

SOCIAL CHANGE AND PREVENTION MEASURES OF FIRE SAFETY

Report

PREVENTING WILDFIRES

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**SOCIAL CHANGE AND
PREVENTION MEASURES
OF FIRE ACCIDENTS**

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INTRODUCTION

This report is one of the outcomes of the international project “Developing an evaluation model to assess prevention measures”. The aim of the project was to develop a model for the evaluation of prevention measures of fire accidents. Five countries around the Baltic Sea – Denmark, Finland, Estonia, Latvia and Lithuania – took part in the project and the preventive activities of the rescue boards of these countries were evaluated. The evaluation model will provide fire departments and policy-makers with feedback when elaborating prevention services.

The evaluation model consists of three interrelated components:

- **impact measurement of the preventive activities;**
- **population survey – the knowledge and habits of social groups**
- **fire safety statistics – a long-term impact of fire prevention activities**

The model helps to measure the state of affairs in fire safety in the course of time and between the countries. The model also provides a general overview of fire prevention activities and helps to classify these.

This report complements the model by:

- introduction of an alternative to the awareness raising approach (or behaviour change approach) - **PRACTICE CHANGE APPROACH TO SOCIAL CHANGE;**
- **DEVELOPMENT OF A METHODOLOGY** to measure individuals' ability and willingness to follow fire safety instructions;
- **MEASUREMENT OF THE OUTCOMES** of the fire prevention measures of the countries (how effective have the activities been in the involvement of the groups that are less able and willing to change?);
- discussion on the fire prevention measures on **THE SCALE BETWEEN AWARENESS RAISING AND STRUCTURAL INTERVENTION APPROACH.**

SOCIAL GROUPS AND CHANGE

Social agency (mode of life)

Rising demands on fire safety expect people to change their ways of conduct and purchase new items. The need to intervene in people's ways of conduct is an issue that concerns specialists and managers from many fields. Their question is: **why part of the population is not willing to follow favourable prescriptions?**

In sociology the central term that is used to describe individuals' ability and willingness to change, is agency. In this report an approach to agency is used that does not view a person's way of life as a consequence of his personal traits and choices, but instead as a way how a person is 'embedded' or integrated into the society. According to this approach **individual choices are bound to a highly complex network of actions** that normalises ways of conduct in their contexts, even if these are considered politically undesirable or normatively 'bad'. **People differ by agency** - i.e. by their ability to get to know and follow socially accepted norms, by the ability to transform their lives according to their wishes, by their social circle (family, media, networks), physical living environment and material resources that shape their choices.

The report is inspired by an analysis¹ of social action that showed that **individuals' normal patterns of everyday doings are a much better predictor of the ability to lead and follow social change** than any social-demographic characteristic (such as income, etc.). The social structure of the society includes many social groups that follow different kinds of everyday routines. It appeared from the analysis that there are tinier social groups that follow a multidimensionally active lifestyle. These groups are voluntarily shaping their lifestyle, especially as they are skilled, socially active and usually take part in many kinds of socially favourable action. The more active they are, the more they can access additional social change. There are also much bigger groups that follow a more passive and one-sided lifestyle and have usually got a narrow social circle. These groups depend in change more on outer contextual factors. The less they have and do, the less they can react to the need to change.

The analysis showed that **the involvement in social activity and accompanying acceleration of time is promoted by social activity itself and the networks formed by it**. The mechanisms driving activity (=change) could be:

- Role models and imitation: the inspiring and impelling influence of social practice
- The (time) resources freed up in the society: no need to limit oneself with survival strategies
- The ability to see new opportunities for change increase due to the networking of individuals
- The changes in the infrastructure (transportation, communication technologies, Internet) ease the access to new social activities for the actor (e.g. finding a job, a partner, a flight, an idea)

¹ Kiisel, M. ja Seljamaa, J. (2017) Sotsiaalse sidustumise mustrid. Vihalemm, P. jt (toim.). *Eesti ühiskond kiirenevas ajas: elaviku muutumine Eestis 2002-2014 Mina. Maailm. Meedia tulemuste põhjal*, 363-410, Tartu: Tartu Ülikooli Kirjastus.

- Rising familiarity of the components of the new practices (transferability of shopping skills, computer skills, project management skills, etc. to new contexts)
- Time pressure – works well for the abandoning of particular (worn-out) social practices
- The inability to continue familiar routines due to the desynchronization of other practices, e.g. change in opening times, closure of services, interruptions in the networks of actions
- Etc.

However, in the social structure of society the patterns of action are not equally networked. Some networks are large-scale and integrated, some are fragmentary. **An active person is more likely to be involved in many fields of life and a passive one is more likely not to oblige oneself to extra action** (as they also have less access to learning, have got smaller network, etc.). For example, ‘white collar’ tasks that are typical to networked groups (such as financial calculations, reports, presentations, running meetings, managing the work of others, etc.) enable an observer to quickly pick up new skills through imitation, but they also enable the actor to choose the timing, intensity and tempo of their actions. People with a more monotonous job shaped by a strict schedule are able to observe and imitate fewer work tasks and therefore it is more difficult for them to learn to change.

In the same analysis² also the changes in people’s social practices (that also form the social structure) were measured in the course of time. It appeared that from 2002 to 2014 (the inquiry was repeated in every three years) there was a remarkable increase in the number and diversity of everyday routines, but this change took place only within the two groups (altogether 20% of the sample) that were the most active already in 2002. In 2014 the growth stopped (probably due to the extreme time compression that accompanied the increase in action). In the final survey in 2014 there were also questions included that asked about the experiences with the tools of intervention. Although survey data has its limits, it can be concluded that **only part of the population is willing and able to take into account normative prescriptions about health, safety, environment, lifelong learning, financial literacy, etc. on their own will**. However, although social activities have a polarizing effect on social structure (from the perspective of nationality, gender, education, income, as well as opportunities and risks related to changes)³, in many issues the power over social change is egalitarian, because many everyday activities and environments are shared by very different actors (such as traffic, shopping, schools).

CASS has used the knowledge about social stratification by social activities in the analysis of the effectiveness of political measures in the example of environmental practices and youth work. Social stratification analysis is the bases for the statistical segmentation of the population that is in turn the basis for additional qualitative analysis by groups. This way for each group a different set of policy measures is recommended. An example from CASS research shows how the groups of young people look like in the research of social stratification by social activities (age group 15-26). The figure 1 is based on cluster analysis (K-means) of a social survey. It is formed of several indexes that measure participation in usual

² *Ibid.*

³ In the active and networked groups there are more younger female middle-aged well-educated and native individuals who have also higher wages and social positions. They also stand out for their cosmopolitan worldview, share empathy for the social problems, have positive attitudes and abilities to imagine future scenarios.

everyday routines. Each index is based on several variables (up to 20), so it is highly likely that the person who claims to be involved in particular practices also actually is. A five-group cluster appeared to be most distinctive. The values of the indexes in the figure were scaled according to the highest mean value found in the clusters (that was also equalised to 1). It appears that there is a tiny multi-tasker and skilful group (the outer circle of the figure) that drives the change, and a big group that resists the change (the inner circle). Three groups in between are not particularly interesting. When observing the outer circle (the most diversely active group), it may seem that the activities of the group are triggered by media influence (the consumption of social media, TV and radio information, etc. is the highest in this group). In many inquiries it is often interpreted this way, especially when only two variables are crossed: the desirable action and media consumption. The “groups in between” that possess a less active lifestyle have relatively high measures of media consumption as well, however, **their active media consumption does not go hand in hand with active lifestyle**. It may be the opposite – active people just want to keep up with the news.

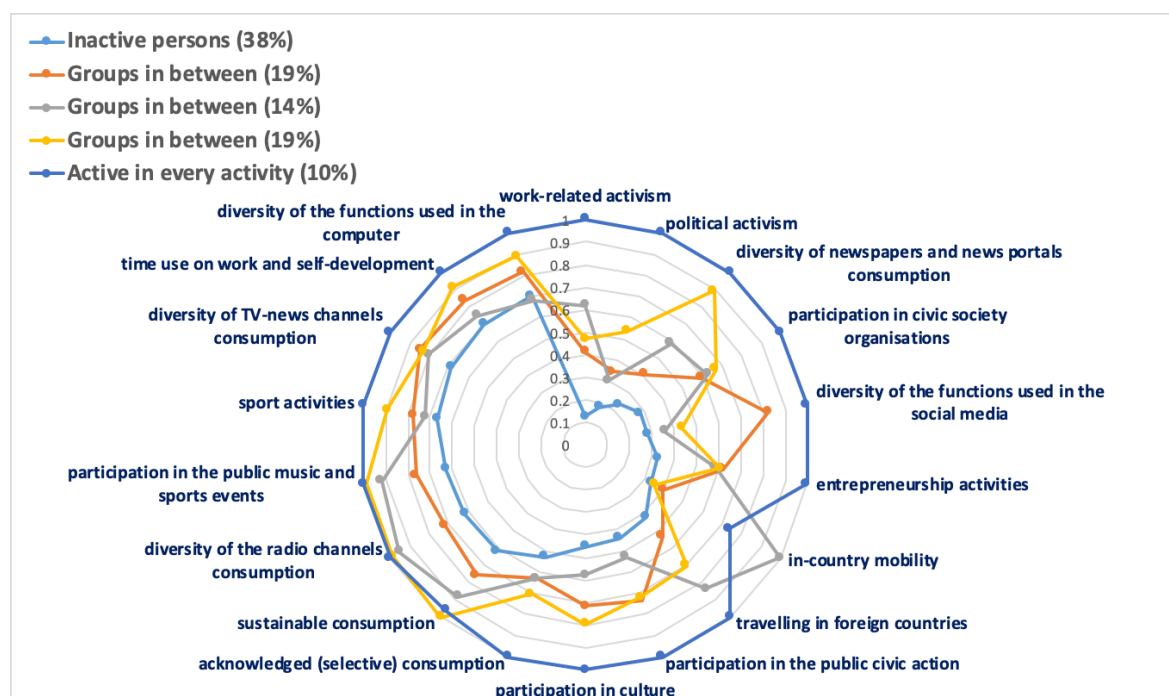


FIGURE 1. Agency groups by social activities, age group 15-26, 2014 (Me. The World. The Media)

Source: Kiisel et al. 2018⁴

The stratification analyses (of consumption) have shown that the structures of these agency groups are usually pretty similar in different countries. Compared to Eastern Europe the ‘change groups’ in Russia are tinier and in Western countries a bit bigger. The agency develops little by little in the processes of modernization and civilization. The obstacle for the changemaker is therefore, firstly, to outwit the level

⁴ Kiisel, M., K. Saarsen, H. Tammsaar (2018) Kuidas kohalikke otsustusprotsesse lähemale tuua? *Noorteseire aastaraamat*, 145-163, p 150.

of social development of the society that shapes the overall ability for change⁵ and secondly, to involve the big groups that resist the need to change (usually they do not even know about the need), in the intervention programme. To do that one must define the tools.

Approaches to social change

The approaches to the change of the human conduct are mostly analysed on a scale where awareness raising (voluntary approach) is in one direction and structural intervention (deterministic approach) in the opposite one (see Figure 2).

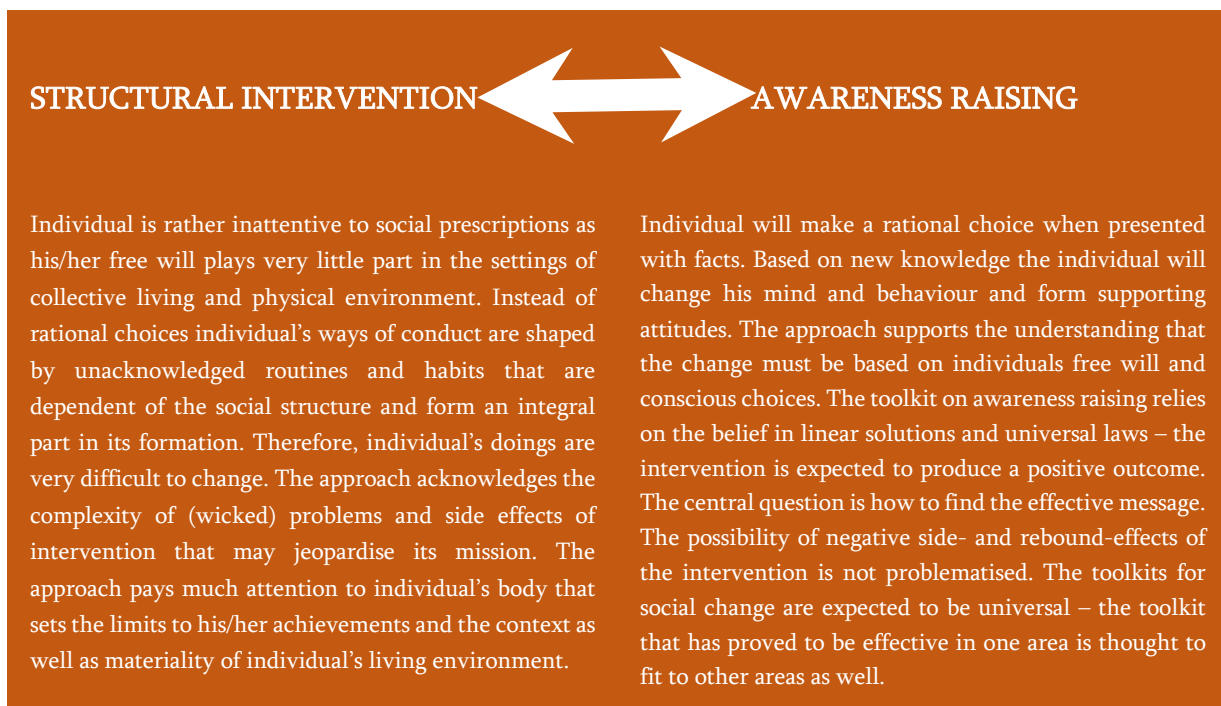


FIGURE 2. Principles of structural intervention and awareness raising

Source: accommodated from Vihalemm et al. 2015⁶

While awareness raising approach relies on individual's attention, expecting one to change his/her behaviour voluntarily, structural intervention learns from the structural upbuilding of society – how it is organised and what are the factors in its change. The most famous structural approach is probably the "nudge" approach by Cass R. Sunstein and Richard H. Thaler.

⁵ The developing countries can go through bigger changes than the developed countries at the same time, however, their development is limited to particular fields of change whereas in the developed countries change is expressed most of all in the integration of the fields.

⁶ Vihalemm, T., Keller, M. ja Kiisel, M. (2015). *From Intervention to Social Change. A Guide to Reshaping Everyday Practices*. London: Ashgate.

The present report emanates from practice change approach that lays in the middle – it recognises the features of both approaches. The approach is developed in several theoretical strands, e.g. by Schatzki⁷, Shove *et al.*⁸ and others. **Practice change approach recognises the interdependence and internal coherence of human activities.** Each activity has its role in the stabilization of the social structure of the society (interaction) and consists of three basic components:

- **MEANINGS** that make sense of the activity, justify the participation in the practice – social norms, duties, rules, understandings, ideologies, etc.;
- **SKILLS AND COMPETENCES** that enable the participant to perform the mental or bodily act;
- **THINGS, MATERIAL ENVIRONMENT AND INFRASTRUCTURE** that accompany the act or make it performable;

The role of the skills and material environment has been often neglected in the analysis of social change, so the results of successful intervention are usually attributed to communication only. However, marketing communication and advertising work only in harmony with shopping routines, mall environment, skills (such as shopping, calculation, cooking, product use), the arrangement of the store environment, availability of the product, the qualities of it (such as price, appearance, shelf life, instructions for use), social norms and most of all – buyers' intentions. By applying the knowledge from marketing communication to social marketing and social change while overlooking the existence of other supporting factors will usually not help to provoke change.

A social practice is a recognisable unit of habitual actions that is usually performed in similar contexts in a similar manner by many people. They share the understanding of the activity, they have the skills and the inevitable things to be able to perform the activity. However, it is often difficult to define which particular doings form an integral set that can be called social practices. The practices may overlap (such as smoking and socialising – both can be done separately, but also together), and some share similar components, for example similar activities, so that transferable skills can spread between practices (e.g. purchasing activity can be part of the culture consumption practices, but also of the mobility practices).

Each practice has its own unique set of factors that enforces its reproduction – interaction, meanings, skills, artefacts and material environment – (the general overview in the example of fire safety is listed in table 3), therefore, the practices can't be approached by a universal set of intervention techniques. Practices are interwoven with each other which means that social change is quite irresistible to prescriptive communication messages. To understand the possibilities of change, the structural reasons for the existence of the practice need to be analysed. What keeps them going? Is it possible to interrupt them or invent new ones? Modify or substitute them?

⁷ Schatzki, T. R. (1996) *Social practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge: Cambridge University Press.

⁸ Shove, E., Pantzar, M. and Watson, M. (2012). *The Dynamics of Social Practice. Everyday Life and How It Changes*. London: Sage.

Similar to the approaches of social change that are divided between awareness raising and structural intervention, also the tools of social change can be divided accordingly. The examples of the structural tools are described on the left hand (figure 3), the awareness raising ones on the right hand⁹:



FIGURE 3. The structural intervention and the awareness raising tools

Source: Vihalemm *et al.* 2015¹⁰

The problem with awareness raising tools tends to be that most of the communication is designed to address the agency group that takes actively part in very diverse set of practices (people with high agency). This social group is willing to pay attention to prescriptive messages as social change is an integral part of their lifestyle. They are looking for the guidelines (although they modify those according to their needs) and they take part in creating new guidelines for the other people.

But even if the awareness raising tools can catch the attention of the activists who observe many media channels and are skilled enough to lead the change on their own, their attention is occupied with many competing demands (financial literacy, ecological demand, norms of good parenting, etc.). So, it is not for sure that they will pay extra attention to fire-safety. Personal time is limited, and there are also limits to their skills.

Public debates increasingly revolve around the necessity of major changes. However, bringing these about is relatively difficult in a dense social structure where power over social practices is egalitarian (shrouded in the everyday activities of numerous similar actors), yet polarizing between those who are eager to

⁹ Vihalemm *et al.* (2015).

¹⁰ *Ibid.*

change and those who resist it. The polarisation is also visible from the perspective of nationality, gender, education, income, as well as opportunities and risks related to changes.

This analysis of fire safety politics aims to provide insight, **what kind of tools** – awareness raising or structural intervention approach – **will help to improve the fire safety activities among people with lower agency** (that is usually the main concern in any politics).

METHOD

In order to respond to this question, three tasks need to be performed:

1. the comparison of the toolkits used in five countries
2. the comparison of the social structures of the countries (agency groups)
3. the comparison of the fire safety activities in the countries across the agency groups

The toolkits of fire safety

Firstly, the toolkits of the five countries that take part in the project are analysed. The analysis is based on country reports. The toolkits are analysed according to the scheme illustrated in table 1. The tools are divided between awareness raising and structural intervention tools. The yellow background distinguishes the awareness raising tools, the red colour the structural tools, orange colours the ones in between.

Table 1. The toolkits of fire safety promotion

AWARENESS RAISING TOOLS	STRUCTURAL INTERVENTION TOOLS
Media (press, audio-visual, prints, signs)	Teachers/company's duties of fire safety
Homepage, webpages	Groups at risk
Social media	Trainings, testing
Participation at public events	Discounts on things, sales placement
Visits to fire stations, demonstration of facilities	Fire inspections
Festivals, weeks, days	Direct counselling, home inspections
Communication campaigns	Emergency management trainings
Quizzes	Placing/giving things (detectors), repair of appliances
Schooling (at FRS, web-based solutions)	Community work, local involvement
Lectures at schools	Fire safety requirements for new buildings, etc.

Source: authors' compilation

The differences in social agency

A statistical tool is used to measure the differences in social agency. The tool is inspired by previous inquiries¹¹. 1. To analyse agency (that is a practical, bodily routinised, half-conscious way of conduct that is bound to material world) a cluster analysis was made that incorporated variables from different field of action that had proved to be good indicators in the detection of the differences between agency groups. The groups with higher agency are more willing to acquire additional activities or demands. Special questions were added to the social survey. The questions were:

1. How often do you attend cultural events (such as theatre, cinema, museum, library, art exhibitions, concerts) or take part in some cultural hobbies (e.g. sing in a choir, play in orchestra, attend art courses)?
2. How often do you take on home improvement activities such as renovation, repair, decoration for the public holidays, spring cleaning, reorganization of garden or courtyard?
3. How often do you pay attention to extra qualities when shopping (e.g. health, ecological footprint, reliable brand, local production, fair trade)?
4. How often do you go out with your friends and acquaintances (e.g. to a cafe, a restaurant, a pub, a nightclub)?
5. How many non-governmental organizations do you take part in (such as specialist unions, hobby clubs, sports clubs, religious societies, community action, handicapped societies)?
6. How many times a day do you keep up with daily news?

Based on the answers to these questions, cluster analysis was made to ascertain the social agency groups in each country. The scores of the answers in the analyses are presented in table 2.

Table 2. The variables of the questions and relevant scores in cluster analysis

score	Q1-4	Q5	Q6
0	Not at all	None of them	Less often than once a day
1	Very rarely	One	Once a day
2	Sometimes	Two	Twice a day
3	Quite often	Three	Three times a day
4	Very often	More than three	More than thrice a day

Source: authors' compilation

The results of the fire safety politics

In order to explain, which set of tools of the fire safety politics can reach the indifferent and inactive groups more effectively, an index of fire safety was made. The survey questions about the doings and possessions of the person were used for it. We did not use any attitude questions as attitudes and behaviour are not directly related and causally linked. As the interviewer asks people questions, the response about the existence of particular attitude or opinion is often constructed by the fact of asking. E.g., the fire

¹¹ Kiisel, M. ja Seljamaa, J. (2017)

extinguisher and smoking habits exist independent of the fact of the asking. The following questions were used in the compilation of the fire safety index (each of them added one point to the index).

Practical knowledge indicators:

Question 1: Assuming you hear this sound [the smoke detector fire alarm will be played], what is the issue?

Question 2: Assuming you hear this sound [the sound of empty battery of the smoke detector will be played], what is the issue?

Question 21: Fire Number to call

Activities that support fire safety:

Question 3: If you think about last YEAR, has the fire safety, and how to act in case of the fire, been discussed at your home?

Question 10: Used a fire extinguisher or not, 2-No,1-Yes

Question 14: When you think about last month (30 days), have you or someone from your household controlled the working condition of the smoke detector

Question 15a: Changed batteries

Question 15b: Cleaned the smoke detector

Question 20: Smoking (negative score)

Things:

Question 8: Is there a fire extinguisher in your home?

Question 12: Is there a smoke detector in your home?

The index of fire safety was crossed with the clusters of agency to analyse the reach of fire safety politics among different social groups. It must be noted, that **the index is rather oriented to technical facilities.**

ANALYSIS

The toolkits

The toolkits of the fire safety of the five countries (Denmark, Finland, Estonia, Latvia, Lithuania) were compared according to the differentiation of the intervention tools presented in table 1.

Media, webpages and social media (awareness raising tools) are used in every country for fire prevention communication. These are necessary tools in fire prevention as the meanings of new safety practices need to be fulfilled. Although Internet is the main source for fire safety information, it's importance should not be overrated. Internet is the most common source of information for most of the issues and the use of information depends on the needs of the information consumer. Internet can make information available for those who look for the information, but it is unlikely that it independently involves new actors in fire safety practices. It is especially hard to reach the audiences who actually need to change (those that have,

for example, multiple social problems, etc.). Therefore, fire safety communication in media is a very passive and ineffective tool – it fails in cases where the unwanted or the expected new practice is coordinated by many factors (other peoples' expectations, time pressure, lack of skills or necessary things, etc.).

However, communication may work well in cases that do not require behaviour change. For example, people already know how to pull off the plugs or the curtains, know how to switch the smoke detector's control button (if they have one), know how the cracks in chimneys look like, etc. By reminding them to do something that they are already able to, the communication activities can be quite effective, although its reach is limited. Communication may help to enhance or maintain practices that already exist or where other conditions for practice change are fulfilled (sufficient level of skills, supporting environment, existence of things). The fire and rescue services have a very special position as communicators. It is quite common that fire accidents become learning cases in media, a lot of practical information can be spread due to the accidents. There are often special formats for FRS communication, for example weather forecasts that people are used to watch, listen to or look for (it may be one of the reasons why FRS has a very high level of trust – they are trusted as an actor who works for the wellbeing of every person regardless of their capitals). Many other social change communicators do not share this access to media.

The media campaigns are rather well focused. Too abstract messages (Be safe! etc.) that are too complicated to be accommodated in everyday life are avoided, campaign messages address practices or activities that are recognisable in personal experiences (candles during the Christmas period, fireworks at New Year's Eve, stove heating instructions in Estonia and Lithuania, etc.). In Finland there was a campaign that warned young people of the danger of being struck by a lightning. This campaign seemed to address activities that are either too complex or too rare to communicate (the lightning strikes persons very rarely and it is very difficult to act according to theoretical instructions in case of an emergency). In Lithuania there is a campaign against spring grass fires that addresses a recognisable activity, however, it is not clear, how often does the distinctive group of lighters of grassfires observe media.

Participation of the FRS brigades at public events, open days at fire stations, festivals and communication campaigns are also used in all five countries. Although the reach of these tools is narrow (usually mainly diversely active social groups are involved), these activities are more participatory and help the target group to accommodate safety instructions to their everyday life. Public events usually include hands on training that may help to develop necessary body memory for the emergency situations. E.g. fire extinguisher is usually used for the first time in case of emergency as people do not want to spend money on extra extinguisher and put their interior in risk for just to learn about of the tool. So, it is useful to rehearse the use of it on a safe bases at some public fire prevention event. Communication campaigns can be built on only media communication, but often additional (and more structural) tools are involved in campaigns that improve the outcome of it. It can be reconciled for example with home visits of FRS inspectors or smoke detectors discounts and sales placement.

Tools that enable even more involvement of the target group, such as **quizzes, schooling, lectures at spot, etc.** are also used in all five countries (the fact of using quizzes is not mentioned for every country). Compared to previous ones these tools enable the target group to approach the fire safety recommendations situationally and based on personal needs, as communication in these cases is rather symmetrical. On spot schooling may also help to improve body memory of the necessary skills when practiced regularly.

Remarkable share of prevention activities is done at schools. However, very little theoretical knowledge that is acquired in childhood and at school is taken account in everyday practical choices in adulthood – people first of all adapt to the structural conditions they can't always choose on their own (wage, place of living, health, organisation patterns of collective life, etc.), then they have a possibility for lifestyle choices (how to spend the time, space and money that is left after the 'compulsory' expenses).

Such tools as **trainings and testing, setting responsible people for schools and workplaces, approaching groups at risk** that are named in table 1 in the structural tools' section are inherently very different. Yet all these are well suited to reach the target groups who are not particularly interested in fire safety (egalitarian approach). Trainings and testing activities in organisations are good to try out hypothetical situations and develop bodily competences that people can rely on in case of emergency (no time to think, impulsive behaviour), they also help to set collective routines for those who would not cooperate in other situations. In order to make the trainings useful, a lot of hands on training and physical exercises are needed. To develop body memory and collective control, the trainings need to be practised regularly. The target group has to get familiar to the things and physical environment that shape emergency situation. To learn resuscitation, it is better to use dolls that enable to experience similar tempo, resilience and strength as is needed in case of an actual person. The evacuation trajectories from the building should be in everyday use, so that the bodily habits will work along with evacuation activities in case of emergency. Tempo, time, strength, etc. can be taught by using markers that are commonly known to people (for example, in Estonia the tempo for resuscitation can be chosen by a national choir song *Tuljak*).

As ordinary people can change very little in the way how things are done or organised in the organisation (there are power relations, traditions and layers that are difficult to bend), training people who can take action in case of emergency or are responsible for fire safety organisation is a good way to internalise fire safety practices in an organisation (change infrastructure, provide things, modify internal regulations, shape organisational culture). These people have an extra say in issues that concern fire safety although they may not possess particular power in other issues. However, it is not known how the roles of the responsible people are played, these positions can also be very formal.

The groups at risk are usually the target groups who cannot be reached by communication campaigns or other direct approaches. Their connectedness to social networks may be low and their agency (ability and willingness to change) as well. However, their practices are often coordinated by other people – social workers, youth workers, chimney sweeps, etc. (for example in Finland fire prevention is integrated in social services and elderly care, in Lithuania there are special counselling programs for people who receive social benefits). By coordinating the action of the people who are in between the communicator and the target group, the preventive action can bring more success.

In the structural tools' section there are also tools such as **discounts of fire safety instruments, special sales placement, fire safety inspections, emergency management trainings**. Market instruments were not described in country reports, but fire safety inspections and on-spot counselling take place in every country. In Denmark there are several types of counselling, in Estonia the counselling is also bound to chimney sweeps services. In Denmark there are also emergency management trainings, i.e. not only the final target groups are prepared for the emergency cases, but also the people who can instruct and guide other people in the dangerous situation if it happens.

The more structural the intervention tools are the less they find recognition in country reports (these certainly exist but find no mentioning). Here we can find e.g. **giving people detectors or placing those at**

their homes (by social workers for example), **community activation** (e.g. asking building society to do something), **fire safety requirements for buildings**. These tools are good for the anchoring of the change – these establish egalitarian conditions for everybody independent of their will. Community action is especially supported in Denmark, it is also developed in youth circles in Estonia. There are also strict safety requirements, most recently established in Latvia.

Although the lists of fire prevention activities in country reports look similar, there are some remarkable differences as well. **In Latvia and Lithuania there are less structural measures used and some of those have put to use just recently**. For example, in Latvia new fire prevention regulations for residential buildings and enterprises came to force just in 2018. **In Lithuania there have been more direct intervention in people's everyday lives, especially those in risk**. While in 2015 8,016 families at risk were visited and 1,553 smoke detectors were installed then in 2016 already 15,604 households were visited, and 3305 smoke detectors were installed. Therefore, the preventive work in Lithuania has been more focused than in Latvia where in 2016 only 1205 buildings were inspected (lay people, not those at risk). For comparison, in Estonia each year around 16,000 consultations for homeowners is made, extra 225 involve key persons from other third sector partners.

In Estonia there are more regulations that coordinate people's fire safety practices (such as mandatory smoke detectors at home, the need to call professional chimney sweep on a regular basis also in private houses, the integration of fire safety inspection and counselling with the visit paid by a chimney sweep). The history of Estonian fire prevention activities is longer than in other Baltic states. **In Finland the emphasis is on schools**. Teachers are counselled on fire safety issues and supported in the management of safety at school. **Compared to the other countries, in Denmark the fire prevention activities are more integrally linked to ordinary community life**. This helps to coordinate fire prevention practices of the lay people on an egalitarian basis. The role of rules, regulations and cross-sectoral cooperation is more emphasised in the country report. They also sell training courses for companies and have **regular fire inspections** in buildings and homes. Both in Finland and Denmark the structure of the fire and rescue services is decentralised that enables more cooperation with communities at regional levels.

The list of structural tools is yet not complete in table 1. A lot of **natural learning processes happen from the observation of actual natural processes and accidents** (flooding, forest fires). People make conclusions from everyday situations and accommodate those in their everyday choices (e.g. where to park a car, how to shape the natural environment around the house). **In Denmark, Finland and Estonia special regulative instruments are used**, therefore the homes are much more equipped with fire safety items. Regulations are important, but these must take into account the standards of living (people of low income may not care enough for the fire prevention to invest in it). **Poor living standards and conditions appear to be a problem especially in Latvia** (where also the costs of fire accidents are the biggest), but also in Lithuania and Estonia. Income problems are accompanied with lower level of education – in Finland and in Denmark the situation is better than in Estonia, but in Lithuania and especially in Latvia the level of education is even lower than in Estonia. Structural tools may also be provoked by other areas of life. For example, fire prevention is supported by smoking (there are more smokers in the Baltic States, especially in Latvia) and alcohol policies (alcohol consumption is the lowest in Denmark and highest in Lithuania). Fire safety goes also hand in hand with housing policies - the renewal processes of dwellings usually accompany new safety standards (also expected by banks and insurance companies) and transition to central heating.

Although the country reports did not reflect on every tool of intervention (especially the regulations part), it can be said that **fire preventive activities have the most access to practice networks in Denmark**, a bit less in Finland. Estonia has an effective toolkit but a shorter history in fire prevention. More attention can be turned to people at risk. **In Lithuania there have been done a lot in a short period, especially among the groups in risk (repair of stoves, installation of detectors). In Latvia the toolbox appears to be the weakest** (communication campaigns have very little effect if other conditions remain the same).

In addition to the country reports, in the evaluation of the countries' toolkits the nature of fire safety practices was kept in mind. The overview of the expectations to people with regard to fire safety is brought in table 3 (it is a sketch based on the brainstorming of the authors who relied on their personal experience). It appears that there are few fire safety activities that are coordinated by similar (f)actors. Each of them needs a different approach. The coordinating (f)actors are the key to practice change. The more coordinating factors surround the practice, the harder it is to change it. Practices that are set in a less dense network are easier to change by awareness raising tools only (e.g. compared to other practices shopping activities are less coordinated). It is also easier to provoke change, if the actors have already got the skills, things, understandings, knowledge or else that helps to facilitate the adoption of new practices. Sometimes not the whole practice needs to be changed, but only a part of it (a thing, an activity, an understanding). And sometimes it is easier to modify the holistic practice (the practice of heating) than request somebody to do one tiny thing that he has never been done before (single act like the installation of a smoke detector).

Practices can be created (the routines of evacuation training), modified (the detector controlling activity is added to the home cleaning practice), substituted (change of burning material) or interrupted (smoking)¹². In table 3 there are firstly described the activities or states people are expected to do or achieve to prevent fires. Secondly, the nature of this activity or a state is defined – what kind of a practice needs to be approached? Thirdly, the favourable way of conduct is described that the person has to adapt to, and finally, the factors that coordinate the practice or resist the modification of it, are described.

A closer look at the expectations to the social change and at the diversity and the intertwining of the coordinating factors reveals that universal tools do not suite well to provoke change. There is a need to intervene in the activities of the people (social workers, chimney sweeps, building society representatives, architects, funders etc) who coordinate the activities of the final target group. As this kind of a network around the final target groups is the best developed in Denmark, their toolbox seems to be the most effective in shaping safe the ways of conduct.

¹² Vihalemm *et al.* (2015).

Table 3. The coordinating factors of fire prevention practices

The activities and factors that are targeted in fire prevention	The present activity of the target group can be described as...	The desired outcome is...	What coordinates the practice, what helps to form a practice? SKILLS, THINGS, MEANINGS, INTERACTION
smoking in bed, indoor smoking	a combined practice	separation of the practices (going to sleep without a cigarette), interruption (quitting smoking) or substitution (e-cigarette, patch, etc.)	smoking regulations, (the absence of) family members, co-dependents, drinking buddies, community members (who watch over whether the smoking ban is followed), availability of cigarettes and their substitutes, physical and mental addiction, collective condemnation of smoking, existence of a smoking room, house rules
evacuation	an unexpected single act	creation of a new activity (training body memory)	a sense of danger (based on smell, sound, changes in temperature, air circulation), observation of other people's activities, space arrangement, existence of safe routes, functioning of passages, body memory, ability to use safety devices, people's bodies and things that block pathways, valuable items or people that can't or shouldn't be left behind
resuscitation	an unexpected single act	creation of a new activity (training body memory)	observation of other people's activities, body memory (tempo and strength), safety of the context, physical strength and stamina, social prejudices and dangers (cf. resuscitation of a small child, homeless person, drug-resistant tuberculosis patient, same-sex person, lover), knowledge (the right position of the body, the reason for resuscitation, time spent on it, timeliness of the aid)
calling emergency services	an unexpected single act	creation of a new activity (training of giving information)	the existence of a phone, phone battery level, phone lock, knowledge (the assessment of the situation, need for help, knowing the location and emergency number, keeping up with what happened, taking into account the abilities and parallel activities of the companions), body memory (automatic dialling), the ability to give information and answer questions, language skills
intervention to dangerous situation (calling for help, counteraction to the dangerous activity)	an unexpected single act	creation of a new activity (training of giving information and body memory)	social prejudices (whether the intervention is a desirable action, are the consequences advantageous to the ones involved or to the one who intervenes), the ability to assess the danger and to assess the security of intervention, companions and their doings, the ability to use the items necessary to reduce the risk (such as fire extinguishers, carpets, water) and to remove or deactivate the objects that may be in danger (cars, gas tanks, wooden materials), appliances and materials (extinguisher, water, containers, gloves), body memory that helps to use these appliances, knowledge of cause-effect relationships in case of inactivity and action, the ability to rank activities on the basis of importance, the ability to deliver warnings and ask for help, community relations and communication routines that help to call for help and activate people, distances, appliances to call for help (see previous row)
chimneys, fireplaces and boilers are in order	there is no practice	creation of a combined practice (the sweeper controls the chimney while sweeping or an additional activity during spring cleaning) or creation of a new	Regulations that oblige the owners to action, penalty options, chimney sweepers' visits, practices of building association's officials, fund for repair costs, a payday, building materials, investment plans and competing expenses, investment readiness of the co-inhabitants, the accessibility and placement of chimneys, stoves and boilers, visits paid by social workers

The activities and factors that are targeted in fire prevention	The present activity of the target group can be described as...	The desired outcome is...	What coordinates the practice, what helps to form a practice? SKILLS, THINGS, MEANINGS, INTERACTION
		practice (reporting deadlines, visit by an inspector)	
items of electrical equipment are safe (e.g. no risk of inflammation)	there is no practice	creation of a new activity (regular visits by electricity inspectors)	Usage routines of electric appliances (boiler, washing machine, refrigerator, electric kettle, light bulbs, etc.), treatment of electrical connections, age of the equipment, age and condition of the electrical system, knowledge of electricity and safety, home-made means for mending electric wires, observation of other people, knowledge and understandings of co-inhabitants, visit paid by electricity inspectors, the observability of electrical connections, electric shock experiences, fund for repair costs and availability of money, competing expenses, terms of insurance services and bank loans
the maintenance of sprinkler and electrical system	there is no practice	creation of a new activity (regular visits by inspectors)	regulations about the control, the availability of control services and relevant means in the budget, age and condition of the system, activities of the responsible persons (and their absence), terms of insurance services and bank loans, apartment association's auditor, obligations to order auditing
safe heating: opening and closing of the chimney valve, removal of debris and objects, suitable heating material, appropriate quantity, tending a fire	a consistent practice	interruption of the practice (joining the central heating system), modifying the practice (adding extra activities, changing existent activities)	the choice of the heating system, the age of the furnace, the prescriptions for the hearths, the properties of the heating appliances (e.g. holes in chimney valves, automated heating, central-local heating) and prescriptions for burning materials, ways of acquiring, availability and price of burning materials, availability of construction and repair waste, chopping and cleaning supplies - saw, axe, brush, shovel, weather conditions and the state of the stove (e.g. on the evening of a warm day the smoke tends to come in the room), chimney sweeping routine, wet items that require drying (next to the stove), number of inhabitants, their knowledge and understandings, the distribution of housekeeping duties, room temperature, time use at home, waking and sleeping hours, routines that are combined with heating, such as cooking, vacation and absence, the storage of burning materials, space arrangement, garbage to get rid of, visits paid by social workers, smoke detector, sense of smell
a control of a smoke detector	a consistent practice	creation of a new activity or a practice (phone reminders), or a combined practice (the controlling of a smoke detector becomes a part of a weekly cleaning practice)	The detector and its technology, a broom or a cane or a stick, aiming skills, body memory, full batteries at home, chair, ladder, lighting, room arrangement, location of the detector and its design, shopping habits, shopping list, detector sensitivity, repair works (and other dusty activities), housekeeping routines, activities and understandings of co-inhabitants, distribution of domestic work, the layers of stuff in the drawers and on the shelves, where the detector can be put away, the experiences with the work of the detector, the knowledge of fire accidents, the knowledge on physics and chemistry (cold and warm air circulation, the weight of gas)
prevention of grassfires	a consistent practice	the interruption of the practice	knowledge of the risks of grassfires, the tradition of grassfires and encouraging/warning examples, understandings and beliefs (e.g. grassfires destroy ticks, ash as a fertilizer, better grass growth), distance from the neighbours, proximity of trees and bushes, tradition of burning branches and leaf piles in the spring, possibilities and skills of composting biodegradable waste on site, availability and price of waste management services, size and visibility of the area from roads, drones and satellite pictures,

The activities and factors that are targeted in fire prevention	The present activity of the target group can be described as...	The desired outcome is...	What coordinates the practice, what helps to form a practice? SKILLS, THINGS, MEANINGS, INTERACTION
sweeping a chimney or ordering a sweeper (refrain from heating, staying at home, setting the stage, cleaning up after the sweep)	a consistent practice	creation of a new practice	<p>disapproval and intervention by the neighbours, regulations and fines, proximity of buildings, weather - wind direction and strength, precipitation, physical skills (making and heading a fire), earlier experiences with grassfires, knowledge of fire accidents and air pollution, the terms of insurance services</p> <p>the choice and condition of the heating system, chimney sweep training and previous experience with it (e.g. knowledge passed from generation to generation), the features of the chimneys and heating appliances, burning material, chimney sweeping tools (ladders, brushes, buckets), weather, circulation problems, knowledge that the chimney sweeper has to notify the FRS about the problems in the system, chimney sweeper's access to heating appliances and chimneys, chimney sweeper's working conditions (e.g. safe access to the roof), the price and waiting list of chimney sweeping services, the terms of insurance services and bank loans, distribution of housekeeping duties between family members, knowledge and skills to prepare for the chimney sweep's visit (covering of surfaces, cleaning, closing the holes, not heating), room temperature, activity of the apartment building's manager, regulations and fines when not swept, storage for ash</p>
buying a battery for the smoke detector	a subactivity of a consistent practice	modification of the practice (additional activities in shopping practice)	distribution of housekeeping duties between family members, shopping list, knowledge of battery parameters, lifetime of a battery, daily time schedule (time to shop), store supply, store environment, shopping routines, money, other items that need batteries, domestic battery reserves, storage places for batteries, ability to make a difference between empty and full batteries, battery installation skills
burning a candle (distance, quantity, surroundings)	a subactivity of a consistent practice	modification of the celebration practices (changing single activities)	the candles and candlesticks (shape and material), anniversaries' and collective celebration practices, matches and lighters, other (competing) activities of celebration or quality time (e.g. in Christmas Eve, romantic evening, commemoration of ancestors), room arrangements (tablecloths, curtains, flower arrangements), co-inhabitants and their activities, use of space (e.g. candles in one room, people in the other room), availability of extinguishers, traditions (e.g. on souls day the candles are burned on the window), draft, candle burning skills, smell of the candle, allergies, domestic animals, daily routine
setting off fireworks (distance, quantity, surroundings)	a subactivity of a consistent practice	modification (following of the safety standards), substitution (other entertainments instead) or interruption (prohibition) of the celebration practices	fireworks and their technologies, traditions of holydays and anniversaries, matches and lighters, related celebration activities (e.g. alcohol consumption, social games, uncomfortable clothing), space arrangement (roads, buildings, inflammable material, empty space, people's walkways and places of residence, windows and balconies), celebrators and their other activities, availability of fire extinguishers, weather conditions (cloudiness, rain, snow, wind, time of sunset), understanding of the fireworks instructions (including language skills), skills of setting off fireworks, body memory, domestic animals, activities of and intervention by neighbours, communication skills (e.g. supervising the people), skills of giving the first aid

The activities and factors that are targeted in fire prevention	The present activity of the target group can be described as...	The desired outcome is...	What coordinates the practice, what helps to form a practice? SKILLS, THINGS, MEANINGS, INTERACTION
purchasing and storing of extinguishers and other equipment	a subactivity of a consistent practice	modification of the practice (additional activities in shopping practice)	distribution of housekeeping routines between family members, communication routines, shopping lists and places, knowledge of the features and uses of the equipment, store supply and arrangement of the shelves, shopping routines, free money and the cost of the device, home storage facilities, equipment usage skills, knowledge about the location and status of the equipment, regulations that oblige to buy the equipment, fines
disconnecting electrical equipment during thunderstorms	a subactivity of a consistent practice	creation of a combined practice (additional activities in storm preparation practice)	other activities for preparing a storm - asking family members to come inside, closing doors and windows, taking pictures, parking a car in a safe place, fastening lightweight items, etc.), timespan before the storm, knowledge of the storm and its strength, the whereabouts of the responsible family member and the distribution of housekeeping activities between family members, body memory (which devices are where), room arrangement and the availability of the plugs, characteristics of the electrical system, activities in progress that presume the use of electrical appliances (e.g. watching a movie, using a computer, baking a cake), a time schedule and free time resources (can the use of electricity be postponed)
installing the smoke detector	a planned single act	creation of a new activity	the knowledge that the smoke detector is mandatory, relevant fines, acquisition of a detector, skills of mounting the detector, means to do it (a drill, screws, etc.), a ladder or a chair or a table, climbing skills, knowledge of a suitable location for the detector, mounting instructions reading skills and habits, design of the detector, room arrangement that affects the instalment location, the opinions of the family members
defrosting frozen pipes with a blowtorch	a single act	the interruption of an activity or a practice, also substitution (safe instruments for warming up the pipes)	inevitability (to get warm, to use water) and haste, tools for warming pipes (including safer alternatives), pipe heating skills, knowledge of fire safety and risks related to the equipment, features of the frozen pipes and surrounding materials (e.g. flammability), family members' opinions and distribution of housekeeping duties, financial means and investment plans (whether it is possible to insulate or rebuild the pipeline), air temperature, activity (or lack of) of responsible persons in the building association, availability, waiting list and price of technical assistance

Source: authors' compilation

Agency groups

We used a cluster analysis to create and measure the agency groups in different countries. As expected, in Denmark and Finland the groups with higher agency are bigger and the differences between the groups are not that big as in the Eastern countries (the shares are presented in figure 4, the average index values of the clusters in figure 8 in the appendix). However, in case of Finland there seem to be some sample problems, as the share of diversely active people is very big (and only 400 persons were questioned). In graph 4 the agency groups are listed by countries from the least active (more passive and resistant to change) to the most active (omnipotent groups who willingly go along with the change), the darker the colour, the more active the group is. The patterns of the groups are not the same, but very similar. In Finland, Denmark and also in Estonia the shares of the activist groups are bigger. In Finland and in Denmark the least involved group is still involved in social practices by media. So, it is easier for these countries to catch the attention of the citizens as FRS departments have well-developed relations to media. However, higher agency is not directly related to social change. The potential for change is bigger in the countries where the social-economic conditions are improving, and the density of practice networks is still rather low. In well-developed countries where the network of practices is very dense, it is easier to spread information through the social networks (the groups are not that detached), but more difficult to provoke new changes as the time and space resources for additional activities is already used.

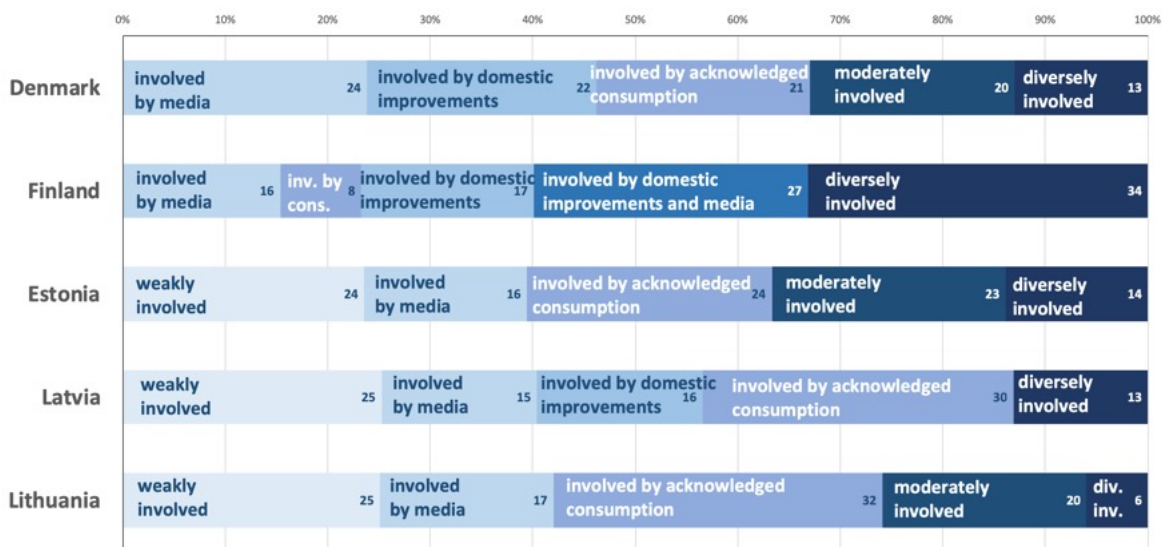


FIGURE 4. The agency groups by countries

Source: authors' compilation

Next, we look at the effectiveness of fire safety politics of the countries (especially the reach of the groups that rather resist the change).

The results of the fire safety politics

In figure 5 the results of the fire safety index are presented by countries. The brown colour represents smoking, the blue stacks positive practices, the yellow ones knowledge and the green ones the possessions that help to reduce the risk of fire. It shows that different indicators of fire prevention have a positive and linear correlation (if one indicator has a bigger value, then the other has as well) except for the knowledge-

3 indicator (knowledge of the emergency number) that has a very similar value in every country. The highest results of the index are in Finland and Estonia, also Denmark. In Latvia the score is the lowest.

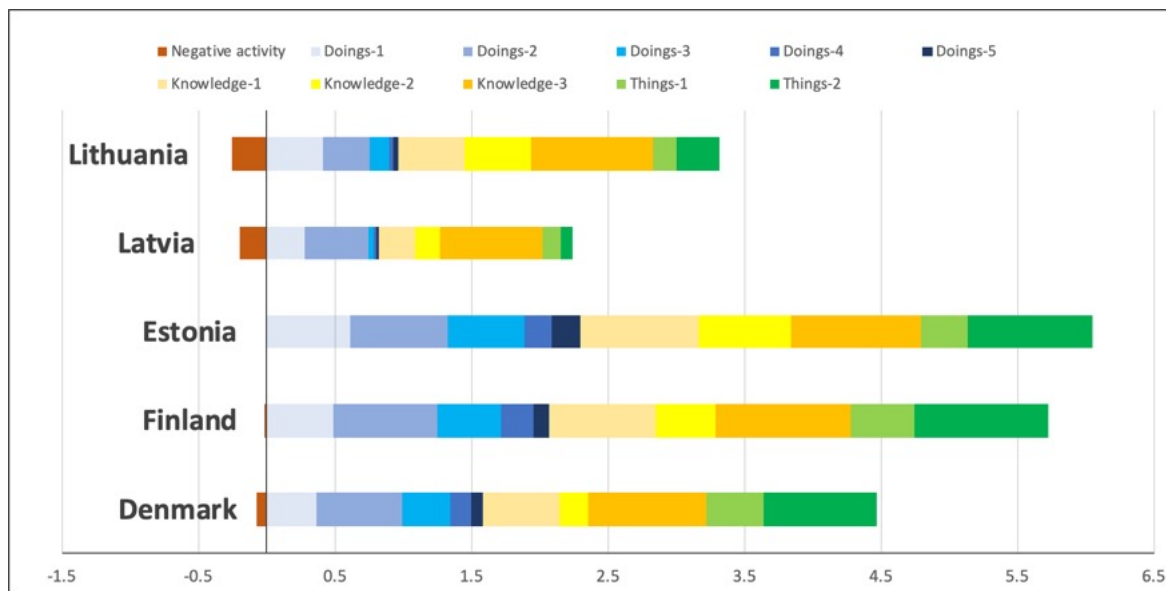


FIGURE 5. Index value of fire safety by countries: doings, practical skills and things

Source: authors' compilation

The same index was shortened to a five-point scale (from *very low* to *very high*). In figure 6 the shares of the respondents are presented according to their fire safety index value.

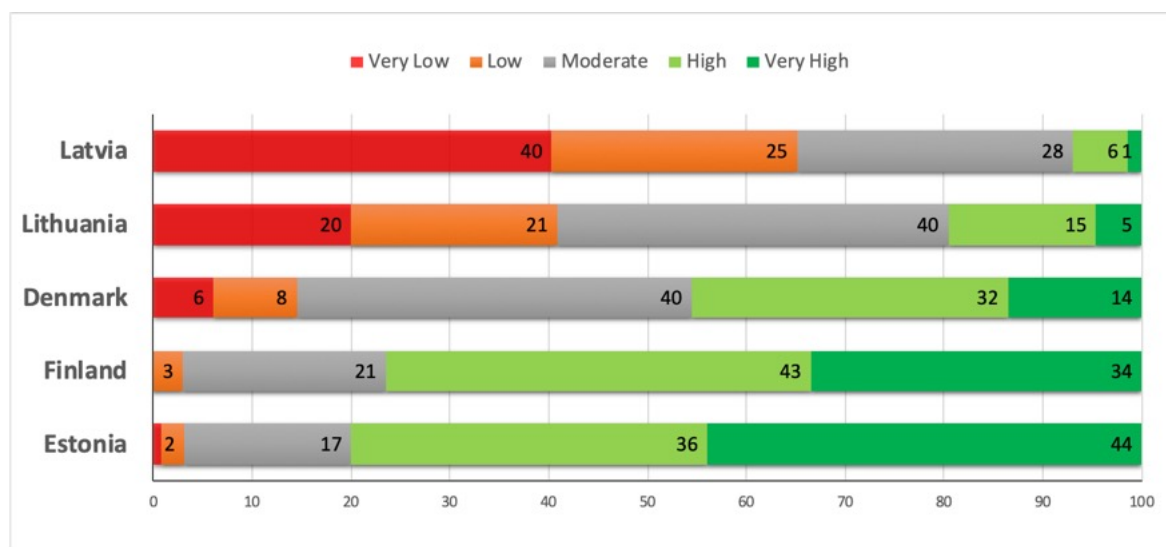


FIGURE 6. The shares of the sample according to the fire safety index

Source: authors' compilation

It is natural that the length of the preventive work and the levels of socio-economic development of the countries are different. However, it would be interesting to know, whether the policy toolkit is able to reach the social groups that are not that apt to change. In figure 7 the results of the index value are shown by countries and by agency groups.

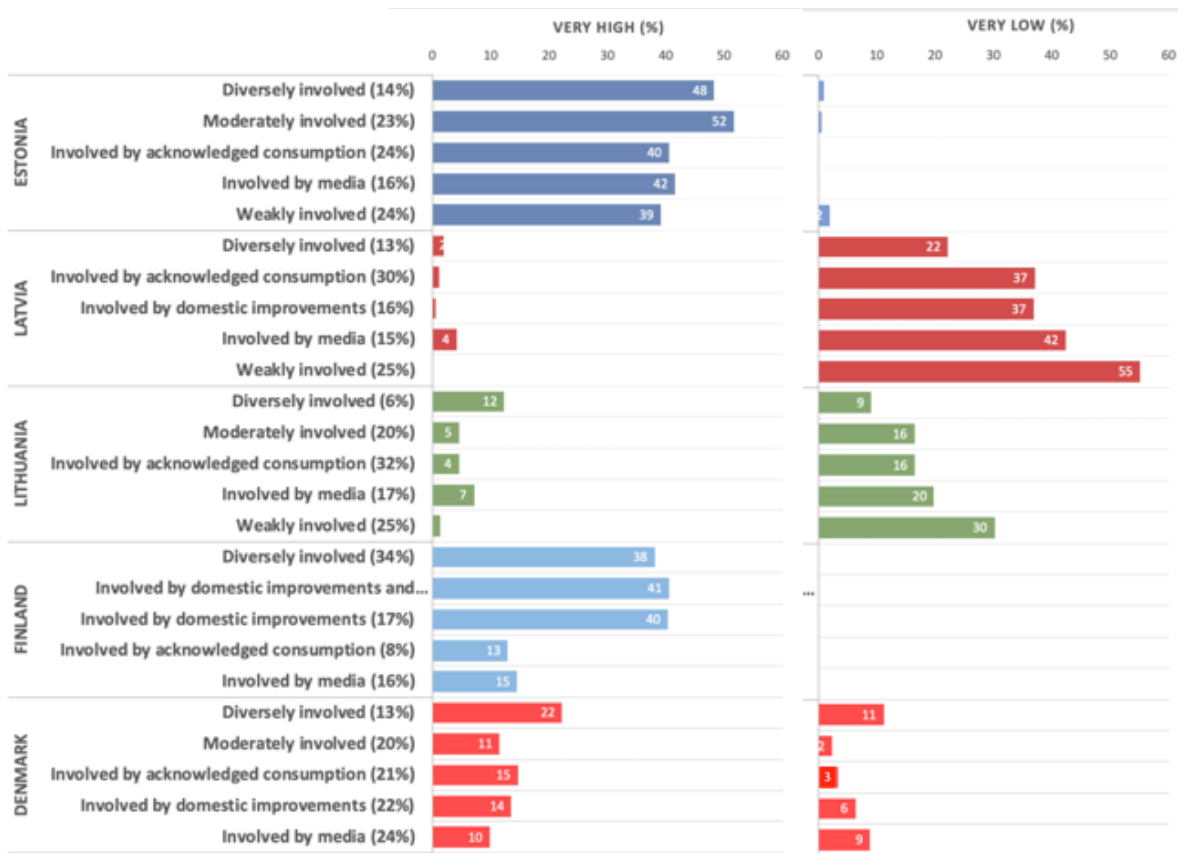


FIGURE 7. The highest and the lowest values of the fire safety index by countries and agency groups
Source: authors' compilation

In figure 7 the differences between agency groups (the upper groups of the country are more able to change, the lower ones less) are relatively big in Finland, although the index values of fire safety are high in all groups. Compared to Denmark and Estonia the fire safety toolbox of Finland has provided good results especially among the active groups. In Estonia and in Denmark the outcomes of the fire safety politics are more egalitarian. In Latvia and Lithuania, the index values of fire safety are much lower, however, it seems that in Lithuania the results are more egalitarian and in Latvia more elitist – the differences between the agency groups are bigger in Latvia.

The associations between the agency clusters and index value of the fire safety are statistically trustworthy in every country (Cramer’s V – the highest value of the measure is 1, the lowest is 0). The more egalitarian the fire safety toolbox is, the smaller or less trustworthy should the numerical indicators be (see table 4). In Denmark and in Estonia the results are rather egalitarian. In Denmark the socio-demographic indicators are practically not related to the agency clusters. It means that the society’s stratification level is rather low – the opportunities and abilities are very similar for different people. In Finland and especially in Estonia the stratification along the agency groups is more apparent. For some reason, in Latvia and Lithuania the agency is associated mainly with education, other socio-demographic indicators are not particularly related to the agency clusters. The reason for it may lay in the fact that the original tool for the measurement of agency consisted of 43 questions (in case of sited article Kiisel *et al.* 2018 several

hundreds). In this survey only six questions were asked (more variations in the answers) and the questions were not previously tested.

Table 4. Associations between socio-demographic factors and the agency groups by countries (Cramer V)

INDICATORS	DENMARK	FINLAND	ESTONIA	LATVIA	LITHUANIA
Index score of fire safety	0,1278*	0,1683**	0,0690*	0,1314***	0,1215***
Type of place of living ¹³	-	0,1649**	0,0760**	0,1152***	0,0676*
Gender	-	-	0,1193***	-	-
Age	-	0,1795**	0,1299***	0,0836*	-
Nationality ¹⁴			0,1293***	0,1132*	
Primary language ¹⁵			0,0887**	-	-
Number of family members	0,1259*	0,1482**	-	-	-
Type of dwelling ¹⁶	-	0,2435***	0,0823**	0,0937*	0,0706*
Employment status ¹⁷	-	0,1447*	-	-	-
Education level ¹⁸	-	0,1423*	0,1427***	0,1194***	0,1028***
Income	-	0,1599**	0,1116***	0,0982**	-

$p \leq 0,05 = *$, $p \leq 0,005 = **$, $p = 0,000 = ***$

Source: authors' compilation

The pilot analysis of this report needs further development. **Firstly**, the analysis of the toolkits of the countries can be elaborated. Many tools that were not paid attention to in country reports deserve an additional in-depth inquiry. **Secondly**, the index of fire safety measures first of all the existence of technical appliances at home (such as extinguisher, smoke detector) and relevant skills. However, there are many other practices and factors that shape fire safety (see e.g. table 3). The present approach is rather one-sided. **Thirdly**, the nature of fire safety and related collective practices and factors may deserve additional research (see the sketch in table 3).

¹³ city, suburb, small town, rural area

¹⁴ native, non-native

¹⁵ native, non-native

¹⁶ single family house, semi-detached apartment block with less than 8 apartments, apartment block with more than 8 apartments

¹⁷ 'occupied' (self-employed, wage worker), 'retirees', 'others' (home with children, unemployed, at home, student, other)

¹⁸ elementary education, basic education, high school or vocational education, higher education

THE CONCLUSION

1 People's activities in fire safety depend on the duration and scope of the preventive work...

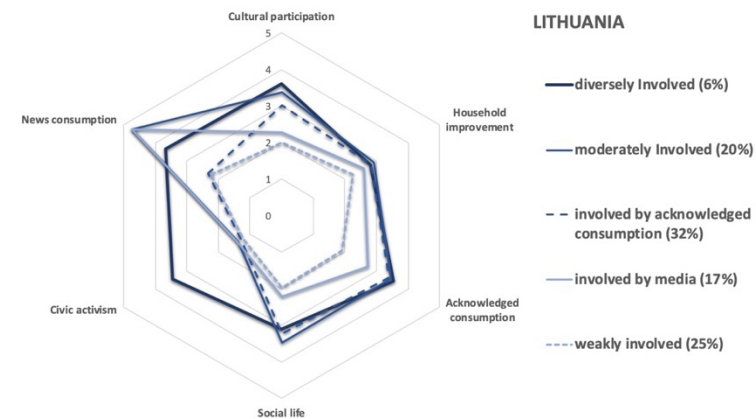
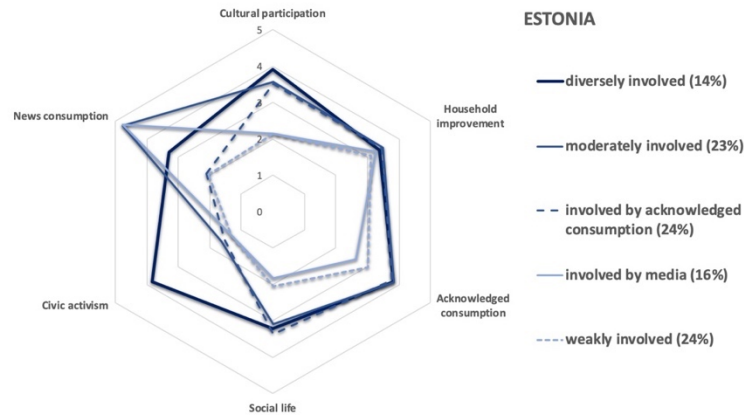
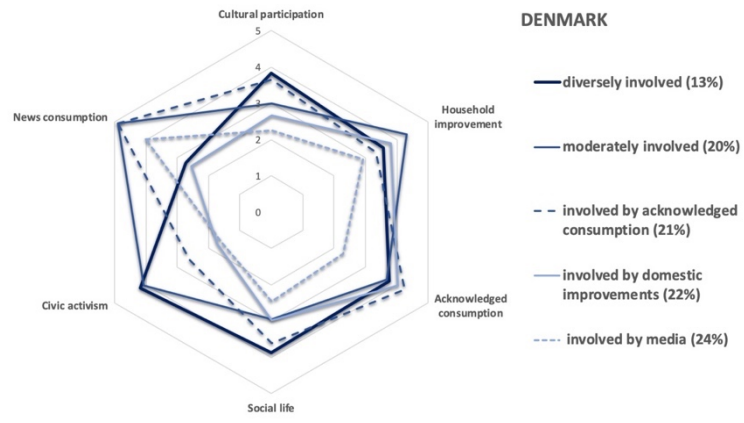
2 ...but also, of the selection of the tools in the fire safety toolkit. More structural tools can be put to use.

3 The fire prevention activities in Denmark are the most integrally linked to ordinary community life.

4 The best results in fire safety activities are in Finland. However, the toolkit is less effective in reaching less active groups.

5 No universal tools exist. To improve fire prevention, each desired activity should be approached separately.

6 To create new fire prevention activities, the development of supporting practice networks is important.



THE APPENDIX

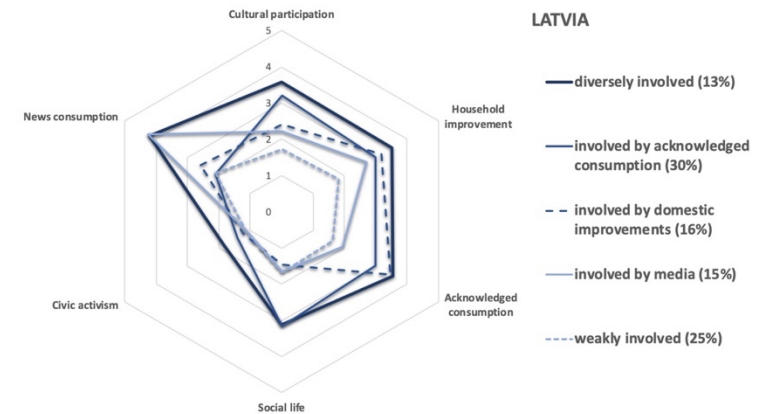
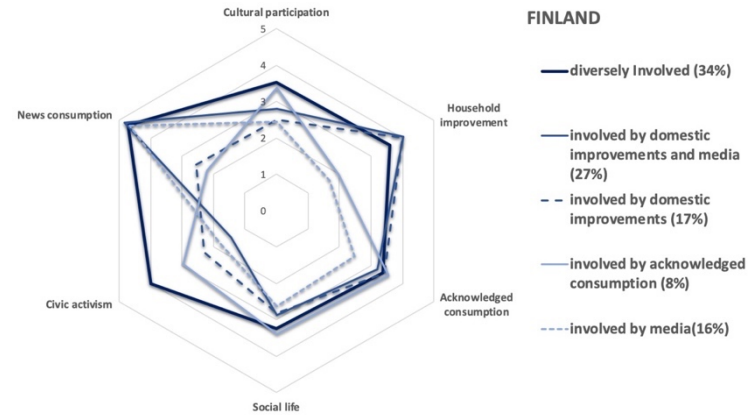


FIGURE 8. The agency groups by countries

Source: authors' compilation