effectiveness of the preventive means for fire death reduction has been continued.

Public goods produced in rescue operations and preparedness are alarm call-outs. There were 110,367 alarm assignments reported in the financial statement in 2010. Fires caused 14,991 assignments, checking assignments were 34,180, emergency responses excluding transportation of patients were 27,043, and other assignments were 34,153. The target for the year 2010 was 94,000 alarm assignments. In 2009, alarm call-outs stood at 101,435, so the number of alarm assignments increased by 8,932 (9%) assignments. Checking assignments increased the most. In 2009, there were 29,461 checking assignments and the increase compared to 2010 was 4,719 (16%).

Service ability in public goods relates to the operational response time in minutes according to the first unit at the scene of the accident. Operational response time in risk area one for urgent tasks of rescue departments was 65% in 2010. The target is that the first unit should be at the scene of the accident in six minutes in 90% of cases. Additionally, the score was that in 65% of cases the scene was reached in six minutes. In 2009, the score was 65 and in 2008 it was 62%. In risk area two, the response time in urgent cases is ten minutes. In 87% of cases the scene was reached in ten minutes in 2010. The target was 90%. In 2009, the score was 88 % and in 2008 it was 85%.

The main reasons for exceeding the target time in terms of operational response time was mentioned as overlapping rescue assignments and other tasks of the rescue staff, for example, fire inspection tasks and education tasks. In these cases, the nearest unit may have to respond to a call-out from some other response area. Additionally, if the unit is badly located in terms of the risk area, it can cause delay, missing the target, especially in traffic jams, or other changing conditions such as bad weather conditions.

The number of shelters related to the population was another indicator measuring service ability. The number of shelters per 10,000 habitants was 58.9 in 2010, and 53.3 in 2009, and 46 in 2008.

The rescue services have a threat estimate in coordinating vital functions of society. This threat estimate is based on the Finnish security and defense policy of 2009 and the strategy for security in society 2010. Rescue services participated actively in the planning and preparation of these strategies. Rescue operations that are within the responsibility of the rescue services have drawn situation cards for coordination and action.

Reform regarding operational response was launched in 2010. This reform examines the structure and the capacity of the rescue staff and the work that was to be carried out in 2011.

In the budget of 2010, a target was set considering the rescue services ability to contribute when international catastrophes takes place. The Ministry of the Interior and the crisis management center agreed with procedures in responding to international calls for help. The crisis management center declares possibility for the used resources prepares a proposal for the Ministry of the Interior. The Crisis management center takes care of procedures and supports possible operations after the Ministry of the Interior has decided to start an operation. Finnish experts have maintained preparedness through education and training. The operation ability was improved significantly when a 1.6 million euro project to establish a rescue service unit in cold environments was funded by the European Union. A project continuing the work has been launched.

Preparation of the regional state administrative authorities in terms of common affairs was launched and organized in coordination with the responsible organizations. The need to develop municipal planning for preparedness was clarified. The preparedness system was improved to analyze compatibility and integration in catastrophes and states of emergency in terms of management, positioning, and communication systems between authorities at a local and regional level.

Due to the novelty of regional state administrative agencies, the performance reports were not available relating to their performance during the study. However, the ERC and the Emergency Service College had reported on their performance. This is evaluated in the following subsections.

### 7.3.1 Emergency Response Center

The effectiveness objective for the emergency response operations in the budget of 2010 is that there is a consistent, networked and reliable ERC in 2015 in Finland. This center works as the first link, responding to the need for help professionally and without delay. Essential decisions required to pursue this objective have been made and the required projects have been started. Reform proceeds according to the plans and schedules.



**Table 31.** Indicators of the social effectiveness of the Emergency Response Center (Source: Financial Statement of the Ministry of the Interior, 2010, 19).

Indicator	Score 2008	Score 2009	Target 2010	Score 2010
The ERC responds to the emergency call rapidly • In 10 seconds	87%	91%	90%	91%
Customer satisfaction among the ones who have telephoned an emergency number (on a scale of 1–5)	4.23	4.38	4.4	4.33

The realization exceeded the target in terms of responding to emergency calls in ten seconds. According to this indicator, the performance can be kept excellent and the resourcing to respond to emergency calls can be kept successful. Customer satisfaction among the ones who have phoned the emergency number is also good. The criteria in evaluating customer satisfaction were the speed of respond to the emergency call, the operator's attitude in serving customers, and the clarity of given instructions. All these were at a good level.

The number of emergency calls per operator was 7,900 in 2010 and the target was 8,000. In 2009, the number was 7,800 and in 2008 it was 7,400. The costs incurred by emergency operations per inhabitant were 10.8 euros in 2010 and the target was 11.2 euros. The score in 2009 was 11.0 euros and in 2008 it was 10.8 euros. Costs per call were 14.5 euros in 2010 and the target was 14 euros. The score in 2009 was 14 euros and in 2009 it was 14.9 euros. Costs per inhabitant and per call vary significantly among emergency response centers. The smallest cost per inhabitant was 6.3 euros and the biggest was 13.1 euros. The smallest cost per call was 8.7 euros and the biggest was 15.1 euros.

The size of the center affects economy significantly. A center classified as small on the basis of human resources receives a worse indicator, because other costs than the personnel costs are not dependent on the size of the center. Additionally, the minimum personnel in a three-shift-work pattern and securing sufficient resources for duty in rush hours causes bigger costs in smaller areas with fewer habitants. Tourism and traffic work affects the figure. A variation between seasons and time of the day can be substantial. However, this indicator also considers the number of inhabitants. Expenses common to departments have not been allocated to each center, for example, the center and data administration costs.

There were 4,195,000 emergency announcements in 2010. In 2009, the number was 4,183,000 and in 2008 it was 3,840,000. The number of emergency calls was 3,031,000 in 2010 and 3,034,000 in 2009, and 2,844,000 in 2008. The number of announcements per inhabitant was 0.79 in 2010 and the same in 2009, and 0.73 in 2008. The number also includes several emergency announcements for the same case. This was changed from the previous procedure, and this caused a 9 % increase in the total number. More than every



fourth emergency call is not supposed to be assigned to ERCs. 865,000 calls in 2010 can be classified as not belonging to the ERCs. 702,000 calls were unintended false calls and 163,000 were intentional, mischief calls. The number of unintended false calls has been reduced, but the number of intentional, mischief calls was increasing.

Service ability is measured as the time from the emergency call to the call-out, and what percentage of calls was responded to in the target time. In 2010, 59% of cases were responded to in the time from the emergency call to the actual assignment. The target was 70%. In 2009, the score was 58%, and in 2008 the score was 55. Different tasks have a different time in terms of the response from the emergency call to the assignment. For example, in traffic accidents, construction fires, or vehicle fires the response time is 90 seconds in 70% of cases. The indicator in the performance contract measures the time spent on the emergency call. The time begins from the initial response and ends when the assignment has been given to the first unit. What is remarkable is that the time should not be confused with the length of the call. The operator can continue the call after the assignment has been given.

Strategic guidelines for the emergency response operations were launched. In March 2010, the Ministry of the Interior decided on the location of ERCs. Project HAKMU is planning a new administrative- and management model for the ERC Administration and by the end of 2015, the new model should be in use. In addition, an operating and information technology project was launched at the beginning of 2010.

The statistical data gathered from the regions has provided information on the time taken from the emergency call to the alarm sounding in 2009 and 2010. In most of the cases involving fire deaths, the time from the emergency call to the alarm being raised was more than 90 seconds. Additionally, only in some cases was the time lower than 20 seconds.

**Table 31.** Time from emergency call to the alarm sounding in 2009 and 2010 (Source: statistical data gathered by the rescue service areas and the Emergency Service College).

		Frequency	Percent
Valid	Lowest through 20 sec	5	1.3
	20 sec through 89,99 sec	82	21.6
	90 sec through highest	93	24.5
	Total	180	47.5
Missing	System	199	52.5
Total	379	100.0	

However, it is considered that in all of the cases, the victims perished. More illustrative would be to compare the time taken from the emergency call to alarm being raised in cases where victims were saved. However, this information was not available from the gathered statistical data.

With these indicators, one can say that the performance of the emergency response teams is excellent. Ninety-one percent of emergency calls were responded to in 10 seconds. According to this indicator, the performance can be kept excellent and the resourcing to respond to emergency calls can be kept successful. Customer satisfaction among the ones who have phoned an emergency number is good. However, we do not know the customer satisfaction rate on the whole. The victims who perished in fires are excluded from the sample.

An important factor in performance evaluation is that evaluation is a showcase for the public managers. How successfully the managers have managed their organization is a critical question. Public managers should make their organizations perform well. What is ambiguous is that the results can look good but they might measure the wrong things. The validity of performance (measuring the right things) and the reliability of performance (measuring the right things correctly) must be taken into consideration (Sinervo, 2011; Vakkuri, 2009). In fire deaths, validity measuring, for example, in terms of the success of customer satisfaction among the victims who perished and victims who were saved is not possible. However, the opinion of the relatives could be taken into account and what they thought about the public service.

### 7.3.2 Emergency Service College

The Emergency Service College has reported on their performance in the annual reports published on their web pages and also in the Netra Internet reporting system<sup>18</sup>. However, the annual report for 2001 was not available, so the years 2005 and 2010 are analyzed in this section.

The Crisis Management Center of Finland<sup>19</sup> (CMC Finland) serves as part of the Emergency Service College. However, in this study, CMC Finland is dealt with as a separate unit and is not included in the performance analysis. CMC Finland was established in 2006 and is a rather new and forming unit.

In the annual reports of 2005 and 2010, the mission of the Emergency Service College was to develop the safety of society by developing knowledge in terms of the rescue services. In the vision for 2010, the Emergency Service College is an internationally appreciated center of competence that challenges through development. In addition, the Emergency Service College is a widely networked and attractive study and work community (Emergency Service College Annual Report and Financial Statements, 2005, 4).

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<sup>18</sup> Netra is an internet reporting service provided by the State Treasury of Finland to openly report performance and personnel information and expenditures of the state ([www.netra.fi](http://www.netra.fi)).

<sup>19</sup> The main tasks of CMC Finland are training and recruiting experts for international civilian crisis management and peace building missions. Also conducting research focusing on civilian crisis management is one of the CMC Finland's tasks.

The most important performance indicator of the Emergency Service College is the training days. Training days are divided into vocational education, preparation training and supplementary training. In 2005, the target was 97,445 training days and the score was 99,359 training days: thus, the actual target was exceeded by 1,914 days. In 2010, the target was 93,840 training days and the score was 92,451; thus, the score was 1,389 days lower than the actual target.



**Figure 8.** *Training days in the Emergency Service College in 2005 and 2010.*

Targets and scores for degrees, training days, vocational education, preparation training, and supplementary training are presented in table 29. The number of degrees has been lower than the target in 2005 and 2010. In the annual report of 2010, the drop-out percentage was mentioned as increasing slightly in vocational education. However, most of the students finish their studies as planned, and that is reported in the annual report. In addition, drop-outs have increased mainly in the training of emergency response operators. 0.7% of students suspended their studies in 2005 and 2.85% in vocational education in 2010. The percentage of drop-outs in polytechnic education was 0.66%. Furthermore, notable is that the number of drop-outs in the fire officers' training program also includes the students who have not completed their degree on time.

**Table 33.** Performance indicators in the Emergency Service College in 2005 and 2010 (Source: Emergency Service College Annual Report and Financial statements 2005 and 2010).

Year	Target	Score	Target	Score
	2005	2005	2010	2010
Degrees	244	238	250	227
Training days	97 445	99 359	93 840	92 451
Vocational education	80 085	80 873	82 440	80 380
Preparation training	10 000	9 202	5 000	5 737
Supplementary training	7 360	9 284	6 400	6 334

What do the number of degrees or the training days actually tell us about the performance of the Emergency Service College? Training days is an indicator measuring the number of days of education. The Emergency Service College is an education institute and training days and degrees are an essential part of the results of the college.

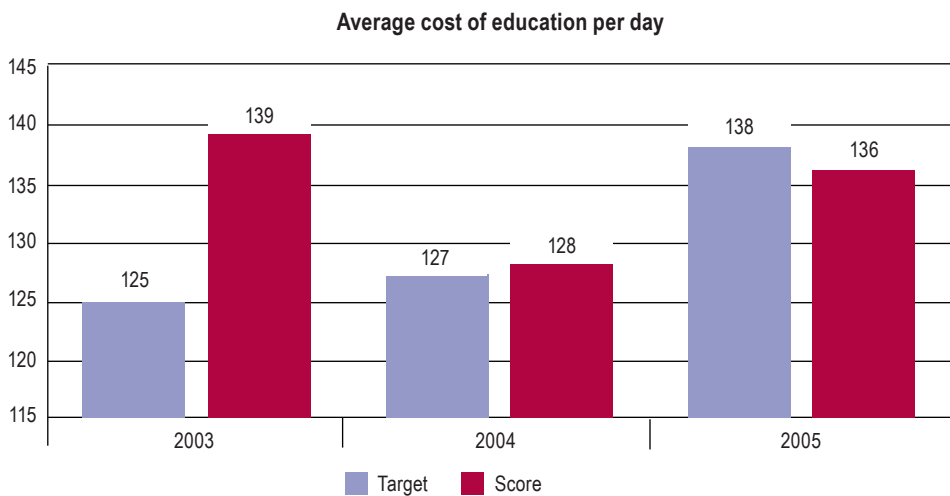
As a comparison, the University of Tampere has agreed a target level of an average of 1,120 higher academic degrees in 2010–2012 (Performance agreement between the Ministry of Education and the University of Tampere, 2009, 2). That would be 373 degrees approximately per year and there were 3,377 students studying for a higher academic degree in 2009. There are 400–500 students in the Emergency Service College, so more or less half of the students graduate per year. Notable again is that, for example, the Emergency response operator’s degree and rescuer’s degree lasts for only three semesters. Thus, the character of the education is different from the universities and thus is not comparable. However, the score for degrees in the Emergency Service College can be considered relatively good, even though the target has been set higher than the actual score is. Additionally, the low percentage of drop-outs can be considered as a signal of highly motivated students and success in teaching.

The Emergency Service College has reported in detail about the realization of economy objectives, productivity, and the cost correlation of the chargeable operations, the quality management, and the control of human resources in 2005. However, the effectiveness of the operations has not been reported. How does the college fulfill its mission to develop safety in society by developing knowledge in the rescue services? In 2010, the effectiveness of the education has been reported. The Emergency Service College “increases safety in society with education and research. Through education and development, the college effects into students’ knowledge in their organizations in the present and in the future.” (Emergency Service College, Annual Report 2010, 5.)

The quality of the education and the economic effectiveness of the education have been analyzed systematically. The quality of education was evaluated through the student feedback. The target for the student overall feedback in 2005 was four (4) on a scale of 1–5, where 5 is the best. The score in 2005 was 4.07. Professional skills of the teachers were ranked the highest in vocational education, in vocational supplementary education, and

in preparation training. Teaching material was ranked the lowest: however, it was 3.7 in vocational education, 3.8 in vocational supplementary education, and 4.0 in preparation training. In 2010, student feedback was 3.1 and the target was 3.00. The scale had been changed into 1–4, where four is the highest.

In 2005, the average cost for the education per day in all teaching was 136 euros and the target according to the performance agreement was 138, so the score was better than the actual target. However, the difference is rather small and the actual performance cannot be determined from this difference. These are the only indicators measuring the economy of the training.



**Figure 9.** *Average cost of education per day* (Source: Emergency Service College annual report and financial statements 2005).

In 2010, the target for the cost of education per day in vocational education was 165 euros and the score was 151 euros; hence, the score was better than the target. In polytechnic education, the target was 102 euros and the score was 114 euros. The target was exceeded by 12 euros. In vocational additional education, the target was 175 euros and the score was 201 euros; thus the target was also exceeded by 26 euros.

**Table 34.** Cost of education per day (Source: Emergency Service College Annual Report and Financial Statements, 2010).

Cost of education per day Year	Score		Target	Score
	2008	2009	2010	2010
In vocational education	150	153	165	151
In polytechnic education	105	100	102	114
In vocational additional education	179	195	175	201

The costs per student in the vocational education had been set as 29,700 euros per year as the target and the actual costs were 27,252 euros in 2010. The Ministry of the Interior account for the expenditure costs in polytechnic education was set as a target of 4,000 euros and the score was 3,890 euros. The total costs of the education was 13,601,216 euros in 2010 and the target was 14,000,000. The person-year value used for education was 93.80 in 2010 and the target was 96.00.

The lower costs in the vocational education were due to lower investment costs in the education infrastructure. The building of the training area for the field of dangerous materials was delayed and this was estimated to lower the costs of vocational education and particularly the costs of rescuer education. Unit costs per student were estimated to stay at a moderate level and the cost of education per day had reduced due to volume. In 2010, there were 8,275 training days more in vocational education than in the previous year. This was estimated to indicate that the cost of training days could have been even lower. However, in 2010, due to the delay of the construction project, it was decided to invest more into education materials such as overalls, and this raised the unit costs in vocational education.

The costs in polytechnic education vary more than the costs of vocational education according to the number of students and because of the fixed costs that are smaller than in vocational education. In polytechnic education there is more classroom teaching than field exercises, as for example, in the rescuer education. The total costs were increased by the higher number of participants in the officers' education in 2010 than in the previous year. Costs of education per day in polytechnic education were higher than the target because the capital costs were higher than in the previous year.

The account of the Ministry of the Interior for the expenditure costs in polytechnic education was lower than the target. The indicator is calculated by reducing the expenditure costs of the officers' education per year from the funding Savonia polytechnic directs to the Emergency Service College for the education, and then calculating the student-specific expenditure costs from the remaining share. The annual variation of this indicator depends on the number of students and strongly affects the total cost of the polytechnic education. Instead, the share for the Savonia polytechnic does not vary according to the number of students per year, but the funding is determined mainly according to the long-term costs, and the number of students, and remains fairly even in

spite of the variation in the number of students. In 2010, the share of the funding was at an exceptionally good level in relation to the expenditure costs of the officers' education paid from the state budget.

The costs of the additional vocational education include the costs of supplementary training and preparation training, and the sum is divided between the numbers of training days in these two training models. The economic target was not reached in these two models. Reorganization of the coordinative regional administration was estimated to have partly affected the demand for the preparation training.

The total cost of the education was lower than the target, but increased compared to the previous year. Capital costs are increasing because of the long-term investments affecting the amount of write-offs. Person-years used for education have decreased, as expected in the productivity program.

The productivity of the Emergency Service College was measured by training days per person-years, training days per teacher, and by the ratio of teachers to students. Productivity targets were achieved according to the performance agreement.

**Table 35.** Productivity indicators and score\* (Source: Emergency Service College Annual Report and Financial Statements 2010).

	Target 2005	Score 2005	Target 2010	Score 2010
Personnel costs/training days	50,00	48,51	–	–
Training days/person-years	955	1,001	960	985
Training days/teacher	1,433	1,460	1,200	1,266
Student: teacher ratio	7,5	7,7	7,1	7,04

\* The personnel costs per training days have been calculated in 2005:  $4,820,213/99.359 = 48.51$ , the training days per person-years have been calculated in 2005:  $99.359/99.28=1,001$  and in 2010:  $92451/93.8=985$ , the training days per teacher have been calculated in 2005:  $99.359/68.06=1,460$  and in 2010:  $92,451/73=1,266$  and students per teacher have been calculated in 2005:  $99.359/190/68.06 = 7.7$  and in 2010:  $92,451/180/73=7.04$ . Teaching hours were in calculated in 2005: 7,687,5 and in 2010: 11,365.

Calculation of the costs of chargeable operations have been drawn up by the Ministry of the Interior and the basis for payment as per 1\$–2\$ and 5\$. The Emergency Service College has commercially priced service production; according to the 2\$ service production funded by the budget, 60% of the price per education day is subsidized by the state, and according to 5\$, service production is priced on commercial grounds. Both service production groups have their own cost-equivalence calculations. In addition, chargeable service production includes products with fixed prices subject to the decision of the Ministry of the Interior (1\$).

**Table 36.** Target and score of cost correlation of chargeable and jointly funded operations (Source: Emergency Service College Annual Report and Financial Statements 2010).

	Score 2009	Target 2010	Score 2010
Commercially priced service production	74%	100%	89%
Commercial production subsidized by the state budget	21%	40%	32%
Service production subject to public law	26%	40%	31%
Jointly funded service production	101%		76%

The cost correlation of the priced subsidy service production was 90% in 2005. The cost correlation of the commercially priced service production was 128%. Additionally, the cost correlation of the service production subject to public law was 36%. (Emergency Service College Annual Report and Financial Statements, 2005, 12–13).

The cost correlation of commercially priced service production was 89% in 2010. Compared to the year 2009, it is better. However, compared to the year 2005, it is not as good as it was in 2005. In 2005, internal pricing had been developed and cost accounting had been focused, and as a result of the development work, the pricing had become profitable. At the same time, commercially priced training days had increased by 70%. Sharpening the costs in terms of teachers' working hours was mentioned as one of the reasons for an improvement in the results in 2010. In addition, the cost accounting of teaching had been focused on different premises than previously. Write-offs to chargeable operations had been raised in 2010 due to the investments in education and this weakened the cost correlation. The incomes had increased significantly in comparison with the years 2008 and 2009, and it had positively affected the cost correlation of the commercially priced service production.

The income from the supplementary education as a commercial production subsidized by the state budget was smaller in 2010 than in earlier years and its share of all chargeable operations was quite small. The cost correlation improved. However, a 40% target is still rather far off the mark. The cost level of the courses and training days would have to be raised by about 950 euros a course and 40 euros a day. Pricing should be focused by defining costs and prices, but the prices should be within the limits of the solvency of the rescue authorities.

The cost correlation of the service production subject to public law was 36% in 2005 and 31% in 2010. The target in 2005 was 36% and in 2010, 40%. The cost correlation of jointly funded service production was 76% in 2010 and with investments it would be 61%. There was not a target for the jointly funded service production in 2010. It was estimated to be extremely difficult to reach a target of 100% if the real joint costs are directed to projects. In jointly funded service production, in national-funded and EU-funded production, there is always a proportion of self-financing, and it is difficult to agree to a total cost model that would bring costs on board that cannot be focused in bookkeeping.



The Emergency Service College's responsibility to coordinate research and development in the rescue services increased in 2005. The coordination model for consolidation was finalized and research strategy work with the Ministry of the Interior was conducted in 2005. According to the research strategy of the Ministry of the Interior, the Emergency Service College is responsible for coordinating research activities in the rescue services in Finland. The Emergency Service College is responsible for guiding research and directing the resources of the rescue services efficiently and effectively. The cooperation between the Fire Protection Fund is tight.

The Emergency Service College arranged a research meeting with a large network of rescue actors. In 2010, the Emergency Service College sealed cooperation with the educational institutions, the Police College of Finland, and the Finnish Border Guard School. The Emergency Service College arranged the first safety research seminar in 2010.

The Emergency Service College is responsible for maintaining, developing, and statistically analyzing the rescue services resource and accident statistics program Pronto. In 2010, the Emergency Service College produced two reviews about the state of the rescue operation, pocket statistics of the rescue services, and a report considering fire deaths.

The Emergency Service College has actively been participating in projects developing operative information systems called PEKE, KEJO, and MapInfo. The testing environment of VIRVE/TETRAPAK was utilized in two reported tests in 2010. The Emergency Service College carried out data collection on the requirements for the future of the cordless-data transfer project. The council contemplating the future of the rescue services was active and produced a research report examining the need and usefulness of contemplating the future. The council carried out workshops and a seminar, and the trend and scenario analyses were utilized in the strategy work and planning of the rescue services.

The Emergency Service College also continued its duties as the representative of the fire research council. The council coordinates, improves, and promotes fire research in Finland in cooperation with the industry and commerce, insurance companies, universities, research organizations, authorities in the state and municipalities and non-profit organizations. In 2010, the council made a preliminary study for a possible professorship in fire safety.

Person-years in 2005 were 99.28 and the target was 102 person-years. In 2010, person-years were 138 and the target was 94.2 for education. In 2010, 71% were men and 29% were women. The average age was 43.9 in 2005 and 44.8 years in 2010. A project preparing for retirement in the next few years has begun.

## 7.4 Conclusions

In evaluating the performance of the fire safety policy, one can easily notice that performance of the actions is a mosaic of several actors and several streams of action. The performance of the fire safety policy is a sum of several factors. As in the garbage can

model by March and Olsen (1976), where the decision is an outcome or an interpretation of several relatively independent streams of problems, solutions, participants, and choice opportunities, performance of the fire safety policy is an outcome of an abundant group of actors from fire brigades, rescue services, municipalities, social services, schools in welfare for intoxicants, and numerous crews of other, different safety authorities, and other actors outside the public sector.

The performance of the fire safety policy was ambiguous in terms of evaluation, since the data covered only documentary data from regional state administrative agencies, the ERC and the Emergency Service College. Other data and data covering other fire safety organizations are outside the analysis. The studied data also covered only governmental authorities and, thus, fire departments are outside the analysis. This makes performance evaluation ambiguous. Whose performance do the actual results relate to if the performance of the actions is analyzed in only a few organizations?

What is also ambiguous is the level of targets. What can be said about the actual performance of the fire safety policy and the rescue services when the overall objective level to reduce fire deaths to by 2015 is 50? The optimal level is that nobody would die in fires and that level would be zero. An objective level of 50 reduces the number of fire deaths, but it still tells us that 50 people will die in fires and it is not a good result. The objective level would be zero to be the best possible objective level.

Then what can be done to prevent accidents and operate efficiently in the case of an emergency being at hand for the rescue services; however, in cooperation with different authorities. The question of whose performance should be evaluated is an essential subject of examination. Financial statements and annual reports of the ERC or the Emergency Service College tell a detailed story of targets reached. When considering the achieved targets, both agencies are performing well. However, people are still dying in fires. This is the result of a series of events that are linked to each other and can neither be predicted nor excluded. However, examining what the consequences were of intended actions (positive and negative) and if there were any non-intended side effects (positive and negative) that were caused as a result of the actions, is an essential aspect of performance evaluation.

The logic of performance is familiar, for example, from school exams. Students may be successful in tests but they may fail in actual learning. Tests do not tell us much about the actual learning. Targets are of limited use and people will try to manipulate them to gain good results. In management, this means “gaming” in that managers may try to make results look good by any means by “hitting the target but missing the point.” Their work is evaluated in the performance management cycle by reaching the targets and reaching the targets should look good. Actors will change their conduct when they know that the data they produce will be used to control them (Bevan & Hood, 2006, 521).

Outcome measures help policy makers control public sector resources. Smith (1996) defines internal, managerial control, political control, contractual control and the science of control. In managerial control, the central management wishes to control the periphery,

and outcome measures can be used as an instrument to control. In political control, the outcome measures are used to inform external persons about the performance of the organization. In contractual control, the principal is a central purchasing organization, and the agent is a separate provider organization, and under these arrangements, control is by means of a formal contract such as a performance contract. The science of control derives from the Greek word for a steersman, and it is illustrated in a cybernetic model of measurement, analysis, action, and system (Smith, 1996, 7–8).

The rescue services, the Emergency Service College, and ERC, for example, have set targets in a professional and skillful manner. However, there are many ways to reach these targets and there are many ways to improve performance outside these targets.

What can be done to intensify cooperation and who are the most important actors in terms of preventing accidents? In alcohol-related fires caused by a cigarette, an important feature is the alcohol consumption and behavior; the victim's ability to react is one of the most important features in fires. Alcohol education could play an important role in individual behavior. However, it is beyond the rescue services' sphere of influence. It is not impossible to affect people's awareness of the accidents and the risky situations leading to casualties. However, this requires much cooperation between several authorities and other parties.

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## 8 Conclusions

This dissertation explored ambiguity in the performance management cycle and in the fire safety policy. This chapter presents the major findings of the study and discusses them in the light of theoretical findings. Ambiguity was analyzed in a performance management cycle of three phases: ambiguity in identification of fire deaths as a fire safety policy, ambiguity in target setting in fire safety policy and ambiguity in evaluating performance toward the targets of fire safety policy. The fourth research question was the coherence of the performance management. Is the performance management cycle a coherent management cycle, and are mutually reinforcing policy actions supporting each other?

The main aim is to understand ambiguities in the model of performance management and what causes ambiguity in the context of political-administrative decision making environments. In addition, the question of coherence in the performance management cycle and how different intercrossing policies go together when considering fire safety policy were questions that needed to be clarified. Fire safety policy and fire deaths offered an empirical case through which to analyze these questions, but the same questions and phenomenon could be studied in some other policy field as well. This is a possibility for further studies.

Thus, we start in section 8.1 by examining at what ambiguities there are in the performance management cycle. The specific research questions are *what are the ambiguities in identifying fire safety policy, in target setting and in evaluating performance of the actions?* The specific research question considering *coherence studied the coherence of the performance management cycle and mutually supporting policy actions as policy coherence*. The theoretical implications are used to elaborate the empirical results. Possibilities for further research are presented in the end in section 8.5.

### 8.1 Conclusions on fire deaths as an ambiguous policy problem

The purpose and links between different policies are important in the identification of the policy problem. Nevertheless, policies are often planned in separate processes and attention to links between policies is not taken into account. Policy problems have become so complex and messy that they are ambiguous to identify.

Fire deaths are a policy problem connected to different policy problems such as the social and healthcare policy and alcohol policy. Fire deaths are a social problem in the sense that they relate to people's personal lives and interaction with society. Social problems and the construction of social problems have been studied in sociology (e.g. Spector & Kitsuse, 2001), although the definition of social problems is rarely comprehensively explained (Best, 2002). However, the focus in fire deaths as a social problem in this study is more in the policy context, and in the public policies, and what the government decides, or decides not to do to prevent fires, and fire deaths. Nevertheless, a life and death problem concerns the 379 people who died in fires from 2007–2010, and each of these cases is definitive, and final.

The Finnish government and the public administration have identified fire deaths as a problem in Finnish society, since it is recognized, and it is the overall performance target for the rescue services, and one of the measures in the inter-sectoral Internal Security Program. The government has recognized the problem, and stated what will be done about it, and, thus, it has become a public policy.

The basic characteristics of fire deaths can be analyzed such as in most fire deaths occurred in the riskiest area four, in specific P3-building types, at night, at weekends, and during the winter months. Most fires occurred in Kainuu, Pohjois-Savo, Pohjois-Karjala, and Kymenlaakso, and the most common cause of fire was cigarettes, and the second most common reason was arson, and other causes. The ability to react had been reduced in those who died by fire and slightly less than one-third died in conditions in which there was no fire alarm at all, and where a third person or a bystander made the emergency call. Mostly victims were men. Middle-aged men were at the greatest risk of dying in a fire.

Fire deaths are also caused by human behavior and partly by system error. Human behavior and human error are caused by intended and unintended actions. Choices can be made deliberately or by trial and error (Elster, 1979). In fire deaths, trial and error can be disastrous, and it can lead to effects on a wider group of people such as first-party victims, second-party victims, third-party victims, and fourth-party victims.

Fire deaths are an ambiguous policy problem. Fire deaths are a compounding of individual choice and behavior, and public choice. Individual choice and behavior is a mechanism that triggers with the interaction of the context, and the society, and these together construct the actual performance change. However, individual choice and behavior are an ambiguous area of study. Individuals and citizens have their own will and their own responsibility for their lives. Individuals make different choices depending on their cognitive abilities, previous experiences, beliefs, attitudes, and the decision making context, – their living environment. Making and sustaining different choices require a change in an individual's reasoning and the resources they have available.

Finland as a Scandinavian welfare society provides public services relating to broad considering wide social and healthcare services, education, and rescue services. The Finnish public sector is based on public finance and tax money, and the financing is

decreasing since the baby boomers are retiring and there are fewer tax-payers, but more service users in the future. The individual's responsibility and choice has an increasing significance on the future in terms of their health and lifestyle such as alcohol abuse or smoking. Taking care of one's health and a healthy lifestyle are individual choices and take on a more significant meaning in the future.

Governmental actions represent collective choice exercised through governmental actions. Collective choice offers the possibility of correcting the perceived deficiencies of individual choice (Weimer & Vining, 1989), for example, by regulating alcohol abuse, or selling self-extinguishing cigarettes on the markets or by stipulating the use of fire alarms, not to mention preventive actions such as fire inspections, or increasing safety consciousness. However, both individual choice and collective choice matters, and the responsibility being held between citizens and the government is becoming more and more essential.

In the decision making theory, the complete cycle of choice (March & Olsen, 1976) describes individual behavior aggregating into collective choices, and the outside world responds to these choices in a way that affects, again, individual assessments of the state of the world, and of the efficacy of one's actions. Collective choices by the government aggregate into the outside world and into the environment that affects, again, the individual's choice and behavior. This kind of cycle can turn out to be positive or negative. Positive effects would be that individuals would understand the health risks better and keep away from the heavy abuse of alcohol and smoking, and would follow the preventive actions such as making sure that there is an operating fire alarm in the house, and avoiding fires, and risky situations. In addition, the governments would succeed in guiding citizens in their behavior. These effects would respond to the state of the society, and, again to the individual's behavior and choices. However, the effects can also be the opposite as well. The complete cycle of choice explains only how decisions actually happen, but the actual performance improvement is an interaction between the context (society) and the mechanism (policy actions and individual choice). Some factors in the context that is, society as legislation, safety regulations, etc. – may enable fire safety in society to “be triggered.” Other aspects of the context, for example, positive attitudes toward heavy drinking, may prevent the particular mechanisms to enable fire safety from being triggered.

## 8.2 Conclusions on what the ambiguities are in target setting

Fire safety policy is about preventing accidents and acting in case of emergencies. Therefore, attention should be paid to preventive measures and people's safety consciousness, and especially to measures that are in the sphere of influence of the public sector, and the rescue services. There are no preventive targets included in the performance contracts between the Ministry of the Interior and the agencies studied. A fifth of the fire deaths

were caused by people's lack of care. As mentioned earlier, social behavior is difficult to predict and submit into formulas or diagrams, not to mention into a form of a target, but following the level of awareness toward safety is an essential feature in fire safety policy.

Targets and measures are set for each ministry and agency, not to the crosscutting policy operators that would aim at collective goals, although cooperation between several policies, their planners, and various implementing agencies has been identified. Fire safety policy is not a social policy problem as such, but fire deaths are a safety policy including social and healthcare policy, and alcohol policy aspects. However, it is not evident whose target this collective and crosscutting policy would be. Fire safety authorities are responsible for saving lives in the case of fires, but social and healthcare authorities are as much responsible for the increasing problem of taking care of elderly people and their safety. Linkages and connections between different policies are not explicit but ambiguous. It is ambiguous what affects these misfortunes and who is mostly responsible from each policy field or subsystem to respond to these needs. Who is "mostly" responsible for each goal in each time and mentioned as the main authority responsible for reducing or improving the policy problem should be agreed.

Participatory policy analysis methods should be expanded in setting crosscutting policy targets (deLeon & Varda, 2009, 59). Proposals that expand the range of actors and stakeholders involved in the making and execution of public policy, for example, fire safety policy should, be undertaken in a discursive or deliberative mode.

Additionally, the changing format of safety makes target setting ambiguous. Alcohol consumption and fire deaths may be replaced by other different factors in the future that may cause insecurity in society and the optimum level of safety would not be possible as a target. Setting the target level is ambiguous. In the matter of life and death situations the zero level would be optimal, in that nobody would die in fires. The target level was originally set to 30, but later discarded, and changed to 50. The target number fluctuates over the years. However, it is not known what is the normal amount of variance, since there are no longer data series, and the targets have been set only for the last few years. Effects of other policy initiatives such as alcohol policy, requirements of fire alarms and self-extinguishing cigarettes and construction requirements may have a possible effect into variation. However, this should be studied further with longer data series. However, accidents always occur and the optimal level of zero is difficult to attain. A little less than fifty thousand Finns die every year for various reasons and fires are one of these reasons.

Overall, the number of victims is not a good indicator to set targets by or to measure performance against. The Indian Ocean Tsunami claimed an estimated 150,000 to 300,000 victims, the largest number of lost lives after the Second World War. The total loss of Finns was 178, more than the victims of fire deaths per year. In the 9-11 attacks, almost 3,000 people were killed and thousands of civilians were killed in the Afghanistan war. The Finnish Myyrmanni shopping mall explosion claimed seven lives and the Jokela school shooting accident, eight. The Columbine school shooting in Colorado claimed 15



victims, and the atrocities in Oslo and on Utøya Island in Norway killed 77 people. The number of victims tells of nothing but misery and the state of the nation as being in crisis. It is not a good performance indicator. There is a philosophical problem involved in a target of zero, 30, 50 or any other number of deaths. What number of fire deaths is acceptable? Zero preventable deaths would be better.

Ill-defined and inconsistent objectives feature target setting and make target setting ambiguous. Public sector organizations such as ERCs and the fire brigades are responsible for producing rescue services, and the Emergency Service College is responsible for educating firefighters, but their overall effect in reducing fire deaths is constrained. It is also remarkable that public managers and decision-makers can only try to imagine what will happen in the future as a result of their actions (March, 1978). However, the intended actions and results and what will actually happen in reality will not necessarily meet.

The goal dimension, and things that are viewed as important to aim at, and the aspiration level for these particular goals are important to identify when setting targets (Cyert & March, 1963). Past goals, past performance of one's own, and other "comparable" organizations are important factors. The Finnish government viewed it as important to reduce the number of fire deaths (dimension). The number of accidental deaths due to fire has varied from 50 to 139 during the period 1952–2010. In 2006, 126 people died in fires (past goal) and in 2010, 80 people died in fires. The number of fire deaths has decreased by a third (past performance). The forecast for 2020 is 90, unless some change occurs, and now it seems that fire deaths are decreasing. The government chose to reduce fire deaths to 50 by the end of 2015. That would be the safest level in Europe (in terms of other "comparable" organizations). However, the first Internal Security Program aimed at reducing the number of fire deaths to 30 by the end of 2012. That would have been the safest level in Europe too, but the target level was revised in the second program.

All in all, targets are of limited use, and actors will change their conduct when they know that the data they produce will be used to control them (Bevan & Hood, 2006). Gaming in performance management would mean that public managers would make the results look good with no meaning attached to them in reality. However, the motivation to do this can be considered rather low in Finnish public administration since there are no awards that would persuade managers to do this.

However, the reputation and negative publicity can be considered as an effective factor. For example, the ERC operators who were ticketed at the District Court in 2010, and who appealed in court to the target level that one emergency call should last only for a maximum of 90 seconds, attracted negative publicity. However, the target was that in 90% of cases, the call-out response should take place in a maximum of 90 seconds, and then the assignment should be forwarded to the police, to the rescue department, or to patient transportation. In addition, the target is directed to the whole agency, not to individual operators. However, Helsingin sanomat reported on 4 October, 2010 that they were handed an evaluation form that emphasized speed as a performance measure of ERC operators.



In 2010, this target was formulated as “in urgent cases time from emergency call to the assignment is responded in the required time in 70% of cases.” Thus, the content and the aspiration level of this target were changed, although the dimension remains the same. However, this single case tarnished the reputation of the ERC for a while.

The behavioral effects of performance measures are important. However, how important are the validity, reliability, and relevance of the measures, and will the measurement lead to the desired actions? It is generally easy to measure the duration of the emergency calls and quantify them, but it tells us little about the quality or the outcomes of the service (did the caller get help, were the instructions clear etc.). To identify effective modes of delivering public services in terms of allocative efficiency and to identify the competence with which those services are delivered in terms of managerial efficiency are two fundamental reasons why public efforts should be made to measure outcomes (Carr-Hill & al., 1996, 195–196).

The level of variation and alteration in fire deaths can be explored, since it is a continuous policy problem, not a sporadic series of events. Significant changes and deviations in a long-term trend are important. However, a single occasion can turn out to be disastrous such as the fire of the Virtain rest-home that claimed 27 elderly victims and raised the figure of fire deaths in 1979 to 139.

An indicator that would measure the effects of the rescue services and measure an effect on the decrease of fire deaths, considering the sphere of influence of the rescue services, would need to say more about the performance of the actions. How many victims the rescue services were able to save, how much the rescue services affected the event, how much other operations and measures affected it outside of the fire safety authorities, and did the rescue authorities even have the chance to provide help would be questions to study further in terms of the performance of the actions.

Pioneers are always needed in constructing and committing to new reforms. The Ministry of the Interior has been a pioneer in target setting and it is a good fit for the solution salience character of the ministry and its administrative head. This development can be considered as one of the “best practices” in the Finnish public administration. The collaboration models and inter-sectoral models such as the Internal Security Programme model should be developed and expanded into wider areas of public administration.

Public planners and administrators are in the key role of creating cross-sectoral collaboration. The collaboration between policy planners has been wide-reaching in the Internal Safety Program. Collaboration between 12 ministries, 22 government offices and agencies, 23 non-governmental organizations, the Association of Finnish Local and Regional Authorities, and research institutions are mentioned in the government resolution of the Internal Safety Program (2008). Collaboration models and networks like this should be supported and developed, acknowledging that the Finnish Government Program is based on policies and inter-sectoral collaboration.

However, the motivation and willingness to participate in deep collaboration may vary. Public planners and managers may not necessarily even want to be around the table planning for solutions in other policy field. Policies are intertwined and interconnected and their effects can be opposing or even conflicting. Taxation policy plays a key role in many public policies and especially in the alcohol policy that is linked into the fire safety policy. A reduction in alcohol prices in 2004 led to an increase in alcohol-related mortality (Herttua, Mäkelä & Martikainen, 2009). Travelers' imports to Finland from, for example, Estonia were liberalized in 2004 and Finland reduced the excise duty on alcohol and alcohol beverages by an average of 33%. The harmful effects of increased consumption seemed to be the most serious in respect of heavy users of alcohol (Ministry of Finance, 2005). These policies (the taxation policy and alcohol policy) had conflicting interests and they were not in coherence. Policy coherence is not about choosing between conflicting aims, but more about enabling processes through which both aims and means can be redefined and eventually achieve better outcomes (Jones, 2002, 391).

In addition, the nebulous and messy public policies may become too frustrating and too boring for the public planners and managers, and instead of working for the public interest, they may become advocates working undercover for a specific client as "administrative guerrillas" who are dissatisfied with the actions of public organizations, and they can even document fraud and abuse, but typically they work behind the scenes (O'Leary, 2006, 5).

The Finnish government aims at transparency and openness in public policies. Transparency of the Finnish public administration is globally recognized and Finland is one of the least corrupted countries in the world<sup>20</sup>. However, transparency does not remove the fact that the motivation and the willingness to participate in collaboration between ministries and agencies play a key role in planning public policies.

### 8.3 Conclusions on what the ambiguities are in evaluating performance of the actions

Performance is a construction of multilevel actors and actions in public and private sectors and in the non-profit sector. Performance management and target setting offer an opportunity to examine only the performance of these organizations and their operations in a limited fashion. Financial statements and annual reports of the ERC and the Emergency Service College tell a detailed story of targets being achieved and it seems that both agencies are performing well. Yet people are still dying in fires and this reduces the safety in society as a total outcome.

<sup>20</sup> According to Transparency International (TI) the perception index in Finland was 9.2 in 2010 on a scale from 0-10 where 0 is highly corrupted and 10 is very clean. Source: [http://www.transparency.org/policy\\_research/surveys\\_indices/cpi/2010/results](http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results).

What is ambiguous is that rescue measures alone do not reduce the number of fire deaths or increase safety. However, the actions with respect to preventive means and implementation of various measures (legislative, regulative, educative, and operative) in cooperation between several policies, their planners and implementing agencies will improve performance.

There is a particular problem of showing the effectiveness of policy actions. The effectiveness of the policy actions can be produced by independent and separate actions that were not even pursued or were pursued by pure chance (Ahonen, Tala & Hämäläinen, 2009, 13). This question has been posed already since the 1960s: has there been an independent and separate effect in terms of the subject of actions or is it pursued by socio-economic conditions, or changes in the international and national economic situations, or by pure chance? (Weiss, 1972).

## 8.4 Conclusion on coherence and public management in the 21<sup>st</sup> century

Bureaucratization is caused in part by the proliferation of rationalized myths. (Meyer & Rowan, 1977, 347)

This quotation from John Meyer and Brian Rowan in the *American Journal of Sociology* at the end of the '70s captures some basic generalizations and myths that public administration still faces in the 21<sup>st</sup> century. One of the basic generalizations is that governmental organizations are blamed for being inefficient. However, big business companies face same kind of inefficiency problems. However, their profitability is more explicated to approve. Business companies have an absolute zero in terms of their profitability, and one can say whether the business is profitable or not. In tax-funded public organizations, there is no absolute zero, and the added value is only theoretical (Meklin, 2009, 45).

Rationalized myths refer to rationalizations in organizations that are not necessarily true but they have become true and common over time. For example, countries use GDP (general domestic product) to measure and compare public economies, but this measure was not used at all a few decades ago. Over time it has become more general and more important in world economics.

What features are incorporated in the real-world, 21<sup>st</sup>-century public management and decision making? What makes a difference in the age of performance? Key contextual factors that affect the real-world decisions can be divided into ill-defined problems, an uncertain, dynamic environment, shifting, ill-defined, or competing goals, action and feedback loops, time stress, high stakes, multiple players, and organizational goals and norms (Zsambok & Klein, 1997, 5).

Organizations are characterized by ill-defined and inconsistent objectives. As we found out in the literature review, the causal world in which organizations live is obscure, technologies are unclear, and environments are difficult to interpret (March & Olsen, 1976). The past is important, but the history can be twisted. Individuals also vary in the attention they provide to decisions, and the pattern of participation is uncertain and changing.

The real world is full of uncertainties no matter how much we try to predict and control it. Ambiguity makes social systems difficult to understand and complexity makes them difficult to control. Osman (2010, 32) argued that causality between social systems is actual illusory and there is only a succession in the events we observe in the world.

Policy decisions are events we observe in the world and reach conclusions about. Policy decisions are complex and boundaries on individual rationality can lead to policy choices that are not fully informed. In addition, failures are indispensable in public decision making. Imperfectly informed decision-makers are, however, capable of learning from their errors, developing new understanding, and adopting new strategies in pursuit of their goals (Busenberg, 2001, 175).

*The modern public manager should adopt resilience.* Resilience implies the ability to recover to normalcy after a deviant event. Resiliency measures how quickly organizations or individuals recover from failure. Fire safety authorities have to be resilient because they face failures several times a year, in fire deaths 80 times in 2010, 107 times in 2009, 107 times in 2008, and 85 times in 2007, and so on. These failures, lost lives, are not the fault of the authorities or society; however, these failures happen and fire safety organizations have to recover and be capable of responding to accidents and calls for aid again. There is a lot to learn from the public management of fire safety authorities.

Is there a coherent decision making and management model in 21<sup>st</sup>-century public management? The answer to the question in short is no, there is no coherent decision making model in the political-administrative decision making environment. Reasons for this straight answer are numerous. One of the reasons is the lack of one single management model or style in the public sector. One holistic management model that all organizations and managers in the public sector should use is an illusion. In real-life management there are several applications and management styles.

One theoretical reason for the lack of a management model or style is that there is no one explicit theory of public administration either. The early US writers on public administration constituted the political theory and a theory of democratic governance, and commented on things such as the good life, the criteria by which decisions are made, who should rule, how a separation of powers should be maintained, centralization versus decentralization, and they were actually writing political philosophy (deLeon & Denhardt, 2000, 90).

The performance management model is an ideological model including the aim of performance improvement. In Europe and in Finland this ideology is under the label of

New Public Management including ideas and concepts of what the management should be like (Lähdesmäki, 2003, 16). However, it is not an explicit description of the existing management model in the public administration.

In real life, public management is a messy and a complex system of mixed aims and policies, problems and solutions, in the same disorder, just like garbage in a garbage can in the next corner of the street as you pass by (March, 1976).

At the extreme, one can claim that the governmental system is not even designed to solve problems (Moe, 2005). Moreover, the political-administrative management and decision making system is a forum of different political viewpoints and ideologies. Politicians represent the state elected by the citizens, and stipulate laws and make decisions on the budget. However, if the politicians were to be asked if they had read the 900-page book called the budget to make decisions and manage the state of Finland, hardly any of them could claim to have done. In addition, it is logical because the budget is not designed to be an instrument to guide and manage the country. It is a plan as to how the tax money is spent each year and the money can be transferred to another year. The budget is a collection of allowance decisions and their transfers from one year to another. The budget is not a strategic management tool. However, strategic management and anticipating have become the short-term management challenges in the Finnish central government (Virtanen & Stenvall, 2011, 67).

However, the budget is the only binding planning instrument the political-administrative decision making system has. The actual targets for the operations are set in the performance contracts, but the resources for the actions are allocated in the budget. Without connecting the actual targets and the resources spent on these targets in the binding planning instruments (budget and performance contracts), this becomes a mechanical process without connections to real-life policy decisions and choices.

One of the major problems concerning the performance management and the planning and budgeting system is the distribution of responsibilities between the state and the municipally organized rescue service regions. The Department for Rescue Services directs and oversees the Finnish rescue services but the regional rescue areas and their operations are funded by the municipalities. The ministry budget for the rescue services is rather limited considering the huge task of preventing fires and saving people from fires. This, and other ambiguities have led to dissatisfaction toward the performance management model. The Ministry of the Interior and the Department for Rescue Services has determined that they cannot fulfill the management model. The rescue services have solved the problem by announcing that they guide and steer their administrative branch in cooperation with the Regional State Administrative Agencies through information control (Rescue Services in Finland, 2012).

Controlling is one part of public politics that helps to guide and steer the public administration after a democratically made policy decision. The information control is not binding and the subject of the control has the freedom to decide not to do anything as

a consequence of that control, or end up with another solution than the one the controller was hoping for. Even in this case, the control had behavioral effects.

For example, the rescue service areas (municipalities) can follow the definitions of the central administration or decide not to follow the definitions. The indirect consequence of the information control exists, however, if the rescue service areas (municipalities) identify the problem or the subject of development (Stenvall & Syväjärvi, 2006, 17). According to Osborne and Gabler (1998), a state using information control is more effective than a state which widens its administration. Information control in this meaning does not refer to traditional bureaucracy but more to entrepreneurial administration (Törrönen, 2004, 17).

However, one cannot totally resign from the management system of the state level government. The ministry has to plan for the most important goals of the administrative branch with indicators measuring these goals anyway. This is done through different instruments such as the multi-annual operating and financial plan (Budget Decree 10§). However, it could be done through some other procedure as well.

Budget legislation defines that the performance accounting and management system has to report on the most important information on operational effectiveness and the vast societal effectiveness in the annual financial report (Budget Decree 63§). No matter what the management system were, obligations to plan and report on performance during each financial year would have to be fulfilled.

Prime Minister Katainen's government has introduced new measures for the Government Program monitoring, and has drawn up a strategic plan for the implementation of the Government Program on 5 October 2011. This implementation plan is a resolution focusing on the Government Program's main objectives, preparation responsibilities, and key measures and projects, turning them into strategic, inter-sectoral, and comprehensive policies. The government has three priority areas: the reduction of poverty, inequality, and social exclusion; the consolidation of public finances; and the strengthening of sustainable economic growth, employment, and competitiveness. The government has identified the reform in local government structures, the social guarantee for young people, and the fight against the shadow economy as its key projects (Finnish Government, 2012).

All these priority areas include social effects, and especially social exclusion and strengthening sustainable economic growth can have effects on the development of fire deaths as well. A positive change in poverty, inequality, social exclusion, sustainable economic growth, and employment can have positive effects on the fire safety problem as well. However, these priority areas are not planned or implemented with the mutual support of different policies in coherence.

The complete cycle of choice by March and Olsen (1976) offers a view of public decision making and management. Individual behavior (members of Parliament, public managers, citizens) is aggregated into collective, organizational actions and choices (Parliament, ministries, and agencies). The outside world responds to these choices in a way that affects individual assessments both in terms of the state of the world and of the



efficacy of the actions (Ministries, National Audit Office, public media). People move in and out of choice situations and involvement in a decision is not attractive for everyone in all relevant choice situations, all the time. Individuals also act in several arenas at the same time. In the case of fire deaths, the cognitions and preferences held by individuals (victims) affected their behavior. Their behavior and choice can affect cognitions and preferences of society, and society can learn and change the standards and cognitions of healthy living in a safe environment. Overall, their behavior and choice affects, in the end, the state of the world through the next generations.

In 1347 when Finland was part of Sweden, the jurisdictional districts were obliged to help victims of fire if the fire was not caused by a lack of care. All residents were obliged to carry out fire aid. Six assessors estimated the damage and if the damage was 20 marks, the whole jurisdictional district was obliged to employ fire aid. If the damage was 10 marks, the aid was divided in half for the district, and if it was five marks, the aid was given from the quarter of the district where the victim lived (Halonen & Nevanlinna, 1983, 11). This medieval joint responsibility system has been replaced by modern taxation and insurance systems in the present-day. However, the solidarity among the residents in neighboring areas should not be replaced. Even though one should not pay jointly for the damage caused by fires, no longer should one be jointly responsible for greeting the neighbors from time to time, and doing the most effective preventive fire safety work.

## 8.5 Implications for further research

In the end of the study it is logical to discuss ideas and possibilities for further study. Fire safety policy and fire deaths offered an empirical case through which to analyze ambiguity of performance management. However, this is just one policy area and the same questions and phenomenon could be studied in other policies as well. There are possibilities for further study for example in social and healthcare policy, education policy and so on.

In addition, public finance and public service production are facing challenges and there is a lot to be studied under these titles in the rescue services and other field of public service production in the future. The rescue services have organized functions and reallocate resources more effectively for the last decade. The municipal rescue services transformed from the municipal level to the regional level, but stayed in the sphere of responsibilities of the municipal self-government.

Finnish municipalities are undergoing an extensive reform in the coming years. The local government reform and the New Municipality 2017 program support the development of new municipal structures. Municipal rescue services were organized in 22 rescue service regions in 2004. Kallio and Tolppi (2012, 126) have been studied this change before, in the middle and after seven years of the change. One of their latest research finding is that the rescue leaders examine the rescue operations, tasks and the level of service production as a coherent whole, not through administrative municipal

boundaries. According to them the available resources should be allocated according to the risks, not according to the municipal boundaries. Structural reforms like the new rescue service organization could be studied further while carrying through reforms such as the local government reform.

In the times of scarce public finance economic aspects are important areas to study in the field of security and safety studies. Maximizing safety and minimizing economy at the same time are difficult questions. At what level of risks people are then willing to live with, in return for freedom to act as we please and in return for a lower level of public expenditures? These could be interesting areas to study further.



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# Appendices

Appendix 1. World fire statistics of 2004 (Source: Center of Fire Statistics, 2006)

Country	Population	Number of fire deaths	Average number of fire deaths	
			Per 100000 inhabitants	Per 100 fires
Russia	144000	18377	12.8	7.9
Estonia	1347	127	9.4	1.1
Latvia	2319	195	8.4	2.0
The Ukraine	47517	3784	8.0	7.9
Lithuania	3500	233	6.7	1.4
Moldova	4400	222	5.0	8.9
Mongolia	2650	57	2.2	2.6
<b>Finland</b>	<b>5220</b>	<b>103</b>	<b>2.0</b>	<b>0.9</b>
Hungary	10117	157	1.6	0.7
Bulgaria	7761	105	1.4	0.4
The USA	293655	3900	1.3	0.3
Poland	38175	486	1.3	0.3
Norway	4577	55	1.2	0.5
Slovakia	5200	45	0.9	0.4
Croatia	4437	39	0.9	0.6
Ireland	4044	35	0.9	0.1
France	61000	500	0.8	0.1
The UK	60000	508	0.8	0.1
Slovenia	2002	17	0.8	0.3



## Appendix 2. List of interviewees

Date	Name	Title	Organization
30.3.2010	Heikki Joustie	Director and Deputy Director General	Ministry of Finance/ Governance Policy and Public Services Unit
18.4.2005	Markku Huuki	Senior specialist	State Treasury/Administrative Management
20.4.2005 14.1.2008	Jukka Aalto	Financial Director	Ministry of the Interior
12.5.2005 6.4.2010	Matti Salminen	Committee Counsel	Ministry of Finance/ The Audit Committee/ Parliament
27.5.2005	Maileena Tervaportti	Central Bookkeeping Manager	State Treasury
17.1.2006	Antti Lehtonen	Counselor	Ministry of the Interior/ Internal Audit
30.5.2006	Jukka Wuolijoki	Director general	State Treasury
14.1.2008	Harri Martikainen	Counselor	Ministry of the Interior/ Strategic planning and reporting unit
14.1.2008	Kaija Uusisilta	Head of Press and Communications Services	Ministry of the Interior/ Press and Communications Services
14.1.2008	Janne Kerkelä	Director of Administration	Ministry of the Interior/ Administration Unit
16.1.2008	Pentti Partanen	Director-General	Ministry of the Interior/ Department for Rescue Services
9.9.2009	Outi Mäkelä	Member of the Parliament	Parliament of Finland
9.9.2009	Markku Haiko	Senior advisor	The Association of Finnish Local and Regional Authorities
9.3.2010	Tuomas Pöysti	Director-General	National Audit Office of Finland
25.3.2010	Matti Ahde	Member of the Parliament and Chairman of the Audit Committee	Parliament
26.3.2010	Juhani Turunen	Under-Secretary of State	Ministry of Finance
29.3.2010	Soili Vasikainen	Government financial controller	Ministry of Finance
30.3.2010	Helena Tarkka	Director	Fiscal Management Unit/Ministry of Finance
6.4.2010	Mikko Kangaspunta	Director	State Treasury/Administrative Management
7.4.2010	Sirpa Kekkonen	Counsellor	Prime Minister's Office/ Policy-analysis Unit
8.4.2010	Silja Hiironniemi	Director General	Ministry of Finance

### Appendix 3. List of authorities and bodies responsible for taking part in rescue operations and civil defense in Finland according to the Rescue Act (468/2003)

Emergency Response Centre Administration,  
Finnish Police,  
Border Guard,  
Finnish Defense Forces,  
Ministry of Social Affairs and Health,  
National Public Health Institute,  
National Agency for Medicines,  
National Product Control Agency for Welfare and Health,  
Radiation and Nuclear Safety Authority,  
National Authority for Medicolegal Affairs,  
Finnish Institute of Occupational Health,  
Ministry of the Environment,  
Finnish Environment Institute,  
Regional Environment Centers,  
Ministry of Agriculture and Forestry, State Enterprise For Forestry Metsähallitus,  
Ministry of Transport and Communications,  
Civil Aviation Administration,  
Finnish Meteorological Institute,  
Finnish Maritime Administration,  
Finnish Rail Administration,  
Finnish Communications Regulatory Authority,  
Regional State Administrative Agencies.

## Appendix 4. Covering letter to the interviewees in the Ministry of the Interior in 2008

Dear representative of the Ministry of the Interior,

M. Adm. Sc Anniina Autero from the University of Tampere is writing her doctoral dissertation about the performance coherence in the Finnish public administration. The empirical research subject examines the branch of administration of the Ministry of the Interior.

The doctoral dissertation is partly written in a research project “Public Sector Efficiency as an Ambiguous Problem” funded by the Academy of Finland and led by the University of Tampere and Professor Jarmo Vakkuri. Professors Jarmo Vakkuri and Pertti Ahonen are the supervisors of this dissertation.

The research questions to be followed are from where do we know what public performance is (problem of search) and secondly how do we act relying on this information (problem of application)?

The first empirical part of this study is to analyze the documentary data including performance contracts in the Ministry of the Interior from 2001–2005. The second stage of the study includes the interviews with the head of the Ministry of the Interior.

The interviews are carried out by adapting thematic interviews. Interviewees will get the questions beforehand and the interviews will take about an hour. The interview times are set for January 2008.

Interviews form an elementary data element for this the study and will be supported with respect to developing public management in the future.

Additional information about the doctoral dissertation or about the interviews is available on request from [anniina.autero@uta.fi](mailto:anniina.autero@uta.fi).

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