

## 1<sup>ST</sup> PROGRESS REPORT

### TASK 1: TERMINOLOGY AND DATA COLLECTION METHODOLOGY

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EU FireStat - Closing data gaps and paving the way for pan-European Fire Safety Efforts

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**LIST OF ABBREVIATIONS**

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BAM	Bundesanstalt für Materialforschung und –prüfung
CFS-CTIF	Centre for Fire Statistics of CTIF
DBI	Danish Institute of Fire and Security Technology
EC	European Commission
EU	European Union
EuroFSA	European Fire Safety Alliance
LU	Lund University
MS	Member State
NFPA	National Fire Protection Association
PT	Project Team
UoE	The University of Edinburgh
VFDB	Vereinigung zur Förderung des Deutschen Brandschutzes

## **EXECUTIVE SUMMARY**

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Task 1 of the EU FireStat project is focused on understanding the terminology and data collection methodology used by the 27 EU Member States and 8 Other European and Non-European countries (Australia, Canada, New Zealand, Norway, Russia, Switzerland, UK and USA); a total of 35 countries were examined. The 8 Other European and Non-European countries have been chosen based on their structured and detailed fire statistics.

The aims of Task 1 are mainly focused on increasing the awareness of the data fields collected in the various countries fire statistics and understanding the definitions provided for the terminologies adopted in those statistics. It is important to evaluate the variables collected related to the pre- and post-fire conditions of fire incidents that affect buildings.

In Task 1 summary tables were created for each country examined and these tables focused on major areas of investigation, such as: fire incident, building description, fire causes, fire consequences, fatalities, casualties, fire safety measures, fire response, fire costs, and fire prevention. The differences that may appear in the fields recorded in the summary tables of the countries investigated are due to the differences in the fire statistics and collection methodologies available in each of them. The summary tables are subdivided into two parts: Part 1 relates to the definitions adopted in the fire statistics and Part 2 relates to the data collection methodology and available fields recorded in the fire statistics. One aspect to consider is that not all the fire statistics of the countries examined were structured in a way that enabled the completion of Part 1 and Part 2 and thus there is a difference in the number of countries investigated for the definitions and fields recorded in the fire statistics.

Abstracts of the summary tables are described in Section 2 for 24 EU and 8 Other European and Non-European countries, and a general description of the current practice of fire statistics in each country is provided. This description highlights the responsible authorities and challenges faced by the consortium groups in gathering the information. In addition, it gives a short description of Parts 1 and 2 of the summary table and examines key aspects and limitations encountered in the process.

Part 1 is focused on the definitions and the related tables for 15 EU and 8 Other European and Non-European countries are available in Appendix I and Appendix II, respectively. The references for each fire statistics have been specified in the tables provided in Appendix I and Appendix II where each definition is related to the specific recording system with the appropriate links, where possible. In Section 3, the evaluation of the analogies and differences in the definitions provided in the fire statistics has been developed considering the major areas of investigation and comparing the terminologies used with those provided by ISO/TS 17755-2:2020(E). The fields recorded in the fire statistics for 21 EU and 8 Other European and Non-European countries are investigated in Part 2 of the summary table, which is considering the major areas of investigation, as discussed in Section 4.

It is suggested to link the considerations presented in the abstract of Section 2 with the definitions provided in Section 3 and the fields covered by the various fire statistics in Section 4.

Overall, the research developed in Task 1 will contribute to subsequent tasks in the EU FireStat project as well as towards a better understanding of current practices, thus identifying optimization measures and providing insights towards harmonised fire statistics.

## 1. INTRODUCTION

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### 1.1. TASK 1 PROJECT OVERVIEW

The data collected in the aftermath of real fire incidents in various building types can vary significantly according to the country considered, who collects the data, the specific data fields recorded, how each field is defined, and the collection methodology adopted. In Europe, a single unique fire statistics terminology and methodology system is not yet available and each Member State has its own recording system, fire statistics fields, and data elaboration. Moreover, within a country, several databases of fire statistics, not always publicly available, could be present and managed by various organizations.

Data are usually collected by the fire brigades attending the fire scene in the aftermath of an event and inserted into an online database. However, in some circumstances, data collection is voluntary and/or uses a paper-based collection system, and fire incident information could also be provided by police, private and state fire investigators, fire engineers and insurance companies. Even though similar terminology and factors of the fire statistics may be encountered in various recording systems, their meanings and definitions can vary also based on the relevance that these fields assume in the various fire statistics. Such inconsistencies often lead to challenges and have the potential for errors particularly when the data are compared between countries.

Based on the above, the aim of Task 1 of the EU FireStat project is to increase the awareness of the fire statistics available, deeply investigate the semantic differences used in the fire safety fields and the recording approaches for the information gathered. Task 1 is focused on the terminologies and data collection methodologies of the **27 EU Member States** and **8 Other European and Non-European countries** (Australia, Canada, New Zealand, Norway, Russia, Switzerland, UK and USA) for a total of 35 countries examined. The two objectives of Task 1 mainly cover the:

1. Terminology
  - to create a complete inventory of the terminology adopted regarding pre and post-fire incident conditions in various building types.
2. Data collection methodology
  - to create an overview of which fire data are collected;
  - to create an overview of when they are collected;
  - to record who collects the information; and
  - to establish the quality assurance process adopted.

Task 1 started on 22<sup>nd</sup> September 2020 and ended on 22<sup>nd</sup> February 2021. The following report presents the progress developed, main findings and specific conclusions obtained from the research.

In Task 1, the research is focused on the analysis of the definitions and fields recorded in the fire statistics of EU, Other European and Non-European countries. For each of them, in the abstracts provided, it is specified who collects the fire statistics, the recording system adopted, and the origin of the information gathered. Instead of providing a unique list of reference at the end of the report, the references have been specifically addressed for each country investigated in the tables provided in Appendix I and Appendix II where each definition is related to the specific recording system. Moreover, in the references, where available, links to this information have been provided. Furthermore, analysing the forms in and by themselves is somewhat beyond the scope of this task, particularly given the large number of languages involved.

Our project has the goal to provide a clear understanding of the fire statistics related to buildings subjected to fire incidents and does not include the evaluation of “near misses” which are usually not collected in the recording systems examined. For instance, in Scandinavia, reports can be created for fire spread in criminal cases, to judge how dangerous it could have been for human beings/property, if accidental circumstances had not prevented fire spread. These evaluations represent a useful field of investigation to identify physical and societal hazards and support the creation of preventive measures. The collection of “near misses” implies, in some cases, a detailed and challenging assessment able to determine benefits for user input. However, such reporting could also result in uncertainty in the data. Furthermore, it would also require a new system able to describe such investigation and could lead to a much higher need for resources to check the correctness and treat the data once a reporting system is in place.

The outputs generated in Task 1 intend to inform the European Commission and Parliament, National and Local authorities, regulators, policymakers, Fire and Rescue Services, International Fire Safety Community and the General Public. Furthermore, the analyses will hopefully contribute to a thorough evaluation of current practices, including identification of missing fields that are relevant to fire safety.

## 1.2. METHODOLOGY

The methodology of Task 1 is based on the collection of fire statistics through publicly available information and by contacting the responsible organizations in Europe and the other international countries. Direct contacts in each of the countries investigated have been established and considered at the base of the outputs generated. Elaborations are determined through an analysis of the summary tables.

In detail, Task 1 is subdivided into 5 subtasks:

1. Creation of summary tables.
2. Terminology and data collection in EU, Other European and Non-European countries.
3. Contact with countries where fire statistics are not publicly available.
4. Contact respondents for follow-up questions.
5. Elaboration of the information.

The goal is the creation of **summary tables** for the **27 EU Member States** and **8 Other European and Non-European countries** to evaluate analogies and differences and increase the understandings of fire statistics. The summary table has been created considering and improving the information presented in Task 0 and is considered as a guide to follow where the differences that may appear in the structure of the countries examined are due to the differences in the fire statistics and collection methodology available in each of them. The summary table is adapted to the information gathered and is always structured in two parts: Part 1 definitions adopted and Part 2 data collection methodologies and available fields recorded in the fire statistics.

**Table 1: Fields covered in the major areas of investigations**

<b>FIRE INCIDENT</b>	Accidental fire Deliberate fire False alarm
<b>BUILDING DESCRIPTION</b>	Building fire Residential buildings Non-residential buildings
<b>FIRE CAUSES</b>	Fire causes Source of ignition Area of fire origin
<b>FIRE CONSEQUENCES</b>	Fire spread Fire horizontal spread Fire vertical spread Damage Fire Flame Smoke Water Total
<b>FATALITIES</b>	Victims Type of fatality
<b>CASUALTIES</b>	Injured people Type of injury
<b>FIRE SAFETY MEASURES</b>	Alarm Type of alarms Automatic extinguishing systems Type of automatic extinguishing systems Compartmentation Fire barriers Safe areas Smoke extractors Fire brigades on site Escape routes Evacuation
<b>FIRE RESPONSE</b>	Fire service time of response Occupant fire response
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs Indirect financial costs
<b>FIRE PREVENTION</b>	Fire regulations and prevention

Along with language barriers, confidentiality policies, private databases and lack of responses represent the most challenging aspects encountered while developing Task 1. The aforementioned risks have been overcome by establishing direct contact with the relevant authorities for the fire statistics of the countries, and by asking for their kind contribution to our project. The countries covered have been assigned to the consortium groups based on their location and existing interaction with relevant countries. It is really important to acknowledge the precious collaboration and cooperation of the relevant authorities and fire brigades who kindly provided the information necessary to fill in the summary tables and allow the comparisons between countries.

The aspects of the fire statistics examined in each summary tables developed in Task 1 cover pre- and post-fire conditions of fire incidents in buildings, and they have been classified according to 10 major areas of investigation: fire incident, building description, fire causes, fire consequences, fatalities, casualties, fire safety measures, fire response, fire costs, and fire prevention. As shown in Table 1, many of the 10 major areas of investigation have various subcategories and the relevant authorities have been asked to indicate the fields covered in their fire statistics. Considering the major areas of investigation, the summary tables could partially bias the information received from the various countries. However, defining generic groups was necessary to have a method of comparison.

From the analysis developed, it appears difficult to evaluate the mandatory and optional fields collected by the various fire statistics. Within a specific country, fire statistics could be a voluntary system, differently managed at a local level or, considering a unique recording system (e.g., UK), only a number of fields are mandatory while others could be filled in only if specific fire conditions appear. In the description provided by the abstracts, such differences have been highlighted to provide a clear overview of current practice in various countries.

The consortium has created summary tables for a total of 35 countries. Unfortunately, no information has been received for Luxembourg, Malta and Portugal, and limited information for Lithuania and Spain. Therefore, the fire statistics of 24 EU countries and 8 Other European and Non-European countries have been investigated, thus 32 countries covered (Table 2).

For all the summary tables developed in Task 1, a short abstract is provided in Section 2. The information collected has been summarised in Section 2 for EU, Other European and Non-European countries, based on the relevant information and the methodology adopted to provide descriptions about:

- who collects the fire statistics;
- if fire statistics are national or local;
- the number of datasets available;
- if definitions for each field of the fire statistics are provided, given by classification or not available; and
- the various fields recorded in the fire statistics.

Part 1 of the summary tables related to the definitions is provided in Appendix I for the EU and Appendix II for the Other European and Non-European countries. Where no definition is available and the specific fields are included in dropdown menu, this is clearly stated. The possible responses in Appendix I and Appendix II have to be considered as follows:

- "a": fields available,
- "b": definitions not available, and
- "c": fields not clear to the relevant authority of the fire statistics.

A deep analysis of the definitions determining analogies and differences is described in Section 3 with a comparison with the terminology provided by the ISO/TS 17755-2:2020(E) (named ISO TS 17755-2 in this document). A semantic evaluation of the definitions is fundamental to understand what is covered by each term and allows correct comparisons amongst variables. Unfortunately, not all the countries considered in Task 1 have an available glossary or list of definitions for the fire statistics. Therefore, the analysis is focused on the definitions available for fire incidents, fatalities and casualties, damage, safety measures, response time and the financial costs of fire for 23 countries (15 EU and 8 Other European countries).

Part 2 of the summary table, focused on the fields recorded in the various fire statistics, is summarized in Section 4 based on the major areas of investigation highlighted in Table 1 for a total of 29 countries (21 EU and 8 Other European and Non-European countries).

**Table 2: Summary tables completed for the EU, Other European and Non-EU countries specifying where definitions and fields recorded in the statistics are available.**

EU-27	DEFINITIONS	STATISTICS FIELD	STATUS	COMMENT
Austria	YES	YES	Completed	
Belgium	NO	YES	Completed	
Bulgaria	NO	YES	Completed	
Croatia	NO	YES	Completed	
Cyprus	NO	YES	Completed	
Czech Republic	YES	YES	Completed	Part 1 - definitions given by law and government but not specified
Denmark	YES	YES	Completed	
Estonia	YES	YES	Completed	
Finland	YES	YES	Completed	
France	YES	YES	Completed	
Germany	YES	YES	Completed	
Greece	NO	NO	Completed	
Hungary	YES	YES	Completed	
Ireland	YES	YES	Completed	
Italy	YES	YES	Completed	
Latvia	NO	YES	Completed	
Lithuania	NO	NO	Limited information	
Luxembourg	NO	NO	No information received	
Malta	NO	NO	No information received	
Netherlands	YES	YES	Completed	
Poland	NO	YES	Completed	
Portugal	NO	NO	No information received	
Romania	YES	YES	Completed	
Slovakia	YES	YES	Completed	
Slovenia	YES	YES	Completed	
Spain	NO	NO	Limited information	
Sweden	YES	YES	Completed	
OTHER EUROPEAN AND NON-EUROPEAN COUNTRIES	DEFINITIONS	STATISTICS	STATUS	COMMENT
Australia	YES	YES	Completed	
Norway	YES	YES	Completed	
Canada	YES	YES	Completed	
USA	YES	YES	Completed	
New Zealand	YES	YES	Completed	
UK - England				
UK - Scotland	YES	YES	Completed	
UK - Wales				
UK – Northern Ireland	NO	NO		
Russia	YES	YES	Completed	
Switzerland	YES	YES	Completed	

The outputs of Task 1 of the EU FireStat project will be considered as inputs in Task 2, where data needed for decision making are evaluated, Task 3, focused on data collection methodologies, Task 4 where a unified terminology will be proposed. Finally, the results generated by Task 1 will increase awareness of the fire statistics collected in the countries examined. The research developed will highlight not only the differences and similarities of the terms, data recorded and methodology adopted in the fire statistics of various countries, but also the missing aspects necessary for the prevention of fire frequency and limitation of fire consequences that could be improved in short- and long-term. The outputs of Task 1 have to be considered as an extended map of fire statistics applied worldwide able to support future horizons of research and introduce a holistic approach based on the collaborations and cooperation amongst various nations in Europe and internationally.

## 2. ABSTRACT SUMMARY TABLES

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Abstracts of the summary tables completed for 24 EU (Luxembourg, Malta and Portugal are not described) and 8 Other European and Non-European countries are presented in the following sections to provide an overview of the information gathered in Part 1 related to the definitions and Part 2 related to the fire safety fields recorded. In the abstracts, the fire statistics of each country is described considering the national or local recording system, the authorities responsible for the data collection and management with a description of the recording system and the datasets available. Challenges faced by the consortium groups for the collection of the relevant information, if any, are also introduced. A short description of Parts 1 and 2 of the summary table related to definitions and fields of the fire statistics available are present and key aspects and limitations encountered are examined. The information provided in the abstract of each country needs to be related to the available definitions provided in the tables of Appendix I and Appendix II.

### 2.1. EU COUNTRIES

#### 2.1.1. Austria

##### Fire statistics description

##### 1. On a national level:

In general, the Austrian Fire Prevention Associations collect data from the police stations and insurers for each federal state (excepting Vienna) and publish them yearly. Several fire statistics are gathered by the Upper Austrian Fire Prevention Association for creating and publishing an Austrian Fire Statistic, which is also published once a year. These statistics provide data in a superficial way only (number and loss by ignition source and federal state, number and loss by risk group and federal state, trend of lethal fire injuries, long-term statistic over 10 years).

Data Management-System in Fire Investigation:

In the years 2014 to 2017 a group of experts in fire investigation created a database-system to collect fire data in a structured way (Datenmanagement in der Brandursachenermittlung – DMBUE). Six of nine Austrian federal states participate in this data management-system up to now.

Since 2017, the participating Austrian Fire Prevention Associations collect information about fires including information of police stations and fire investigations conducted by the fire prevention associations.

##### 2. On a local level:

SIZ (Sicherheitsinformationszentrum)

<http://www.siz.cc/bund/sicherheit/show/231>

BVS - Brandverhütungsstelle für Oberösterreich

Property loss: <https://www.bvs-ooe.at/services-und-leistungen/brandschadenstatistiken/>

Landesstelle Steiermark, <http://www.bv-stmk.at/index.php/statistik>

Fires, property losses, fatalities and injuries (uploaded documents)

##### Collection of the information

Several different entities who collect fire data. Some of them are focused on property losses and fire causes, others seem to collect data about fatalities and injuries as well.

No national system but various local systems seem to be in place.

The DMBUE is a web-based tool to collect information about fire incidents. Primarily, the surveyors of the Austrian Fire Prevention Associations, that conduct fire investigation, feed data into the system. System-members connect to [www.brandursache.or.at](http://www.brandursache.or.at)

The gathered data are available typically to create statistics or requests.

##### Summary table – Part 1: Definitions

In the reporting systems, various fields are recorded such as fire incident date, time and location, building description, fire cause, fire loss, damage to person, alarm and several others.

##### Summary table – Part 2: Fields recorded in the fire statistics

Fire incident, building description, fire causes, fire losses, fatalities and casualties

##### Further comments

- Very fractured collection system as several institutions are collecting with different methods and terms.
- Limitations regarding the link between the different collections of data.
- Fatalities due to smoke inhalation, smoke is hazardous for inhabitants and firefighters (smoke layer ignition, backdraft etc.) (Brandschutzforum Austria- Heisse Zahlen).

- High property loss in a few numbers of industrial fires, these are not the fires with the most fatalities.
- Property loss is increasing over recent years.

### 2.1.2. Belgium

#### **Fire statistics description**

The fire statistics cover the entire country of Belgium and it is unknown the recorded number of fire incidents per year. The intervention report which represents the only form of data collection known to the consortium partner, does not cover many fields in the summary table. The intervention report is filled in by the first responders that were at the scene of the incident and the report is not solely used for fire incidents. It focusses on the interventions made by the fire brigades. Almost all fields of the intervention report consist of a dropdown menu.

#### **Collection of the information**

The summary table has been completed by the Dutch Fire Service Academy. An example of an intervention report was provided by the Belgium Ministry of Internal Affairs. There was a delay in the response and very limited information is available.

#### **Summary table – Part 1: Definitions**

In the intervention report, no definitions are described.

#### **Summary table – Part 2: Fields recorded in the fire statistics**

Remarkably, not much information is being collected about fatalities. Only the number of victims, their age (estimation) with a distinction is made between occupants and firefighters. No information on the causes is being collected and this makes Belgium one of the few countries that does not collect data on fire causes. Most data collection occur in the field of building description and the fire incident. Since an intervention report was received, many fields that are collected in that report are related to intervention of the fire brigade and does not only relate to fire incidents. Moreover, the field of fire response is covered by the intervention report. The presence of (automatic) smoke alarms is collected, but not the presence of (automatic) extinguishing systems, nor the presence of other fire safety measures.

### 2.1.3. Bulgaria

#### **Fire statistics description**

The fire statistics in Bulgaria is managed by Fire Safety and Civil Protection Chief Directorate, Ministry of Interior. The data is usually collected by the fire brigades in the aftermath of an event. The dimension of the dataset (number of incidents recorded per year) is 42,141 fire records in 2019. Therefore, one fire statistics dataset is available.

#### **Collection of the information**

No public access to the database. Inquiries through the responsible ministry are possible.

#### **Summary table – Part 1: Definitions**

In Bulgaria, the sources of fire statistics seem to have no link to definitions.

#### **Summary table – Part 2: Fields recorded in the fire statistics**

A written description of the national database is not available for the public. It is an internal document of the related ministry. The annual reports contain the following chapters and describe all the activities of fire services in Bulgaria: number of accidents and exits of fire and rescue equipment; fires with material losses distributed by reasons of occurrence; fires with material losses, broken down by industry; statistics on fire deaths and injuries; information on the performed activity; information on the performed activity in the field of preventive control; and training and preparation.

#### **Further comments**

A unique fire statistics dataset is present. No evaluation of the economic impact of fire is available.

#### 2.1.4. Croatia

##### **Fire statistics description**

The basis for the data collection on fires by the Croatian Fire Brigade Association was data collected by the Ministry of Interior and others compiled through analysis on about 50 data collection systems currently in existence in Croatia.

##### **Collection of the information**

The summary table has been completed based on the reports prepared by the Croatian Fire Brigade Association.

##### **Summary table – Part 1: Definitions**

Data collected in Croatia are number of fires by size by Croatian Firefighting Association, number of victims (deaths, injured, rescued persons, missing persons) by Ministry of the Interior, fire causes by Ministry of Interior, fires by fire objects (buildings types, sectors of industry, etc.) by Croatian Firefighting Association, and fire damage by Ministry of Interior. A unique database with nationwide definitions is not present.

##### **Summary table – Part 2: Fields recorded in the fire statistics**

There is no regular document with a description of fire recording rules available.

##### **Further comments**

A national fire statistics is not present.

No evaluation of the economic impact of fire is available.

The purpose of national fire statistics is: reducing the number of fires, reduction in the number of fire victims, reducing fire damage, elimination of the main causes of fire, increasing fire safety in the most important fire objects, reducing the environmental damage caused by fires, creation of stable fire-resistant infrastructure, increasing fire safety for children and the elderly, incident preparation, incident management, post analysing, financing of fire-fighting units, public relations.

#### 2.1.5. Cyprus

##### **Fire statistics description**

Data is collected by each fire station and then centralised in the headquarters of Cyprus fire service.

##### **Collection of the information**

All data are collected at the time of the incident by the Fire Operations Control Center.

##### **Summary table – Part 1: Definitions**

There is no information at present about definitions.

##### **Summary table – Part 2: Fields recorded in the fire statistics**

The statistics are calculated daily and cover the total number of fires, special services, and false calls, ambulances - by province, by the station and nationwide. They also contain the damage in euros if any, the number of injured, the number of dead, the total comparison with the previous year (increase or decrease in number). Fires are divided into urban and rural. The burned area in hectares is also calculated.

#### 2.1.6. Czech Republic

##### **Fire statistics description**

The Czech Republic collects the fire statistics according to the ISO 17755-1/2. Each region is responsible for collecting the fire statistics and the republic data are concentrated in Ministry of the Interior- Directorate General of the Fire Rescue Service of the Czech Republic

##### **Collection of the information**

The name of the national Fire Statistics Database is “Statistical monitoring of emergencies” (Statistické sledování událostí). In this programme, not only fire statistics are recorded but also all details of all emergencies in which the fire units intervened. This database is not public. The statistics can be found in the Statistical Yearbooks.

### **Summary table – Part 1: Definitions**

In the national database, detailed definitions are provided for almost all of the major areas of investigations with specific fields recorded. Evaluation of direct or indirect costs of fire is present.

### **Summary table – Part 2: Fields recorded in the fire statistics**

The typical contents of the statistical fire statistics yearbook are the following: individual types of events with fire service interventions, evacuated and rescued persons, number of interventions in natural disasters, summary information on events in the regions, interventions (including multiple) for individual types of events according to the type of intervention, basic information about intervention, death and injury of firefighters during interventions, events with the intervention of the chemical laboratory of the Fire and Rescue Service of the Czech Republic and aeronautics of other services, events involving military fire brigades, events in the territory under the administration of municipalities with extended powers, negative effects of interventions, events with fire service interventions by time of day, fires with damage of CZK 10 million and more, events in the 3<sup>rd</sup> and special alarm level, number of persons killed in fires, number of persons injured in fires, number of rescued persons, number of persons killed in traffic accidents, number of evacuees, and extraordinary events in the 3<sup>rd</sup>, and special alarm level.

### **Further comments**

A national fire statistics is present. Fire statistics is very detailed with clear definitions and the fields available cover the major areas of investigations. The Fire Rescue Service is responsible for collecting fire data, some information is collected also by insurance companies and Police of the Czech Republic. The Czech Republic collects all relevant data which are necessary for analysing the emergencies.

#### 2.1.7. Denmark

### **Fire statistics description**

The fire statistics in Denmark is national statistics. The data is usually collected by the fire brigades in the aftermath of an event in the ODIN database (online dataregistrering og indberetning). The inputs to the fire statistics are managed by the public body Beredskabsstyrelsen (DEMA). Other bodies, such as police, health authorities and insurances are also gathering data, which are not public.

### **Collection of the information**

The summary table has been completed based on DEMA, which is publicly available, and ODIN, which is not publicly available. However, the fire statistics of Denmark are published annually with a limited number of fields recorded.

### **Summary table – Part 1: Definitions**

DEMA provides some definitions for almost all of the 10 major areas of investigations with specific fields recorded. In particular, there is no definition for accidental and deliberate fires, but there are definitions for false alarms. Fatalities, fire safety measures, fire response and fire prevention are provided/specified. There are no clear definitions for causalities and the building description, fire causes and fire spread are described by a dropdown menu with clear classes. No evaluation of direct or indirect costs of fire is present.

### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered in ODIN, except for the evaluation of casualties and fire costs, which are evaluated by police, health authorities and insurances, but are not made public. Fire incidents, building description, fire causes and consequences are present, as well as fatalities, fire safety measures, fire response and fire prevention.

### **Further comments**

- A national fire statistics is present.
- Fire statistics in DEMA are present with some definitions and the fields available cover the major areas of investigations.
- No evaluation of the economic impact of fire is available

### 2.1.8. Estonia

#### **Fire statistics description**

The fire statistics cover the entire country of Estonia with approximately 5,000 fires per year. The dataset is a combination of different automatic logs and report forms and is collected by the Emergency Response Centre (log), the incident commander (report) and the fire investigator (report). The inputs to the fire statistics are mostly manual quality controlled and sometimes an automatic check for omissions is done. Potential errors in the database are removed if discovered in single reports or queries. All ERB staff members (brigades, planners, management) can access the database. This includes detailed incident reports on a need-to-know basis. Datasets issued for research projects are upon consideration.

#### **Collection of the information**

The summary table has been completed by the Estonian Rescue Board. There was no delay in the response and the summary table is complete, so there was no need for an update or a check.

#### **Summary table – Part 1: Definitions**

In the Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms), many detailed definitions are provided for almost all of the 10 major areas of investigations. Relevant, is the definition for Fire consequences: damage, namely "Property damage = [(building square metre value) \* (burnt area square metre)] \* [(100% - depreciation percentage) + sanitary repairs + renovation + capital repairs + warranty repair] / 100". This is quite detailed and seems well thought-out. Also, having a formal definition of what are false alarms differentiate Estonia from many countries. No definitions are available of type of automatic extinguishing systems, water, fire horizontal and vertical spread and (non-)residential building.

#### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered, except for fire costs, fire response of occupants. Themes covered are fire cause, source of ignition and room where the fire started. Also, descriptions of the building are provided by the building registry. Fatalities, casualties, responses of the fire brigades and many aspects of fire safety measures are covered by data collection in Estonia as well. The information recorded comes from automated registries, like the building registry query and the Emergency Response Centre. An exception is that age, gender, language, social status and disabilities of a fatality victim are added by a fire investigator and is therefore not added automatically.

#### **Further comments**

- Several definitions explained in details are available.
- Official data about injuries come from Estonian Forensic Science Institute (mainly CO poisoning or burns)
- Despite a large number of definitions, not many data are collected, as seen in part 2. The fire statistics are mostly automatically registered.
- The dataset is a combination of different automatic logs and report forms and collected by three parties.

### 2.1.9. Finland

#### **Fire statistics description**

Finland has approximately 15,000 incidents recorded per year. Fire statistics (in Finnish language only) cover the whole country of Finland (excluding Åland island). The data originate from the 22 regional fire departments and they guarantee a quality assurance process. Rescue services authorities, other authorities, researchers, students have access to the database.

#### **Collection of the information**

In the website (prontonet Finland), the documentation system can be found that shows the database. In order to remove potential errors in the database, (22 regional) fire departments monitor its quality. Also errors detected by other users are corrected.

#### **Summary table – Part 1: Definitions**

Many definitions in fire statistics exists in Finland. Indirect costs, safe areas and fire prevention are the only groups that do not have a definition available. Having a formal definition of what are false alarms differentiate Finland from many countries. Also, having most of the fire safety measures defined is remarkable.

### Summary table – Part 2: Fields recorded in the fire statistics

In Part 2, almost all the fields are covered. All types of damage (water, fire, smoke) are collected, as well as details on the fire response of occupants and fire brigades. Data of direct costs are collected, but not the indirect costs (loss of business, transportation etc.). Also, no distinction is made between insured and uninsured losses and the cost incurred to insurance companies. Ethnicity and profession of the victims are not collected.

### Further comments

Finland has very elaborate system of collecting fire statistics, called PRONTO. Almost all aspects of fire statistics are collected by the regional fire departments. The data is checked for its quality and therefore increases its reliability.

#### 2.1.10. France

### Fire statistics description

Data is collected in each fire service and is then sent to General Direction of Civil Security and Crises Management (DGSCGC) of the French Home Ministry. At the end of each year, the latter publishes the French national fire statistics only in French.

### Collection of the information

The annual reports contain information about the personnel (professional civil or military), the organisation, the equipment and national fire departments indicators.

Fields recorded are mostly covering the number of interventions for all type of activities: fire-related, traffic accidents, personal assistance, the number of interventions by day, the number of interventions for 100,000 inhabitants, number of interventions by types of buildings and the type of intervention missions (fire-related, traffic accidents, personal assistance...), the duration of intervention, the average number of intervention by day, by activity and type of building, number of aggression by 100,000 hours of interventions, number of victims by type of intervention (deaths, severe injuries, relative injuries), number of victims by type of buildings (deaths, severe injuries, relative injuries) and number of enrolled firefighters (civil, professional, military, etc.)

### Summary table – Part 1: Definitions

There are no definitions available; however, a working group related to the Ministry on Interior is currently working on the development of definitions with the main objective to adopt definitions that are in agreement with those defined in ISO TR 17755-2.

### Summary table – Part 2: Fields recorded in the fire statistics

Only the number of fire interventions, fatalities and casualties are reported by the building types.

### Further comments

Very basic fire statistics are reported in France. However, due to the lack of definitions, it is very difficult to rely on this data. Moreover, since fire deaths are registered for fatalities occurring only on the fire scene, the numbers of fire deaths are underestimating the real number of fire deaths.

#### 2.1.11. Germany

### Fire statistics description

1. On a national level:

National cause of death statistics, ICD-10 and gender, e.g. exposition to flames, fire and smoke, official website (public available):

[https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Gesundheit/Todesursachen/\\_inhalt.html](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Gesundheit/Todesursachen/_inhalt.html)

Operations of fire brigades, fire deaths and injuries, Deutscher Feuerwehrverband (DFV), only as a paper book "Feuerwehrjahrbuch" (only in German, website including some data.

<https://www.feuerwehrverband.de/presse/statistik/>)

Injuries and fatalities from accidents (DGUV), <https://www.dguv.de/de/zahlen-fakten/au-wu-geschehen/index.jsp>

Property loss: data collected by insurer Gesamtverband der Versicherer (GDV), website (with data: <https://www.gdv.de/de/zahlen-und-fakten/versicherungsgebiete/hausrat-24100#Schaeden> )

Fire causes (insured fire incidents), collected by the institute for fire cause investigation (for insurers), Institut für Schadenverhütung (IFV) website with data: <https://www.ifs-ev.org/schadenverhuetung/ursachstatistiken/brandursachenstatistik/>

## 2. On a local level:

Data collected by fire services, different data and formats; several fire services collect via an electronic system but not all. Often there is a fire service operation statistics (electronic) and a fire incident report (form to fill in). Example for such a form for fire incident report is given in uploaded documents, one form is to be submitted to DFV, it is called FEU 905 and it summarizes data for one year and is collected on a national level by DFV (see above)

Some "Länder" (states) and some larger fire brigades collect data about fire incidents with a survey about prevention measures and effect of these measures on the fire development (form to fill in uploaded documents) For example, Munich fire service collects data about fire incidents with a survey about prevention measures and effect of these measures on the fire development (form to fill in uploaded documents): <https://www.lfv-bayern.de/informationen/statistiken/>

Data collected by German police, such as criminal statistics and fire causes, is not publicly available.

### Collection of the information

The information for the summary table was collected through the investigation in the statistics group in VFDB. Challenges faced in Germany while gathering the information are due to the extremely fragmented approach for the collection of data related to fire incidents.

### Summary table – Part 1: Definitions

Relevant definitions: three words in the German language: Falschalarm (false alarm - fire detected but not real) is divided into Fehlalarm (false alarm - alarm due to technical failure in the detection systems) and Täuschungsalarm (deception alarm - detection is working but detected something different, i.e. water vapour). Fire: Kleinbrand (small fire) a and b. Small fire a: use of one small extinguishment equipment (Einsatz von einem Kleinlöschgerät); small fire b: Use of not more than one C-hose (Einsatz von nicht mehr als einem C-Rohr)/ Mittelbrand (medium fire): use of not more than 3 C hose / Großbrand (large fire): use of more than 3 C hose / fire extinguished before fire service on scene.

Building regulations reflect definitions / what to understand under a compartment/fire barrier.

### Summary table – Part 2: Fields recorded in the fire statistics

Fire incident, building description, fire causes, fire losses, fatalities and causalities are recorded.

### Further comments

- Very fractured system as several institutions are collecting data with different methods and terms.
- Limitations regarding the link between the different collections of data.
- Most fires and fatalities occur in residential building fires.
- Fires and fatalities occur also often in nursing homes and hospitals.
- Observation after bigger fires: the measures against fire spread work in general, the smoke spreads further than the fire and leads to damage/injuries (Munich fire service statistics), escape routes are blocked by smoke in several numbers of fires (40 %) (TB – VFDB).
- High number of false alarms with automatic fire alarm systems.
- Highest property loss in a few numbers of very big fire incidents.

#### 2.1.12. Greece

### Fire statistics description

The fire statistics in Greece present a unique national statistics database. Main data collected by Hellenic Fire Corps. Some other data collected by General Secretariat for Civil Protection, Forest Offices per region, and National Observatory of Athens. The data is usually collected by the fire brigades in the aftermath of an event. Therefore, one unique fire statistics dataset is available for the whole country.

### Collection of the information

The Hellenic Fire Corps collects all the needed statistical information. Besides, General Secretariat for Civil Protection and Forest Offices per region collect specific information, which is required by their sections. The following information is part of data collection: number of fires by size, number of victims (deaths, injured, rescued persons, missing persons), fire causes, fires by fire objects (buildings types, sectors of industry, etc.), and fire damage.

### **Summary table – Part 1: Definitions**

In the national fire dataset, the following information is available: name of the responsible administrative unit, event type, date event start, start time, date extinguishing, extinguishing time, municipality, village (it is important because of a high number of settlements on small islands), space description, event characterization, total fire, vehicles, total fire forces (in men and women), total firefighters shipping, accident type, number of people involved by type, injured, deaths, disasters, and burns. However, definitions have not been provided.

### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered in the national data collection system. It is difficult to study the available materials because of language barriers.

### **Further comments**

Information on the structure of the database is available for Greece. Then information on the number of fires is given and information about fire victims is displayed. For every fire, there is specific information about the time and place. Moreover, forest fires play a particularly important role for Greece and information on this topic, both on the Internet and in specialist literature, is available. Studying information about the fires in Greece is particularly difficult due to the language barrier.

#### 2.1.13. Hungary

### **Fire statistics description**

There is one unique Fire Damage Statistics Database that is compiled and used within the professional disaster management organization and ministry. It is not open for public.

### **Collection of the information**

Information for the summary table has been provided by the University of Public Service - Institute of Disaster Management, and National Directorate General for Disaster Management, which works with the Hungarian National Directorate General for Disaster Management, who collects, analyses, and summarizes fire data of fire brigades.

### **Summary table – Part 1: Definitions**

Filling instructions to fire and technical rescue reports are available on the online Disaster Management Data Service Program (DMDSP), which contains definitions such as false alarm, fire causes, fatalities, casualties, fire safety measures, fire response.

### **Summary table – Part 2: Fields recorded in the fire statistics**

Fire incident, building description, fatalities casualties, fire safety measures are recorded.

### **Further comments**

Information on fire incidents is well organised to collect useful fires statistics; however since it is not publicly available, it is difficult to assess and compare with other statistics.

#### 2.1.14. Ireland

### **Fire statistics description**

In Ireland, the fire statistics is provided by the fire authorities attending the fire scene. Once all the data inputs are completed, the National Directorate for Fire and Emergency Management (NDFEM) contact each authority to confirm that the information is correct. The NDFEM is currently developing a new command and control system for the Irish Fire Service, and when this will be operational, statistical information will be downloaded directly from a validated computer system. Currently, there are two collection forms: the Fire Statistics – Operational and the Fire fatalities report.

### **Collection of the information**

Information for Ireland was based on the fire statistics publicly available in the website of the Department of Housing, Local Government and Heritage where data about fire service, fire prevention, fire brigade activities, location of fires, causes of fires and fatalities from fires are available for a time range which in general vary from 2000 or early to 2019. Moreover, direct contact has been established with the National Directorate for Fire and Emergency Management who kindly provided the two reporting forms.

### **Summary table – Part 1: Definitions**

In Ireland, a glossary for the fields adopted in the fire statistics is not available. However, for each field, specific classes are present. For example, there are various classifications with several options for residential and non-residential buildings, fire causes and area of fire origin.

### **Summary table – Part 2: Fields recorded in the fire statistics**

The fields recorded in the “Fire Statistics –Operational” form are focused on the residential and non-residential buildings, fire causes and fire prevention with details of prevention work such as inspections, fire safety notices, High Court orders, summary offences and licenses. In the “Fire Fatalities report”, the time, date of the incident and the location and type of the premises is recorded. Furthermore, the number of fatalities, age of the victims and if the death occurred at the scene or afterwards are indicated. Finally, the presence of smoke alarm and the smoke alarm working conditions are asked in the “Fire Fatalities report”.

### **Further comments**

- Data about fire consequences, fire response and fire costs are now listed in the fire statistics.
- The presence of smoke alarms and their working condition are indicated in the “Fire Fatalities report” and not in the “Fire Statistics – Operational”. No other fire safety measures are listed.
- It would be possible that in the new command and control system for the Irish Fire Service developed by the NDFEM other fields will be recorded.

#### 2.1.15. Italy

### **Fire statistics description**

In Italy, the collection of data is conducted by the STA-RI (Statistics and Report of Intervention) web-based software, used by the crew commander while compiling the intervention report on digital support on a standardized frame called “VF-41”. The intervention report is not only for fires and explosions but also for the opening of windows and doors, the safety of buildings and stability of constructions, rescue of people, recoveries, road accidents, water accidents, intervention no longer required, clean up from insects, gas leakages, lift malfunction, the rescue of animals, false alarms and aircraft. The data are subdivided into provincial, regional and central levels only for administrative and statistical reasons.

The Central Statistical Service has been editing the Statistic Annual Report of the Corpo Nazionale Vigili del Fuoco (C.N.VV.F) for several years, with the aim to standardize and spread out the information, in a fully available way also for users outside the Administration, as well as to acknowledge of the work for the CNVVF STAT-RI application that allows the electronic compilation of the same data included in the VF-41 form, such as time and place, type of accident, cause, substance involved, injured/dead, etc.

STAT-RI is integrated with SO115 software, - the software used in the operating rooms - allowing the person compiling the form to import, thanks to the card code, all information already inserted by the operator in the control room. At the same time, this mechanism ensures the integrity of all data treated by SO115 and STAT-RI system.

The statistics are used by Fire departments, governments, industries, public and private use, as per law for access act right (L.241/90), FOIA regulation apply to more general data with the statistical annual report, without privacy issues.

### **Collection of the information**

The information about the Italian fire statistics has been collected considering the Annual Report called Annuario Statistico Corpo Nazionale Vigili del Fuoco and kindly provided establishing direct contact with the Corpo Nazionale Vigili del Fuoco.

### **Summary table – Part 1: Definitions**

For the Italian fire statistics, a glossary with the definitions of each field collected is not available. However, for each field recorded, a detail classification is provided. Various classes are listed for residential and non-residential buildings, fire causes, item and material first ignited.

### **Summary table – Part 2: Fields recorded in the fire statistics**

For intervention related to fires and explosions, the Italian fire statistics report fire incidents and false alarms, time, date and location of the incident, property types, fire causes, item and material first ignited, fire response of the fire brigades and duration of the intervention. The number of victims and people injured, cause, age and gender of the people affected are fields recorded. Moreover, the rescue of persons is classified according to various causes amongst which one class is given by fire ignition. Fire prevention and surveillance data are recorded related to fire prevention activities of fire brigades. The activity of investigation and judicial/criminal police in charge of Fire Brigade and/or to other Police Corp.

#### Further comments

- Fire statistics are collected by the fire brigades and it is subdivided into national, regional and provincial levels.
- Fields are determined by various detailed classifications. However, no specific definition is provided.
- There is no information about the damage caused by the fire incident, the fire safety measures present at the scene and the evaluation of financial costs.

#### 2.1.16. Latvia

##### Fire statistics description

There is a national database, but it can be used to a limited extent by external users.

##### Collection of the information

The summary table has been completed based on the available reports and information taken from related websites.

##### Summary table – Part 1: Definitions

In the national database system for fire statistics of Latvia, detailed definitions exist. The information is available only for internal use of the Ministry of Interior.

##### Summary table – Part 2: Fields recorded in the fire statistics

In Part 2, the majority of the fields are covered in the national database. Attention is focused on: fires in objects (in the residential sector, agricultural production facilities, in public buildings, production buildings, in vehicles, transportation means, industry, in warehouses, construction sites, landfills, waste, and unmanaged buildings), and victims (people died, including children, injured people, and rescued people).

##### Further comments

A national fire statistics is present.

#### 2.1.17. Lithuania

##### Fire statistics description

The fire statistics in Lithuania is national statistics and it is subdivided into 10 counties and the Capital region of Lithuania (Vilnius county). The data is usually collected by the fire brigades in the aftermath of an event. The inputs to the fire statistics are managed by National Fire and Rescue Department of Lithuania. Therefore, one unique national fire statistics dataset is available.

##### Collection of the information

The summary table has been completed based on the available national reports on fire statistics. Publications about the fire situation in the country are published annually.

##### Summary table – Part 1: Definitions

There is a national fire dataset based on definitions. The definitions are part of internal documents of a relevant national ministry. The dimension of the dataset (number of incidents recorded per year) in the year 2019 is of 9,848 fires, 60 fire deaths, 112 injured by fires, and 82 persons rescued from fires.

##### Summary table – Part 2: Fields recorded in the fire statistics

In Part 2, the majority of the fields are covered by the national dataset can be specified as follows: human loses (children under the age of 18 among them, injured people, rescued people, and children among them), factual number of fire (residences, hotel buildings, manufacture and industrial buildings, home farm buildings, vehicles, open territories, forest, meadow, peatbog, crop, stubble, other open territory, and other objects), losses from fires (rescued people, animals (units), vehicles (units), buildings (units), living-space (m<sup>2</sup>), uninhabitable space (m<sup>2</sup>), and fodder (t)), fire causes (22 types of causes).

##### Further comments

A national fire statistics is present. The definitions for the various fields of fire statistics are not publicly available.

#### 2.1.18. Luxembourg

For Luxembourg, the level of information received is not enough to provide a complete summary table.

#### 2.1.19. Malta

For Malta, the level of information received is not enough to provide a complete summary table

#### 2.1.20. Netherlands

##### **Fire statistics description**

The fire statistics cover the entire country of the Netherlands. The country is subdivided into 25 safety regions, (e.g., Drenthe and Amsterdam-Amstelland). The safety regions collect data on their own incidents and report their data. Another collector of fire statistics is the Institute for Fire Safety (IFV and Fire Service Academy). IFV and the fire brigades from the 25 safety regions collaborate together and compute one database. This database is accessible for IFV for research and educational purposes. It is also available for the fire brigades to do their own research or to learn from fire incidents. Every year carefully selected (national) fire statistics are shown to the public by means of an online dashboard. Media and reporters can have access to most of the data, when requested officially and when the data are made anonymous.

##### **Collection of the information**

The summary table has been completed based on the questionnaires that are used throughout the Netherlands to collect fire statistics. These are available to IFV and the fire brigades of the 25 regions.

##### **Summary table – Part 1: Definitions**

For the majority of the fields in Part 1, definitions are not available. Definitions regarding fatalities, rescues, response times, fire causes and building characteristics are covered but safety measures, fire costs and fire prevention are lacking in the list of definitions.

##### **Summary table – Part 2: Fields recorded in the fire statistics**

Data on fire incident, building descriptions, causes, fatalities and casualties are collected in detail. For consequences, damage is not collected by the Netherlands. For fire safety measures, detailed data are collected on smoke alarms but not on other types of fire safety measures (e.g. automatic extinguishing systems and escape routes). Data on the time before finding the occupant (fatal or rescue), the fire response time and the time between incident and fatality are collected.

##### **Further comments**

- No evaluation of the direct and/or indirect fire costs are available.
- The Netherlands data are focused mainly on fatal residential fires and rescuing civilians from buildings and possesses a detailed database regarding these issues.

#### 2.1.21. Poland

##### **Fire statistics description**

The State Fire Service (SFS) of Poland, supervised by the Minister of the Interior and Administration, is a leading rescue organization in Poland, comprises variety of activities and constitutes main part of the National Firefighting and Rescue System (KSRG). Centralized structure of the KSRG enables to swiftly relocate rescue resources. In order to safeguard good response time of professional and voluntary firefighters, various models and methodologies are adopted.

##### **Collection of the information**

All data are collected, processed and analysed in the State Fire Service Decision Support System (DSS). The functional and informative scope of the software covers all areas of the SFS activity, with particular emphasis on the tasks performed by the rescue units. The main task of the DSS is to support the duty service in handling reports and events, coordinating rescue operations, and preparing documentation of the actions carried out. All statistical data collected by SFS, you can find at:

<https://www.gov.pl/web/kgqsp/interwencje-pszp-lata-2010-2019-zestawienia>

<https://dane.gov.pl/institution/22,komenda-glowna-panstwowej-strazy-pozarnej>

### **Summary table – Part 1: Definitions**

No list of definitions has been provided.

### **Summary table – Part 2: Fields recorded in the fire statistics**

Detailed scope of data collected by the SFS from the intervention of fire protection units is specified in Annex 6 to the Regulation of the Minister of Interior and Administration of July 3, 2017 on the detailed organization of the National Firefighting and Rescue System (Journal of Laws 2017, item 1319). The main areas which are covered by the information from the intervention are: type of the incident (fire, local threats, false alarm), location of the incident, facility and owner (closed catalog), operational times of the incident, forces and resources used during the incident, types of rescue operations (closed catalog), equipment used in rescue operations (closed catalog), place of activities (inside the facility, floor, etc.), consumption of water, extinguishing agents, medical rescue operations, fatalities and casualties, the size of the event, the size of the facility, estimated losses, estimated property rescued, preventive data about the facility (presence and operation of fire prevention measures), access to the facility, personal data of persons managing rescue operations and medical rescue operations descriptive data of the event (description of the course of rescue operations, threats and difficulties, used and damaged equipment, etc).

### **Further comments**

Various fire statistics fields are collected in Poland; however, it is not clear if definitions are available.

#### 2.1.22. Portugal

For Portugal, the level of information received is not enough to provide a complete summary table.

#### 2.1.23. Romania

### **Fire statistics description**

The fire statistics in Romania is national statistics. The information is collected during the interventions through a letter form and subsequently entered in the electronic databases set up at county level and transmitted at a national level. The database is manually checked to identify potential errors which are subsequently corrected at county/nation level. The inputs to the fire statistics are managed by the public body IGSU.

### **Collection of the information**

The summary table was completed based on the internal procedure (Order of the General Inspector of IGSU) and Databases on emergency interventions - set up and managed at the level of the General Inspectorate for Emergency Situations.

### **Summary table – Part 1: Definitions**

There are some definitions for the major area of investigations. All the definitions provided in the summary table were extracted from the internal procedure (Order of the General Inspector of IGSU). In particular, there are no clear definitions for fire safety measures, fire financial cost and fire prevention. For the building characteristics, there are no definition but classifications. The fire fatalities and casualties are divided into three categories (burns, asphyxiated and other causes) and six age groups (0-6, 7-14, 15-25, 26-55, 55-70, >70). The estimation of damage is done in m<sup>2</sup> and the extent of flame damage at the end of the fire is assessed.

### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered in the database. The value estimation of the properties is assessed by the firefighters. All the other categories are presented in some context.

### **Further comments**

- Fire statistics are present with some definitions and the fields available cover the major areas of investigations.
- No evaluation of the economic impact of fire is available, nevertheless, the estimation of damage is assessed by the fire brigade.

#### 2.1.24. Slovakia

##### **Fire statistics description**

The fire statistics in Slovakia are national. The data are collected by fire investigators in the fire departments and issued by the Fire & Rescue Corps. An English version of their annual fire statistics was published until 2011. The number of fires and fire deaths are also reported in the annual statistics yearbook for Slovakia. In 2016 (last year we got information from) there were 8,407 fire incidents in Slovakia.

##### **Collection of the information**

The information about fire statistics in Slovakia was obtained from the English version of the Fire Statistics from 2011. This book contains very detailed information about the data collected. Additionally, the annual statistics yearbook provided some of the key definitions. Other definitions were obtained with help from the Slovakian ministry. However, it was found that several of these definitions were more of generic nature found in testing standards and similar and not the definitions used by the fire investigators in their collection of data.

##### **Summary table – Part 1: Definitions**

As mentioned above, definitions are available for some of the terms, often more generic than what was needed for the actual fire data collection. The definition for fire fatalities was provided in the statistical yearbook as: “killed persons are persons who died in the place of the accident (or in the place of fire), or when being transported to the hospital, or within 24 hours after the accident.”

##### **Summary table – Part 2: Fields recorded in the fire statistics**

The data recorded are focused on the type of building, Fire cause, room of origin, item first ignited as well as information about fire victims.

##### **Further comments**

It is not clear if the data are a full census, but it is assumed that it is. There was no information about how missing or incomplete data are handled.

#### 2.1.25. Slovenia

##### **Fire statistics description**

The fire statistic in Slovenia covers the entire country and is available within a national database defined as Intervention and Accident Reporting System (SPIN). The data is usually collected by the fire brigades in the aftermath of an event. Some of the information such as the cause of the fire is only an approximate estimation conducted by the firefighters. However, the experts usually evaluate the fire events, but they are not obliged to write it in the system.

##### **Collection of the information**

The summary table was completed based on the information provided in SPIN. The definitions were given based on the Building law and the Fire Protection Act.

##### **Summary table – Part 1: Definitions**

Most of the time, there are no clear definitions for the major area of investigations. All the definitions provided in the summary table were extracted from the Building law or the Fire Protection Act. Both of the documents are official laws in Slovenia, which specify general definitions which can act more like guidelines of how to reach a certain group of definitions. In particular, no clear definition of fire incidents exists. Building characteristics are provided and casualties are specified. For the fire safety measures, there are no definitions, except recommendations on how to ensure fire safety measures. Evaluation of damage and fire financial cost (direct and indirect cost) are present.

##### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered in the SPIN, except for cause, fire safety measures, fire cost and fire interventions. The property damage and cost of the property damage are not assessed by the firefighters. Fire incident, building description, consequence, fatalities, casualties and the fire response are presented in some context.

### **Further comments**

- Fire statistics in the SPIN is present but not very detailed with no clear definitions and the available fields cover most of the major areas of investigations.
- All the provided definitions in the summary table are extracted from the building code and the Slovenian fire protection act.
- No evaluation of the economic impact of fire is available.

#### 2.1.26. Spain

### **Fire statistics description**

A Spanish Royal Decree establishes the need of collecting fire statistics. The Royal Decree also indicates the convenience of centralizing the statistics elaboration, incorporating them into the General Statistic Plan of the Ministry of Interior Affairs. However, since 1994, official statistics have not been published due to lack of funding. Currently in Spain, the only (recent) existent documents about fire victims are those annually published by Mapfre Foundation in collaboration with APTB (professional association of firefighters) and Fundación Mapfre publish every year a report on fatal fires. UNESPA (association of insurers) also publishes an annual report based on data from insurers. It is generated with information from 22 insurers, which can be estimated to have just over 75% of the Spanish market by turnover.

### **Collection of the information**

Data published by APTB and MAPFRE are developed from data detailed by fire departments on fires with fatalities and crossed with the Legal Medicine Institutes of the different autonomous communities and provinces. There is a basic standardized document to collect data «Parte Unificado de Actuación», but most of the Fire Services don't use it, and they have their own way to collect data, depending on their resources. It is variable between different regions.

### **Summary table – Part 1: Definitions**

There is a clear definition for fire deaths in the annual report; however, for other aspects of fire incidents, no information is available at the present time.

### **Summary table – Part 2: Fields recorded in the fire statistics**

Example of published data:

- Estimated distribution of the cost of insured fires by type of buildings.
- Insured assets from fire, according to the size of the municipality where they are located and cities.
- Distribution of the severity (derived from cost) of fires, by type of insurance.
- Average severity of fires, according to the type of insurance.
- The 50 municipalities with the most insured assets from fires.
- Provincial distribution of fires, insured assets and population.
- Ratio of the average severity of the fire to the average disposable income of the municipality.
- Fire intensity ratios, according to the type of insurance
- Fire intensity ratios, by province.
- Fire intensity ratios, by cities.

### **Further comments**

Fire investigations are not included in the Fire Service reports, which means that in many of the accidents there are not enough data to establish the cause of the fire or the reason for the fire deaths. These data would be useful to complete the “unknown” sections in the existing database.

#### 2.1.27. Sweden

### **Fire statistics description**

National fire statistics are published by the Swedish Civil Contingencies Agency (MSB) on the IDA web site. Data is collected from incident reports from all fires that the municipal fire and rescue services respond to. MSB also has a database covering fatal fires which occur in Sweden and people who died in the fires. Data is collected from all relevant authorities and cover all fire deaths regardless of a victim's nationality. Data from forensic pathologists have been available up to 2015. At present, the MSB do not have access to this data, and until the legal situation is clarified, there will be some under-reporting of fatal fires not attended by the fire service. The statistics are available at the IDA website. The number varies over time, from 80 to 130 per year. In addition, the National Board of Health and Welfare (Socialstyrelsen) publishes cause of death statistics, covering all people dying in Sweden as well as residents of Sweden who die in foreign countries. The statistics

use the international classification of diseases, so fire deaths can be identified. The numbers vary over time. In 2019, there were 47 fire deaths. The highest figure in recent years was 138 in 1998. Finally, the Swedish insurance companies collect data on insurance claims due to fires. The latest figures are 27,794 in 2018 and 34,217 in 2019.

#### **Collection of the information**

All the information reported here is publicly available. However, not all data fields are searchable through the online tools. The MSB update preliminary statistics on fire fatalities on a daily basis. All other statistics are published annually.

No special challenges have been encountered during the project except that it was sometimes difficult to translate specific terms and present them in the project's predefined table structure.

#### **Summary table – Part 1: Definitions**

The definitions are not available online but have been obtained through direct contact with the corresponding data collector (except for the cause of death register, which has the same definitions as in other countries (ICD-10)).

#### **Summary table – Part 2: Fields recorded in the fire statistics**

Different data collectors gather different types of data.

The incident report database contains data on emergency responses by the fire and rescue service. It also includes the number of presumed deaths and injuries (the number of people taken off by ambulance and the number of people treated on the scene). Concerning the fire itself, data recorded includes item first ignited, ignition source and room of origin, as well as the fire spread expressed as contained in the item of origin, room of origin, fire compartmentation, initial building or spread to another building.

The fatal fire database contains data on the fire and its victims.

The cause of death register only contains the number of deaths per cause.

The insurance companies have data on claims and the costs reimbursed for the fire.

#### **Further comments**

- The different databases focus on different aspects and the contents of the datasets vary.
- Quality assured data is difficult to get and recently the secrecy legislation has been an obstacle.

## 2.2. OTHER EUROPEAN AND NON-EUROPEAN COUNTRIES

### 2.2.1. Australia

#### Fire statistics description

The fire statistics in Australia is collected at the state level by the Queensland Fire and Emergency Service; Fire and Rescue New South Wales; South Australia Metropolitan Fire Service; Tasmania Fire Service; Fire Rescue Victoria; Fire & Emergency Service Western Australia. The data are yearly published; however, only specific fields are publicly available. The fire statistics are collected by the fire brigade after attending an incident and the data are reviewed by the fire service which monthly amends the datasets. Despite the review, data would still include anomalies and missing information and the fire statistics is used by the fire service to evaluate and optimize performance, by insurance investigations and court cases. The collection of the information is based on the Australian Incident Reporting System (AIRS). The AIRS includes definitions, and it is composed of 10 parts as follows:

- A. Incident report header
- B. False alarm
- C. Hazardous materials
- D. Casualties, rescue and evacuation
- E. Ignition (all fires)
- F. Firefighting
- G. Bush, Forest, Grass fires
- H. Dollar loss fires
- I. Mobile property
- J. Structure fires.

#### Collection of the information

The information has been collected based on the public website of the Fire and Emergency Service in the six states of Australia and thanks to the support of the South Australian Metropolitan Service.

#### Summary table – Part 1: Definitions

The definitions provided by the AIRS covers the fire incidents with time, date, location and property type, fire causes, material contributing most to fire and smoke, area of origin and fire consequences such as factors contributing to flame spread, fire spread, flame, smoke and water damage. For the fire safety measures, the definitions of alarms, automatic extinguishing systems and compartmentation are provided as well as descriptions of fatalities and casualties. The fire response is determined as the time of the incident, the time that the officer in charge declares the incident to be under control and no further response of emergency units are required. Finally, fire financial costs are estimated based on dollar loss, property, contents with specifications if they were insured.

#### Summary table – Part 2: Fields recorded in the fire statistics

The fields included in the fire statistics are very detailed and cover the majority of the fields related to pre and post-fire conditions. There is no information about the descriptions of the person affected by the fire and the damage is subdivided into flame, smoke and water damage.

#### Further comments

- The fire statistics are based on the AIRS and collected at the state level.
- Definitions are available and provided with a high degree of detail.
- Not all the fields collected by the fire statistics are publicly available.

### 2.2.2. Canada

#### Fire statistics description

Canada's fire incident reporting at the national level has been inactive since at least 2007 and efforts to renew fire data collection appear to currently be in a state of flux. Fire incident data are collected at the level of provinces and territories by local fire departments. However, fire data collection in Canada is highly decentralized, with some variation within and between provinces. A pilot project seeking to revive a centralized fire data collection system in Canada released a report in 2017 introducing a National Fire Information Database. This effort relied upon data from six of Canada's thirteen provinces and territories, provides the backbone for a new National Fire Information Database. Canada's most populous provinces collect substantially more detailed information on fire incidents that include information on data and time, fire

department response, property details, presence and type of fire protection features, factors relating to ignition, and details of fire loss.

### **Collection of the information**

The information relies upon several reports from the Canadian Centre for Justice Statistics which described the National Fire Information Database, the current state of fire incident data collection in Canada, and results on Canada's fire experience from 2005 to 2014. Our description of Canada's fire data collection system has been shared with one of the principal participants in the country's data collection efforts and received confirmation that the information was accurate.

### **Summary table – Part 1: Definitions**

Canada has a data dictionary.

### **Summary table – Part 2: Fields recorded in the fire statistics**

Incident Information: Year, Month, Date, Day of Week, Time, Location, Response Time, Mutual Aid, Crew Size, Number of Vehicles, Distance from Department to Incident, Status on Arrival, Number of Persons Rescued, Number of Casualties, Type of Weather, Temperature, Wind Direction, Wind Speed.

Property Classification

Property Details: General Construction, Method of Construction, Year of Construction, Building Height, Ground Floor Area, Number of Occupants, Value at Risk.

Fire Protection Features: Manual Fire Protection Facilities, Sprinkler Protection, Fixed System Other than Sprinklers, Automatic Fire Detection System, Fire Detection Devices, Outside Fire Protection, Fire Service in Area.

Incident Variables: Igniting Object, Fuel or Energy Associated with Ignition, Energy Causing Ignition, Material First Ignited, Act or Omission.

Factors Relating to Origin and Spread of Fire: Area of Origin, Level of Origin, Flame Spread – Interior, Flame Spread – Vertical Openings, Flame Spread – Horizontal Openings, Smoke Spread Avenues

Fire Loss Details: Extent of Fire, Extent of Damage, Dollar Loss.

Discovery of Fire and Action Taken: Initial Detection, Transmission of Alarm to Fire Department, Action Taken, Performance of Automatic Extinguishment Equipment, Method of Fire Control and Extinguishment, Performance of Smoke Alarm Device, Impact of Smoke Alarm Activation on Occupant, Occupants in Dwelling Unit at Time of Fire.

Fire Casualties: Age of Victim, Sex of Victim, Status of Victim (Firefighter, Civilian), Nature of Casualty, Probable/Possible Cause, Class of Victim (Adult, Senior), Condition of Victim (Asleep, Too Young to Act, Physical Disability, etc.), Action of Casualty, Condition of Casualty, Cause of Failure to Escape, Ignition of Clothing or Other Fabrics, Type of Material Ignited.

### **Further comments**

Key aspects: Fire data collection in Canada is highly decentralized, with some variation within and between provinces. Local fire departments are asked to collect information on incendiary incidents and submit them to their respective provincial or territorial authorities. It appears that Canada's most populous provinces collect substantially more detailed information on fire incidents that include information on data and time, fire department response, property details, presence and type of fire protection features, factors relating to ignition, and details of fire loss. Commonality of the data reported across jurisdictions is facilitated by the Canadian Code Structure on Fire Loss Statistics, a document produced by the Council of Canadian Fire Marshals and Fire Commissioners.

Limitations: Canada's fire incident reporting at the national level has been inactive since at least 2007 and efforts to renew fire data collection appear to currently be in a state of flux. A pilot project seeking to revive a centralized fire data collection system in Canada released a report in 2017 on fire statistics in Canada from 2005 to 2014. This effort, which relied upon data from six of Canada's thirteen provinces and territories, provides the backbone for a new National Fire Information Database. A critical challenge in assessing national fire data collection in Canada is a lack of publicly-available information regarding discussions about harmonizing localized data collection into a uniform and sustainable national database.

### 2.2.3. New Zealand

#### **Fire statistics description**

The fire statistics of New Zealand is collected by the fire crew filling an online form in the aftermath of an emergency. The data cover the whole of New Zealand from 1998 to current and publications are annually released. Some incident types are quality assurance completed and final dataset reviewed by the national office before publishing. The data are used by Fire and Emergency, government agencies, industries, public and private users. The data related to the general incident description are published for public access while private/sensitive data are restricted. Moreover, National HQ staff manage the data and correct identified errors.

#### **Collection of the information**

The information for the fire statistics of New Zealand has been kindly provided by the Fire and Emergency New Zealand.

#### **Summary table – Part 1: Definitions**

Definitions for the fields collected by the fire statistics are available in the Fire and Emergency New Zealand SMS Incident Report for what concerns fire incident, building description, fire causes, fire consequences, fatalities and casualties. The definition for the type of injury is provided by the Fire Investigation technical manual while those for fire safety measures by the NZ Building Code. Fire and Emergency Fire Safety, Evacuation Procedures and Evacuation Schemes Regulations 2018 describe terminology for the evacuation and the Statement of Performance 2020/21 defines an agreement between Fire and Emergency New Zealand and the Government about the fire service time of response. There isn't a definition for the direct financial costs; however, an activity-based costing model is adopted. Finally, the Fire and Emergency Act 2017 provides fire regulations and a National Risk Reduction Strategy 2019-2029 contain fire prevention.

#### **Summary table – Part 2: Fields recorded in the fire statistics**

The fields recorded in the incident recording system adopted in New Zealand cover fire incident, false alarms, date, time and location, building types and dimensions. For the fire consequences, fire spread is collected considering confinement and quantified in m<sup>2</sup> for flame, smoke and water damage. Fatalities and Casualties are listed in the same classification and age, gender and ethnicity of the person affected are reported. The field for alarms includes also automatic extinguishing systems and type, operation, effectiveness and failure are present. Fire response is recorded, and direct financial costs caused by fire are estimated considering average m<sup>2</sup> rebuild cost multiplied by the total damage without considering content loss and business interruption.

#### **Further comments**

- The New Zealand fire statistics are nationally collected by the fire brigades after an emergency.
- Definitions are provided in detail and cover all the aspects related to pre- and post-fire conditions.
- Several fields are recorded in the fire statistics and in particular, damage is subdivided into flame, smoke and water damage and direct financial costs are evaluated.

### 2.2.4. Norway

#### **Fire statistics description**

The fire statistics in Norway is a national statistics. The data is usually collected by the fire brigades in the aftermath of an event in the collection form BRIS (brann- og redningstjenestens rapporteringssystem). The inputs to the fire statistics are managed by the public body, the Norwegian Directorate for Civil Protection (DSB). Other bodies, such as police, health authorities and insurances are also gathering data, which are not public.

#### **Collection of the information**

The summary table has been completed based on DSB, which is publicly available, and BRIS, which is not publicly available. However, the fire statistics of Norway are published annually with a limited number of fields recorded.

#### **Summary table – Part 1: Definitions**

DSB provides some definitions for almost all of the 10 major areas of investigations with specific fields recorded. In particular, there is no definition for accidental and deliberate fires, but there are definitions for false alarms. Fatalities, fire safety measures, fire response and fire prevention are provided/specified. There are no clear definitions for causalities and the building description, fire causes and fire spread are described by a dropdown menu with clear classes. However, in Norway, the incident commander (Fire) must make an

assessment of the cost of fire. This must be registered in BRIS. The insurance companies make their own collection of data which one can apply for the access.

#### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered in BRIS, except for the evaluation of casualties and fire costs, which are evaluated by police, health authorities and insurances, but are not made public. Fire incidents, building description, fire causes and consequences are present, as well as fatalities, fire safety measures, fire response and fire prevention.

#### **Further comments**

- A national fire statistics is available.
- Fire statistics in DSB are present with some definitions and the fields available cover the major areas of investigations.
- The assessment of the cost of the fire is done by the incident commander and is registered in the collection form.
- The data collected by the insurance companies can be access with permission.

#### 2.2.5. Russia

##### **Fire statistics description**

The fire statistics in the Russian Federation is a national statistics and it is subdivided into 86 regional subjects taking into account 11 time zones and 17 vegetation zones and several climate zones. The data is collected by the fire brigades according to national law. The inputs to the fire statistics are managed by the Ministry of the Russian Federation for Civil Defense, Emergencies and Elimination of Consequences of Natural Disasters (EMERCOM of Russia). Therefore, one unique national fire statistics dataset is available.

##### **Collection of the information**

The summary table has been completed based on "Order of the EMERCOM of Russia N 625" dated 12.24.2018. The documents name is "On the formation of electronic databases for accounting for fires and their consequences" (together with the "Procedure for filling out and submitting a fire accounting card"), which is publicly available.

##### **Summary table – Part 1: Definitions**

In the Order N 625, detailed definitions are provided for almost all of the major areas of investigations with specific fields recorded.

Data is collected for every fire that occurred in the country for one year. Each fire is characterized by approximately 100 parameters. The database consists of the following parts: general information, object of fire, consequences of fire, saved (evacuated) by fire, development and extinguishing the fire, firefighting forces and means, information about the dead and injured, and others. Information about costs and damage are available. For all the parameters examined definitions are available.

##### **Summary table – Part 2: Fields recorded in the fire statistics**

The structure and scope of the data fields enable a diverse analysis of all important aspects of the fire situation: fire development, course of fire, the extinguishing of fires, fire objects, causes of fire, fire victims, specific conditions of the persons concerned, and fire damage. Where necessary, the data are collected in specific standardized units of measurement. Methods were introduced to minimize or, if necessary, correct data entry errors.

#### **Further comments**

A national fire statistics is present. A qualified team of experts works on fire statistics and produces analyses and reports. Fire statistics in the Russian Federation is very detailed with clear definitions and the fields available cover the major areas of investigations.

## 2.2.6. Switzerland

### Fire statistics description

1. On a national level:

Bundesamt für Statistik, cause of deaths (fire deaths are not a category)

<https://www.bfs.admin.ch/bfs/de/home/statistiken/gesundheit/gesundheitszustand/sterblichkeit-todesursachen.html>

2. On a local level:

Fire service: <https://www.swissfire.ch/der-sfv/fakten-zur-feuerwehr/> (documents uploaded)

Vereinigung kantonaler Feuerversicherungen VKF, <https://www.bsvonline.ch/de/> (no direct link to data – data not publicly available) und Vereinigung kantonaler Gebäudeversicherungen (VKG)

<https://www.vkg.ch/de/versicherung/rueckversicherung?banner=1>

Interkantonaler Rückversicherungsverband (IRV), data not public available

Wildfire statistics: <https://de.statista.com/statistik/daten/studie/369841/umfrage/waldbraende-in-der-schweiz/> (paywall)

### Collection of the information

The information for the summary table was collected through web-based searched and contact persons in Switzerland. Challenges faced in gathering the information are due to the very fractured approach in Switzerland for the collection of data related to fires.

### Summary table – Part 1: Definitions

Various definitions are available such as:

Bestimmungsgemässes Feuer

Raucherwaren

Elektrizität

Explosionen

Brandstiftungen

Feuerungsanlagen

Küchenbrände

### Summary table – Part 2: Fields recorded in the fire statistics

Some fields collected in the fire statistics are:

Residential buildings: Building whose major part of the horizontal area is used for residential purpose.

Fire deaths: Persons who lost their lives in or close to a burning building (called "Brandtote" or "morts à la suite d'incendie")

### Further comments

- Very fractured recording system as several institutions are collecting data with different methods and terms.
- Limitations regarding the link between the different collections of data.

Trends in data:

- A single person dies in more than 90% of the fatal fires. Fires with more than 2-3 fatalities are very rare.
- Most of the fatalities occur in dwellings (CH: more than 80% of the fatalities); however, this building category constitutes also the majority of the building stock
- The following categories of use have the highest fatality rate when considered relative to their proportion in the building stock (descending order):
  - Hospitals and residential cares
  - Dwellings with a part of the building devoted to another usage.
- Fires with fatalities are caused most frequently (descending order) by:
  - Smoking materials or candles, matches etc.
  - Cooking or electrical equipment, electrical installations (Most of the fatal fires are “man-made“ for example careless, sometimes intentional)
  - The risk of injuries (non-lethal) is especially large in cooking fires.

### 2.2.7. USA

#### **Statistics Description**

The National Fire Incident Reporting System (NFIRS) is a voluntary data collection system which relies upon local fire departments to collect detailed data on fires (as well as other incidents) as they occur, using standardized and uniform reporting forms. Data are transferred from participating fire departments to (or through) their respective state offices before consolidation by the United States Fire Administration into a single national database. The data set includes separate modules for fire incidents and casualties (deaths and injuries for civilians and firefighters).

#### **Collection of the information**

Information was collected through the NFIRS Complete Reference Guide and additional documents from the USFA and NFPA.

#### **Summary table – Part 1: Definitions**

Definitions are available in a data dictionary.

#### **Summary table – Part 2: Fields recorded in the fire statistics**

Note that NFIRS includes a category of “confined fires” for common types of a fire occurring in non-combustible containers that result in little damage, such as confined cooking fires, chimney or flue fires, fuel burner fires, and compactor or incinerator trash fires. NFIRS requires very little causal information or information about fire detection and suppression systems for these fires.

Basic module: State, incident data, location (street, city, etc.), type of incident (structure, vehicle, rubbish, etc.), alarm time, arrival time, controlled time, last unit cleared time, actions taken (extinguishment, overhaul, search and rescue, etc.), estimated dollar losses of property and contents, original value of property and contents, casualties, detectors, hazardous materials release, property use (assembly, educational, health care, residential, etc.), person or entity involved (name, phone, address, city, etc.) owner (name, phone address, city, etc.).

Fire module: State, date, property details (number of buildings, residential living units), on-site materials or products, area of fire origin, heat source, item first ignited, type of material first ignited, cause of ignition, factors contributing to ignition, human factors contributing to ignition, equipment involved in ignition, equipment type, equipment power source, equipment portability, mobile property involved.

Structure fire module: structure type (enclosed building, portable or mobile structure, air-supported structure, etc.), building status, building height, main floor size, story of fire origin, fire spread, number of stories damaged by fire, item contributing most to flame spread, type of material contributing most to flame spread, presence of detectors, detector type, detector power supply, detector operation, detector effectiveness, detector failure reason, presence of automatic extinguishing equipment, type of automatic extinguishing equipment, operation of automatic extinguishing equipment, number of sprinkler heads operating, reason for automatic extinguishing system failure.

Civilian fire casualty module (injury and fatality): state, date, fire department ID, injured person, number of casualties, age or date of birth, race, ethnicity, affiliation (civilian, non-fire department emergency medical services, police, other), date and time of injury, severity, cause, human factors contributing to injury, factors contributing to injury, activity when injured, specific location when injured, general location when injured, story at the start of the incident, story when injury occurred, primary apparent symptom, primary area of body injured, disposition (transferred to hospital, etc.).

Fire service casualty module (injury and fatality): state, date, fire department ID, victim name and ID, gender, affiliation, number of casualties, age, date of birth, date and time of injury, usual assignment, physical condition just prior to injury, severity, taken to, activity at time of injury, primary apparent symptom, primary body part, cause of injury, factor contributing to injury, object involved in injury, where injury occurred, story where injury occurred, specific location where injury occurred, equipment sequence number, protective equipment item, protective equipment problem, equipment manufacture, model, and serial number.

#### **Further comments**

Key aspects: NFIRS is the world’s largest and most detailed collection of fire incident data. Data is collected and published on an annual basis. NFIRS includes incident and casualty forms, a coding structure for data processing, comprehensive manuals for users, and computer software and procedures. A basic web-based data entry program is available and used mostly by smaller fire departments. The National Fire Academy also sponsors a training program that details how to use the system. Local fire departments may use vendor software with state permission. Some states have purchased software licenses for all fire departments in the state. Some fire departments have custom software that is integrated with other public safety functions.

Limitations: As the primary collectors of data, fire departments and firefighters have different levels of time commitment and motivation in how well they provide complete and accurate information in NFIRS reports.

Those who are tasked with entering data may not have enough time to complete all the modules or spend time identifying the best coding option, so they do the best they can with the time they have. This may be particularly true for volunteer fire departments. Consequently, data quality may vary. NFIRS coding options can be confusing and lead to inconsistent coding responses, even between experienced NFIRS researchers. Many data elements had too many coding options or had options that were not clear, which can lead to no decision or poor data reliability. The authors also pointed out that memory is limited and that long lists of codes can frustrate those who are responsible for entering data. Some states have dedicated program managers to perform quality control and provide feedback to fire departments, but many states lack the resources to perform this function. States do not receive federal funding to support personnel engaged in NFIRS. NFIRS also records a high share of “unknown” responses to a number of data elements, possibly a result of being such a detailed reporting system. It is difficult to make changes to NFIRS because of the many different software packages in use.

#### 2.2.8. UK

##### **Fire statistics description**

The fire statistics in the UK is not a national statistics and it is subdivided into England (Home Office), Northern Ireland (Northern Ireland Fire and Emergency Service), Scotland (Scottish Fire and Rescue Service) and Wales (Welsh Government). The data is usually collected by the fire brigades in the aftermath of an event. The inputs to the fire statistics are managed by the relevant organizations without having a national database. While England, Scotland and Wales have adopted the Incident Recording System (IRS) for the collection of the fire incident data, Northern Ireland has its own system. Therefore, four different fire statistics datasets are available with three of them based on the IRS.

##### **Collection of the information**

The summary table has been completed based on the Incident Recording System, which is publicly available. However, the fire statistics of England, Scotland and Wales are published annually with a limited number of fields recorded. Information for Northern Ireland has been requested and its fire statistics description has not been inserted in the summary table due to delay in the response.

##### **Summary table – Part 1: Definitions**

In the IRS, detailed definitions are provided for almost all of the major areas of investigations with specific fields recorded. In particular, fire incidents are subdivided into primary, secondary, and chimney fires. It also has an appropriate separation between accidental and deliberate fires. Building characteristics are provided and fatalities and non-fatal casualties are specified. For the fire safety measures, definitions for alarms, automatic extinguishing systems, compartmentations and escape routes are described by a dropdown menu with clear classes. No evaluation of direct or indirect costs of fire is present.

##### **Summary table – Part 2: Fields recorded in the fire statistics**

In Part 2, the majority of the fields are covered in the IRS, except for the evaluation of direct and indirect financial/monetary costs. Fire incidents, fire causes and consequences are present, as well as fatalities and casualties. In particular, for the fire consequences, fire damage (flame and/or heat damage) and total damage (flame and/or heat and/or smoke and/or water damage) are recorded in m<sup>2</sup>.

##### **Further comments**

- A national fire statistics is not present. In England, Scotland and Wales the statistics are based on the IRS while Northern Ireland has its own system.
- Fire statistics in the IRS is very detailed with clear definitions and the fields available cover the major areas of investigations.
- No evaluation of the economic impact of fire and economic impact are available.

### 3. ANALYSIS OF THE DEFINITIONS

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Part 1 of the summary table involves the analysis of the definitions available in the fire statistics. For a total of 23 countries (15 EU and 8 Other European and Non-European countries), information has been received and reclassified according to the major areas of investigation highlighted in Table 1. The tables with the definitions present in the fire statistics of the countries examined are available in Appendix I for EU countries and Appendix II for Other European and Non-European countries. In the following sections, the evaluation of the analogies and differences in the definitions provided has been developed and the terminology obtained compared with the one provided by the ISO TS 17755-2.

#### 3.1. FIRE INCIDENTS

The analysis of fire incidents is subdivided into three main parts which are accidental fire, deliberate fire and false alarm. Then ISO TS 17755-2 presents the following definitions:

- "3.2 Accidental fire: fire for which the cause does not involve an intentional human act to ignite or spread the fire into an area where the fire should not be.
- 3.6 Arson: act of intentionally and maliciously starting a fire or causing an explosion
- 3.7 Arsonist: person who commits arson
- 3.24 Deliberate fire, incendiary fire, intentional fire, voluntary fire: fire intentionally ignited under circumstances in which the person knows that the fire should not be ignited.
- 3.35 False fire alarm: alarm for which no fire occurred or for which fire department response was unnecessary".

The investigation of the definitions adopted in the various fire statistics is explained below according to EU, Other European and Non-European countries.

#### I. EU Countries

##### Fire incidents

- No definition is available for the description of the fire incident in Austria, Bulgaria, Denmark, France, and Germany while in the Netherland definitions are available but not provided.
- In Croatia and the Czech Republic, the number of fire incidents is collected; however, no definition is available.
- A unique definition for fire incident is present in the following countries:
  - Romania: Fire - self-sustaining combustion, which takes place without control in time and space, which causes loss of life and/or material damage and requires an organized intervention in order to interrupt the burning process.
  - Slovakia: A fire is any unwanted burning in which the lives or health of individuals or animals, property or the environment are immediately endangered, which results in damage to property, the environment or which results in the injury or death of a natural person or animal.
  - Slovenia: An incident is an event or a group of events that are caused by uncontrolled natural or other forces, which can endanger the life or health of people and animals. It can also cause damage of property, cultural heritage and the environment in such extend, that it is required to use special measures, forces and resources to control the incident, since regular activities, forces and resources are not sufficient. Fire is a process of rapid burning that is spreading uncontrollably in time and space. The fire characteristics are energy release together with smoke, toxic gases and flames. The consequence of rapid burning is an explosion.
  - Sweden: Fire or fire incident: In Swedish fire is to some extent defined by language, there are separate words for unwanted and wanted fires (like a fire for heating your house). In addition, a definition like "uncontrolled flame, glow or smoke that caused damage" for Brand (fire). Fire incident is defined as danger that a flame, glow, smoke or heating of flammable material might cause damage.

From these definitions is clear how fire incident is usually referred to an uncontrolled burning able to endanger the health of individuals and damage property as well as the environment.

Accidental fires, referred to an unintended event causing the fire incident:

- Estonia: Unexpected and unintended event, which causes damage to the person's life, property or environment. Crucial elements of accident are suddenness, involuntary and damage.
- Finland: Accidental fires include those where the motive for the fire was presumed to be either accidental, negligent, or not known (or unspecified).
- In the Netherlands, definitions exist but are not specified.

Deliberate fire, the fire incident is caused by an intentional cause defined as deliberate:

- Estonia: Intentional activity, which purpose is to make harm to another person, using fire for it.
- Finland: Deliberate fires include those where the motive for the fire was 'thought to be' or 'suspected to be' deliberate. This includes fires to an individual's own property, others' property, or property of an unknown owner.

False alarm could involve the notification of a false alarm by an individual or automatic fire alarm system as presented in the following fire statistics:

- Estonia: A false alarm of an automatic fire alarm system is an alarm caused by other factors than a fire.
- Finland: No fire at the scene.
- Romania: False alarm - Upon arrival of the crews at the scene it is found that it does not exist.
- Moreover, in Hungary, only the definition for a false alarm is provided: There is no incident at the indicated location, no event requiring the intervention of firefighters, only an event deemed to be by a caller or fire alarm device (the notifier misjudged the event). The use of detection and surveillance tools does not mean intervention, e.g. lamp, thermal imager, gas sensor. But here counted chimney fires that do not require the intervention of firefighters and the fire does not spread from the chimney to its surroundings.
- Finally, fire incidents can be classified as false alarms in Italy and as fire false alarm, malicious and good intent in Ireland. However, no definition is provided.

## **II. Other European and Non-European countries**

Fire incident is provided where accidental, deliberate fires and false alarms are recorded:

- Canada: Any instance of destructive or uncontrolled burning, including explosion of combustible solids, liquids, or gases. Accidental, deliberate and false alarms are recorded.
- USA: Incident Types: Structure fire, Fire in Mobile Property Used as Fixed Structure; Building fire; Confined fire (Cooking fire without extension beyond cooking vessel, Chimney or Flue Fire confined to chimney or flue, Incinerator overload but no flame damage outside incinerator, Fuel burner; boiler without flame damage outside firebox, Commercial compactor confined to contents, Trash or rubbish fire in structure but no damage to structure of contents). Accidental, deliberate fire included under causes and false alarm included under type of incident.
- In the UK, there are definitions for primary, secondary fires and chimney fires where primary fires are generally more serious fires that harm people or cause damage to property while secondary fires are generally small outdoor fires, not involving people or property. Moreover, a late fire is defined as are fires attended by a Fire and Rescue Service which were known to be extinguished when the call was made.

Accidental fire is available in:

- New Zealand: Fires where the proven cause does not involve an intentional human act to ignite or spread a fire into an area where the fire should not be.
- Russia: Uncontrolled burning, causing material damage, harm to the life and health of citizens, the interests of society and the state.
- UK: Accidental fires include those where the motive for the fire was presumed to be either accidental or not known (or unspecified).

Deliberate fire:

- New Zealand: Incendiary - An unlawful, deliberately-lit fire where, given the known information the fire is likely to be a result of malicious intent or reckless disregard of others and property, to cause unlawful damage.
- Russia: Deliberately or inadvertently setting fire to objects in such a way that the fire is able to spread further spontaneously after removing the ignition means.
- UK: Deliberate fires include those where the motive for the fire was 'thought to be' or 'suspected to be' deliberate. This includes fires to an individual's own property, others' property or property of an unknown owner. Despite deliberate fire records including arson, deliberate fires are not the same as arson. Arson is defined under the Criminal Damage Act of 1971 as 'an act of attempting to destroy or damage property, and/or in doing so, to endanger life'.
- In Switzerland, there is a classification for accidental and deliberate fires, but no definition is provided.

False alarms could be found:

- Norway: There are two types of false alarm.  
"ABA Feil i Bruk" og "ABA teknisk/ukjent" alarm: An alarm which is given accidental or in good faith without fire or risk of a fire or any damage which require or could require the fire brigade.  
A False alarm "Falsk ABA": An Alarm which is given intentionally and in bad faith without fire or risk of a fire or any damage which requires or could require the fire brigade or where there is no other damage.
- Furthermore, in Australia, Russia and the UK, false alarms are recorded in the fire statistics, but a proper definition is not available.

### **3.2. BUILDING DESCRIPTION**

In the building description there are generally two philosophies which are followed:

- Buildings are distinguished between residential and non-residential buildings, and
- Buildings are described with regard to the national building code, often with regard to height and use of the building.

In several countries a drop-down list or a list of typical buildings is given from which the property type can be chosen.

The ISO TS 17755-2:2020 presents several definitions regarding buildings:

- 3.10 building: permanent or semi-permanent walled and roofed structure that stands alone and separately from other structures, including those under construction, or any comparable structure
  - Note 1 to entry: See also built environment, ISO 13943:2017, 3.32.
  - Note 2 to entry: When buildings are used for automatic operations, this shall be specified.
- 3.11 building fire: fire involving any kind of building (3.10) such as residential, commercial, public building
- 3.52 height of a building: distance between the floor of the ground floor used by firefighters and fire engines and the floor of the highest level used by people of the building (3.10)
  - Note 1 to entry: This is at least the number of floors above the ground level of the building.
- 3.26 dwelling fire, home fire, residential fire: fire which occurs in a property that is also a place of residence, excluding hotels, hostels, and residential institutions.

#### **I. EU Countries**

Residential and Non-residential buildings:

- In Switzerland, residential buildings are: Building whose major part of the horizontal area is used for residential purpose.
- In Croatia, Fires by fire objects (buildings types, sectors of industry, etc.) are collected.
- In Denmark, the building description is defined in a "pick list" which specifies which type of building is on fire.
- In Estonia, it is referred to the Building Code: A building is a construction work that has an interior space that is separated from the external environment by the roof and other parts of the building envelope, Residential buildings/House, block of flats, dormitory, auxiliary buildings, Non-residential buildings, Public buildings, industrial buildings.
- In Finland, several building characteristics are reported on separated Building form which are:
  - Residential buildings: Detached house, attached house or block of flats, free-time residents.
  - Non-residential buildings: Commercial building, office building, office building, transport and communication building, institutional and healthcare building, assembly building, educational building, industrial building, warehouse, building for fire services, agricultural building or other building.
- In France, for residential buildings, there are definitions for different types of buildings in French regulations for dwellings (by type and height). These are also used in Fire statistics from firefighters. For non-residential buildings, there are definitions for different types of public buildings (by type and height). These are also used in Fire statistics from firefighters.
- In Ireland, fires are recorded in Domestic buildings, Institutions, Industrial, Commercial, Service and Other. The definitions are the following:
  - Residential buildings: Domestic buildings: Chimney Fires in Houses; Other House Fires; Apartments, flats and bedsitters; Caravans/Mobile Homes.
  - Non-residential buildings: Institutions: Hospitals; Schools; Other institutions, Industrial: Factories, Chemical Plants; Storage Buildings/Warehouses, Commercial: Shops/Supermarkets; Offices; Hotels/Guesthouses/Boarding Houses, etc. Service: Places of

Public Entertainment (Dance Halls, Discos, Cinemas, Theatres, Bingo Halls); Public Houses; Restaurants.

- In Italy, residential buildings are Residential Places and Homes: Private flats and homes; Generic building; Others; Private parking; Gypsy camps; Temporary buildings. Non-residential buildings are Places for specific uses; Storages of solid combustibles; Commercial and sales stores; Agricultural and farming places; Traffic and parking areas; Mountain areas; Other places, waste storage rooms; Switchboard room.
- In the Netherlands, residential buildings are buildings where people live for at least 6 months a year (houseboat and holiday home can be included) and non-residential buildings, all building types that are not residential.
- In Slovakia, the residential part of a building is the part of the building that contains flats or a flat intended for long-term housing; the residential part of the building should have a separate entrance from the public space.
- In Slovenia, specific requirements for buildings are stated: Article 17 (fire safety) says: (1) In order to reduce the risk to people in or near them and the environment, facilities must ensure fire safety and enable effective and safe action by firefighters and rescuers. A sufficient amount of water for extinguishing must be provided. (2) The load-bearing structure of a building must maintain the required load-bearing capacity for a certain period of time in the event of a fire. To limit the rapid spread of fire throughout the building, building elements must be used that are difficult to ignite, emit small amounts of heat and smoke when ignited, and limit the rapid spread of fire over the surface. (3) In order to limit the spread of fire throughout the building, the building must be divided into fire sectors. (4) Facilities must provide a sufficient number of properly carried out evacuation routes and exits at appropriate locations so that people can leave them quickly and safely. To ensure the rapid and safe evacuation of people and the rapid intervention of firefighters and rescuers in the facility, fire alarm and alarm systems must be installed. (5) Unobstructed and safe access for firefighting and rescue must be provided in and around facilities. (6) Appropriate fire-fighting systems and devices and equipment must be installed or installed in the facilities. (7) The external walls and roofs of buildings, partition walls, together with doors, windows and other penetrations, must reduce the risk of the fire spreading to neighbouring buildings. Residential buildings are defined as buildings of which at least half of the usable floor area is used for residential purposes. In case less than half of the usable floor area is used for residential purposes, the building is categorised as non-residential, depending on the purpose of the building.
- In Sweden, a building is a permanent construction with a roof or roof and walls placed on ground or partly below ground or placed for a long period at a certain place in water constructed so that people can be in it. Residential and non-residential buildings are not defined.

## **II. Other European and Non-European countries**

Residential and Non-residential buildings:

- In Australia a code for buildings exists. Determining which major division, the fixed property falls within will assist in finding the correct subdivision. Three digits must be recorded for this code. For each of them property subtypes are available:
  - Public Assembly Property Division 1
  - Educational Property Division 2
  - Institutional Property Division 3
  - Residential Property Division 4
  - Shop/Store, Office Property Division 5
  - Primary Industry, Utility, Defence Property Division 6
  - Manufacturing Property Division 7
  - Storage Property Division 8
  - Special Property Division 9
  - Unclassified Division 0
- In New Zealand, a building fire is referred to as a 'structure fire', either with or without damage. Residential building is a building where a person or persons normally live. Does not include hotels, temporary accommodation or hostels. Non-residential buildings: Nil - field breaks down into general property use. 'General Property Use' is defined as 'the board use of the location where the emergency has occurred.
- In Russia, a building fire is a fire in aboveground construction with premises for living and (or) activities of people, location of production facilities, storage of products or keeping animals. Residential buildings are apartment buildings for permanent residence of people and dormitories for living during the period of work or study. Non-residential buildings are buildings which are not apartment buildings for permanent residence of people and dormitories for living during the period of work or study.

- In the UK, building characteristics are reported: number of floors below and above the ground level. Residential buildings are Dwellings (residential homes and HMOs) and Other residential (hostel, B&Bs, Nursing homes, Students halls of residence, etc.) and Non-residential buildings are Offices, shops, factories, warehouses, restaurants, cinemas, public buildings, religious buildings, agricultural buildings, railway stations, sheds, etc.
- In the US, a building is defined as a Property use, structure. Residential buildings include 9 code choices and non-residential buildings are defined as Assembly; Educational; Health care, detention and correction; Mercantile, business; Industrial, utility, defense, agriculture, mining; Manufacturing, processing; Storage.
- In the other countries, the building is described according to terms used in the building regulations or with the implicit regard to building regulations but without a specific definition written down in the fire statistics.

### **3.3. FIRE CAUSES**

#### Fire causes

- The ISO TS 17755-2 defines the fire cause (3.16) as a predefined categorical class of the primary cause of the fire.
- Most of the countries have no definitions but many of them have a dropdown menu from which it is possible to choose the fire cause.
- The following countries have a definition: Italy, Romania, New Zealand, Russia.
- The existing definitions are similar and can be summarized as the circumstances or conditions that cause the fire.

#### Source of ignition

- The existing definitions are similar to the ISO TS 17755-2 definition, where the source of ignition (3.74) refers to the energy that initiates the combustion.
- Most of the countries have no definitions but many of them have a dropdown menu from which it is possible to choose the source of ignition, such as the heat source, material first ignited, and equipment involved in the ignition.
- The following countries have a definition: Estonia, New Zealand, Russia.
- The existing definitions are similar and can be summarized as the energy or source of energy that initiates ignition or combustion.

#### Area of fire origin

- The existing definitions are similar to the ISO TS 17755-2 definition, where the area of fire origin (3.5) refers to the localized area where the fire started.
- Most of the countries have no definitions but many of them have a dropdown menu from which it is possible to choose the area of origins, such as kitchen, living room, others.
- The following countries have a definition: Australia, New Zealand, Russia
- The existing definitions are similar and can be summarized as the area/place where the fire originated.

From the definitions provided by the fire statistics of the EU, Other European and Non-European countries, the following statements can be affirmed:

- Drop Down menus with the limited amount of possibilities of causes, sources of ignition and areas of origins give a possibility to compare statistical data, once being unified. On the other hand, they limit the editor to given possibilities (a good asset would be to get the full drop-down menus from the countries to compare them with each other).
- In the existent difference of definition/dropdown menus of fire causes and sources of ignition one can see possible different approaches of fire investigation - elimination process versus hypothesis building and verifying, even if the result will be in the most cases the same, the dropdown menu is limiting the number of possibilities (if there is not a free text box, the editor can fill in).
- Differences in interpretation of the terms such as the cause of the fire and sources of ignition can be seen. Some countries report concrete possibilities of a cause of the fire, some also first fuel while others circumstances of the fire (what is also according to ISO) but perhaps difficult to compare statistically. Related to the source of ignition there is also a deviation in reporting. Some countries refer to heat transfer, some to kind of energy that leads to a fire, others also report first ignited material in this category of statistics.

### 3.4. FIRE CONSEQUENCES

Only 5 EU countries and 7 Other European and Non-European countries provide definitions for the different generic groups dealing with fire consequences. Those are Estonia, Finland, Netherlands, Romania, Slovenia, Australia, Canada, New Zealand, Norway, Russia, UK and USA while other countries (e.g. Hungary) record these fields and interpret them, but they do not have specific definitions.

#### Fire spread

- Fire spread or fire propagation (3.46) is defined according to ISO TS 17755-2 as the movement of fire from one place to another.
- Estonia, Finland, Romania, New Zealand, UK and USA define fire spread generally as the evaluation of the extent of flame (and smoke) damage at firefighter arrival and at stop. The possible measurement is to report if the fire was confined to (spread to) room of origin, the floor of origin, building of origin, or beyond the building of origin.
- While in Australia the focus is on determining the reason or the most important factor that allowed flame spread (or char) beyond the room or area of origin.
- In Russia, fire spread is defined as an increase in the combustion zone and/or the likelihood of exposure to hazardous fire factors.

#### Horizontal and vertical fire spread

- According to ISO TS 17755-2, the extent of fire propagation (3.29) is defined as the horizontal and vertical dimension of fire spread.
- Finland, New Zealand, and the UK measure the horizontal area damage in m<sup>2</sup>. New Zealand also measures the vertical area damage in m<sup>2</sup>. In contrast, the Netherlands does not necessarily separate horizontal and vertical fire spread but rather evaluate if and how the fire spread inside/outside the building or to another floor, which can be a combination of fire horizontal and vertical fire spread.

#### Damage

- For the definitions available in the ISO TS 17755-2:
  - "3.23 Damage: total loss caused by fire, including direct property damages (3.25) and indirect losses (3.54) such as business interruption, loss of future production and including loss of wildlife or watershed values in wildland fires.
  - 3.25 Property damage: property damages: estimated monetary value of the damage to property and contents caused by fire and firefighting operations, including costs for demolition and decontamination as well as indirect losses (3.54) due to business interruption"
- Slovenia, Canada, Russia, and ISO TS 17755-2 introduce different definitions for damage that are not specifically contradictory, but with different level of precisions.
- Slovenia: Damage that is caused by natural or other accident.
- Canada: Extent of Damage is the total extent of damage caused by actual burning or charring and includes damage caused by heat (browning, blistering, etc.), smoke, water and other extinguishing agents.
- Russia: Direct material damage from a fire is understood as material values estimated in monetary terms, destroyed and (or) damaged as a result of exposure to hazardous fire factors and their associated manifestations.
- Finally, Estonia has a mathematical equation to calculate the property damage as a function of different parameters such as building square metre value, burnt area, depreciation percentage, sanitary repairs, renovation, capital repairs and warranty repair.
- Finland, New Zealand, and Romania estimate the damage caused by fire depending on the area affected by fire in m<sup>2</sup>.

#### Fire

- The definition in ISO TS 17755-2 is specific for reported fire (3.39):
  - "<fire statistics> fire that receives a fire department response regardless of loss, without any exception.
  - Note 1 to entry: In some countries, a fire can be reported to a fire station. In this case, it is specifically noted as such.
  - Note 2 to entry: Reported fire does not include the following, except where they cause fire or occur as a consequence of fire: explosion, lightning and electrical discharge.
  - Note 3 to entry: This definition differs from general definitions of fire given in ISO 13943:2017, 3.114, 3.115 and 3.116."
- Estonia defines fire as "Combustion process, which is characterized by heat release, smoke and/or flames".

- In Russia it is “Uncontrolled burning, causing material damage, harm to the life and health of citizens, the interests of society and the state”.
- In the UK, the definition is “The total horizontal area damaged by the flame and/or heat (in square metres) at the stop of the fire”.
- While the first two definitions focus on the fire process and are complementary, the latter definition focuses on the fire damage.
- All definitions are technically correct; however, they depend on the context and how they are expected to be used.
- For this term, some fire statistics provide definitions for the fire incident while others for the fire damage caused by the incident.

#### Flame

- Estonia defines flame as a “combustion zone in the vapour phase which emits light” and Russia defines it as “Combustion process accompanied by flame or glow”.
- Australia and New Zealand define flame damage in a similar way (but different wordings) covering “the extent of the area burned or charred by flame impingement”.
- The UK only records if there were any heat and smoke damage, while the USA evaluates the number of stories where there is minor damage, significant damage, heavy damage and extreme damage.
- Finally, Finland records fire damage in square meters and Euros.

#### Smoke

- The ISO TS 17755-2 does not include a definition just for smoke but for the extent of smoke propagation (3.30): horizontal and vertical dimension of smoke spread.
- Estonia and Russia have similar definitions for smoke which covers “a visible suspension of solid and/or liquid particles (or aerosol) in gas formed by combustion or pyrolysis of materials”.
- The definition in Australia is also similar but is worded differently: “The extent of the smoke and heat scorch or browned damage to the structure.” Overall, they don’t seem to contradict.
- New Zealand records the approximate floor area of the structure that was affected by smoke. That is also the practice in Finland, in addition to the estimated cost of damage in Euros.
- The UK only records if there were heat and smoke damage or not.

#### Water

- Finland records the area of damage by water in square meters and its cost in Euros, while New Zealand only records the approximate floor area of the structure that was affected by water. Similarly, Australia evaluates the extent of the damage to the building and contents caused by water or other extinguishing agents. However, there are no specific definitions.

#### Total

- Finland accounts for total damage in square meters and Euros, while New Zealand only considers all damage measured in square metres. In the UK, it is the total horizontal area damaged by the flame, heat, smoke and/or water (in square metres) at the stop of the fire. Finally, in the USA, the Estimated Dollar Losses cover Property and Contents.

### **3.5. FIRE SAFETY MEASURES**

Members of the project team sought to assess whether countries included in the study collected data on a variety of fire safety measures that may have been present in fire incidents involving buildings. Information was sought on eleven safety measures: Alarm, Type of Alarm, Automatic Extinguishing Systems, Type of Automatic Extinguishing Systems, Compartmentation, Fire Barriers, Safe Areas, Smoke Extractors, Fire Brigades on Site, Escape Routes, and Evacuation. The project team sought to identify whether the various national data collection systems provided definitions of these safety measures, the type of information included in the definitions, and how differences and similarities between definitions in the respective data collections systems.

“Alarm” is the only safety measure for which a definition is available in ISO TS 17755-2, limiting comparisons with an external standard:

- “3.4 Alarm: it is the time to notification to fire service or other local service
  - Note 1 to entry: This definition differs from alarm time defined in ISO 13943:2017, 3.16 which corresponds to the time interval between ignition of a fire and activation of an alarm to notify occupants”.

In general, although most of the data collection systems include data on alarms, the focus can significantly differ between systems.

It is also worth noting that there may be some inconsistency in how certain of the fire safety measures were interpreted by individual members of the project team. For instance, it isn't clear whether escape routes, safe areas, evacuation referred to building features that were specifically designed with fire safety in mind or, alternatively, whether occupants were simply able to find passages to safety, to shelter in safe areas, or to evacuate, and whether compartmentation referred to fire spread or to fire safety structural features. There was also likely to be confusion whether fire brigades on site referred to whether or how soon fire departments reached the scene of a fire or to fire departments permanently stationed at the location of a fire, such as industrial fire brigades.

The results of this research task are summarized below for three country categories: member states of the European Union, European nations that are not members of the European Union named Other European, and Non-European countries.

### **I. EU Countries**

Seventeen members of the European Union were included in the assessment of fire safety measures. Our research found that the fire data collection systems in seven of these countries included a definition of at least two of the safety measures: Austria, Denmark, Estonia, Finland, Germany, Hungary, and Slovakia. However, no definitions were provided for Germany or Austria. Definitions were classified as not available for four countries: France, Ireland, Italy, and the Netherlands. Definitions were not specified or unclear in six countries: Bulgaria, Croatia, the Czech Republic, Romania, Slovenia, and Sweden. Consequently, the review of fire safety measures in the European Union is limited to five countries for which at least some of the definitions for fire safety measures are available: Denmark, Estonia, Finland, Hungary, and Slovakia.

Alarm:

- Four countries (Denmark, Finland, Hungary, Slovakia) were found to capture information on "Alarm" in their data collection systems.
- The information in each case referenced the physical presence of a fire alarm in a building, which differs from the ISO TS 17755-2 definition of alarm as "time to notification to fire service or other local service."

Type of Alarm:

- Four countries (Denmark, Estonia, Finland, and Hungary) captured information on the type of alarm, but categories differed between them, such as "ion detector, optimal smoke detector, thermodetector, multifunction detector" vs. "autonomous fire alarm sensor, autonomous fire alarm system, automatic fire alarm."

Automatic Extinguishing System:

- Information on the presence of automatic extinguishing systems is captured in four countries (Estonia, Finland, Hungary, Slovakia).

Type of Automatic Extinguishing System:

- Finland and Hungary capture information on the type of automatic extinguishing system.
- Finland captures "type of sprinkler," while Hungary captures whether the system is "water mist, gaseous, pressurized, drencher, foam, powder, or other."

Compartmentation:

- Three data collection systems (Estonia, Finland, Hungary) capture compartmentation as a structural element of a building.
- Information on compartmentation for a fourth (Denmark) references fire spread from the main space and the reason for the spread, such as open doors.

Fire Barriers:

- Two countries (Estonia and Slovakia) collect data on fire barriers and reference the barrier as a structural feature designed to stop the spread of fire.
- Information on fire barriers in Finland is said to be included in compartmentation, but no additional information is provided.

Safe Areas:

- Safe area in Hungary is identified as a designated room or space in a building that is designed to ensure safety until rescue or escape.
- Estonia identifies the safe area as a room where people are evacuated to but doesn't indicate that this is the room designed as a safe area.

Smoke Extractors:

- Four countries (Estonia, Finland, Hungary, Slovakia) collect information on smoke extractors.
- Finland and Slovakia distinguish between automatic and manual extraction systems.
- Estonia references smoke extractors as a permanently installed building system.

Fire Brigades on Site:

- Two countries (Finland and Hungary) include information on fire brigades on-site, but reference different phenomena: Finland reports arrival time of fire brigades, while Hungary references fire brigades that are maintained by the facility of fire occurrence.

Escape Routes:

- Estonia, Finland, Hungary and Slovakia identify escape routes as a route used to facilitate evacuation. Two indicate or imply that the escape routes are a building design feature.

Evacuation:

- Estonia, Finland, Hungary, and Slovakia identify evacuation as the departure or removal of building occupants to safety.

## **II. Other European and Non-European Countries**

Information was collected on fire safety measures for four European nations that are not member states of the European Union (Norway, Russia, UK, and Switzerland). Although the research indicated that the fire data collection systems for Switzerland included definitions on all of the fire safety measures within the scope of review, no definitions of those measures were identified. Information on fire safety measures is therefore limited to Norway, Russia, and the United Kingdom. Information was also collected on fire safety measures for four non-European countries (Australia, Canada, New Zealand and the United States).

Alarm:

- All Other European and four Non-European countries indicate that information on alarm presence is captured in data collection systems.

Type of Alarm:

- Norway and the UK capture information on the type of alarm but utilize different categories.
- Detector type in Norway is based upon the type of detection (ion detector, optical smoke detector, thermodetector, multifunction detector)
- Categories in the UK are based upon alarm power source (Smoke alarm – 1-year battery; Smoke alarm - long-life battery; Smoke alarm – mains; Smoke alarm - mains and battery; Smoke alarm - Battery type not known; Mains security system including smoke alarm; Other; Not known).
- Canada, New Zealand, and the USA capture information on the type of alarm.
- Canada captures whether the alarm is: Single- or two-stage central alarm, whether the alarm is a voice alarm, and whether the alarm is connected to a remote monitoring agency single-stage central alarm with connection to the remote monitoring agency.
- The USA identifies whether the alarm is a smoke alarm, heat alarm, combination smoke and heat alarm, sprinkler water flow detection alarm, or involves more than one type of alarm.

Automatic Extinguishing System:

- Russia and the UK capture information on the presence of automatic extinguishing systems.
- All four Non-European countries have information on the presence of automatic extinguishing systems.

Type of Automatic Extinguishing System:

- Information is collected only by the UK, based on categories of Water mist; Gaseous system - halon; Gaseous system - other; Pressurization; Smoke ventilation; Drencher; Foam; Powder; Other.
- The USA identifies whether the system is wet pipe, dry pipe, dry chemical, foam, halogen-type, carbon dioxide or other.
- New Zealand identifies different types of system, but options are not available.

Compartmentation:

- Information on compartmentation was included for Norway and the UK.
- The information for Norway refers to whether fire spread from the area of origin and whether spread was due to open doors, holes, etc.
- The UK more directly references compartmentation as a building design feature, where the size of compartment is recorded and compartment categories include: Stopped/checked spread; Breached - current building work; Breached - previous building work; Breached - fire doors left open or incorrectly

fitted; Damage to compartmentation; Fire spread through gaps or voids in construction; No compartmentation in the building; Not applicable; Other.

- No information on compartmentation as a building design safety feature in Non-European countries.
- Australia collects information on the smallest compartment within which the fire is contained.
- The USA collects information on the extent of fire spread.

#### Fire Barriers:

- Information on fire barriers for the UK is included in information on compartmentation.
- The data collection system in Russia describes fire barrier as: A building structure with a standardized fire resistance limit and a structural fire hazard class of a structure, a volumetric element of a building or other engineering solution designed to prevent the spread of fire from one part of a building, structure, structure to another or between buildings, structures, structures, green spaces.
- No information on the presence of fire barriers in Non-European countries.

#### Safe Areas:

- The data collection system in Russia is said to include safe areas as "An area where people are protected from the effects of fire hazards or where there are no fire hazards".
- The response for Norway indicates that safe area involves "Fire technical equipment and functionality (smoke alarm, fire blanket, fire technical installations)".
- No information on smoke extractors as a feature of the building in Non-European countries.
- New Zealand defines a "place of safety" as a place in the vicinity of a building from which people may safely disperse after escaping the effects of a fire. It may be a place such as a street, open space, public space or an adjacent building.

#### Smoke Extractors:

- Information on smoke extractors is only included for Russia, with this definition: The smoke exhaust system is a specialized complex of ventilation equipment designed for the prompt removal of combustion products from the premises, for removing smoke from the evacuation routes of people and contributing to the correct organization of measures to eliminate the fire.
- No information on smoke extractors as a feature of the building for Non-European countries.
- New Zealand records equipment adopted by fire brigades for the extraction of smoke.

Fire Brigades on Site: No information.

#### Escape Routes:

- Russia defines an escape route as: An exit leading to the escape route directly outside or into a safe area.
- The UK includes escape route information in several response options: Okay – no visible concerns; Exits locked; Exits blocked (e.g. Materials stored blocking exit); Exit route blocked by smoke/flames; Poor implementation e.g. doors swing the wrong way; Contents contributing to abnormal fire spread/smoke production; Not applicable; Other.
- New Zealand records only if occupants could or could not escape safely.

#### Evacuation:

- Russia defines evacuation as: The process of organized independent movement of people directly outside or into a safe area from premises where there is a possibility of exposure of people to dangerous fire factors.
- The UK includes evacuation information as: Yes (with data on people evacuated with or without assistance) and No Escape Routes.
- New Zealand asks for evacuation status and whether the location of the emergency was fully evacuated during the emergency. Fire Safety, Evacuation Procedures and Evacuation Schemes Regulations 2018 require buildings to have a 'means of escape from fire' either by "The owner of a building must have a procedure in place (evacuation procedure) for the safe, prompt, and efficient evacuation of the building's occupants in the event of a fire emergency requiring evacuation, or an evacuation scheme to enable the safe, prompt and efficient evacuation of the building's occupants in the event of a fire emergency evacuation.

### **3.6. FIRE RESPONSE**

Fire response constitutes of two different entries, “Fire service time of response” and “Occupant fire response”. These terms are part of ISO TS 17755-2 only as “response time (3.68) – time from the time of call to the arrival of the first fire engine”.

Fire service time of response:

- The examined fire statistics show that in many countries only a definition for “Fire service time of response” is provided. The fire service response time is also possible to be calculated in many cases based on different entries.
- In Denmark and Norway, this can be constituted of several time entries like alarm time and date, departure, arrival at scene, leaving scene and back at the station.
- In Hungary, the country has provided the requirements that the country has on the rescue service for response time (time between alert and the first vehicle starts moving) or what affects the response time.  
Estonia, Netherlands, Romania, Slovenia, Australia, Canada, New Zealand, Russia and UK have provided a similar definition as given by ISO TS 17755-2.

Occupant fire response:

- The term “Occupant fire response” is more ambiguous and few countries have provided a definition for this in the tables. In Finland, it is unclear if it, in fact, relates to the Fire service time of response.
- Hungary explains the regulations on who should report a fire.
- The Netherlands defines “Occupant fire response” as if someone tries to put out the fire.
- New Zealand does not provide a definition but have a selection drop list on what equipment had been used to control the fire before the fire brigade arrived.
- The UK has defined it as the time between ignition and discovery and between discovery and the call recorded.

By studying the tables obtained in Part 2 of the summary table in the fire statistics, it is possible to gain further insight into what data different countries collect that can relate to “Occupant fire response”, this is in many cases related to what actions the occupants take to control the fire, but as the term is written now it is unclear what is meant by it.

### **3.7. FIRE FINANCIAL COSTS**

The direct financial costs related to the fire incidents are defined only in 4 EU countries, while the indirect financial costs only in Slovenia. When Other EU and Non-EU countries are considered, 4 countries determined the direct financial costs and only Russia the indirect financial costs.

In the ISO TS 17755-2, there are various definitions related to the direct and indirect fire costs:

- “3.23 Damages: total loss caused by fire, including direct property damages (3.25) and indirect losses (3.54) such as business interruption, loss of future production and including loss of wildlife or watershed values in wildland fires
- 3.25 Direct property damages: damages (3.23) excluding indirect losses (3.54)  
Note 1 to entry: See also, damages (3.23) and indirect losses (3.54).
- 3.66 Property damages: estimated monetary value of the damage to property and contents caused by fire and firefighting operations, including costs for demolition and decontamination as well as indirect losses (3.54) due to business interruption  
Note 1 to entry: Property damages does not include land value. It can include indirect loss due to business interruption.
- 3.54 Indirect losses: amount of loss incurred as a result of being unable to use business property or equipment”.

#### **I. EU Countries**

The direct financial costs are evaluated as the amount of damage to the building caused by the fire in monetary terms:

- In Estonia, damage to furniture or the environment is not taken into account.
- In Finland, they are estimated by fire, smoke and water.
- In Slovakia, the direct material loss is the sum of losses calculated from estimated residual value of tangible fixed assets, materials and other values destroyed by the fire.
- In Slovenia, physical or legal person who intentionally caused an accident or because of negligence, the incident induced costs due to the emergency is required to cover the following: costs of the rescue

intervention, costs of restoration to the previous condition, costs of compensation for physical and legal people. Funds for assessing the damage in the event of a natural or other incident is provided by the government

The indirect financial costs:

- In Slovenia, they are related to the cost of the firefighting operations. In particular, the owner or manager of the facility is obliged to cover the costs of performing firefighting operations. The costs of the intervention that arise due to the tasks performed by the fire brigade are covered by the municipality. Irrespective of the previous two sentences, the costs of the intervention are covered by:
  1. The person responsible for the accident that was caused intentionally or due to negligence
  2. Whoever is not taking precautions when transporting, storing or carrying out other tasks with toxic substances
  3. Whoever is not organising that the firefighters to be present at an event or activity according to the regulations
  4. Whoever is on purpose contacting the fire unit without reason.
- The costs of interventions that arise due to the interventions performed outside of the municipality of the fire unit are covered by the Republic of Slovenia if the intervention was performed on the basis of national protection.

## **II. Other European and Non-European countries**

The direct financial costs in Other European and Non-European countries:

- The fire direct financial costs are subdivided into dollar loss, property, contents and insurance in Australia:
  - Dollar loss: the estimated monetary value of the damage to property and contents caused by fire and firefighting operations. Do not include land value.
  - Property: the reporting officer's estimation of the value of the property. Do not include the value of the contents (property includes buildings, structures and mobile property).
  - Contents: the reporting officer's estimation of the value of the contents (includes crops).
  - Insurance: whether the contents or structure or both were insured.
- In Canada, the direct financial costs are estimated in dollar loss but no methodology is provided.
- In Russia, direct material damage from a fire is understood as material values estimated in monetary terms, destroyed and (or) damaged as a result of exposure to hazardous fire factors and their associated manifestations.
- In USA, estimate of total property and contents dollar loss and pre-incident value of the property and contents are provided.

For the indirect financial costs of fire:

- In Russia, material losses due to violation of economic plans in the economy (e.g. a decline in production, a decline in trade and banking operations, a decrease in income, losses due to delays in the transport of goods).

In the following Section, the analysis of fatalities and casualties, will be provided based on the definitions available in the ISO TS 17755-2 and the description of the current terminology adopted in EU, Other European and Non-European countries.

### 3.8. FATALITIES AND CASUALTIES

#### 3.8.1. Description of the data status of ISO TS 17755-2

With regard to the current EU FireStat project, the ISO TS 17755-2 standard has been examined. Table 3 provides an overview of common terms and definitions.

**Table 3: Common terms and definitions ISO TS 17755-2**

Code	Terms	Definition(s)
3.03	Age group of victims	categorization by age of the victims (3.15) of fire Note 1 to entry: this categorization may differ locally. This document proposes the following categories: - Newborn (child under 28 days of age) - Child (person whose age is between 28 days (included) and 9 years (included)) - Youth (person whose age is between 10 years (included) and 17 years (included)) - Adult (person whose age is between 18 years (included) and 64 years (included)) - Elderly (person who is aged 65 or more)
3.15	Casualty, Victim	person killed or injured
3.18	Cause of casualty	phenomenon causing death of a person in a fire: Smoke inhalation (heat gases and toxic gases including oxygen depletion); Burn; Physical injury; Other
3.21	Condition of casualty	predefined categorical classes of the circumstances of casualty EXAMPLE Asleep at time of fire; bedridden or other physical handicap; defenestration; impairment by alcohol; impairment by drugs; impairment by medication; blinded or partially sighted; deafness; mental impairment; senility (3.72); awake and no physical or mental impairment at the time of fire; under restraint or detention; too young to react to fire emergency; child left unattended; unclassified
3.36	Fatal fire	fire with at least one fire fatality (3.37) Note 1 to entry: See also, multi fatal fire (3.62).
3.37	Fatal fire casualty, Fire fatality, Fatal fire injury, Fire death	person who has died as a result of injuries sustained during a fire incident Note 1 to entry: In this context, there is no limitation of time after the fire. Fire fatalities also include death from natural or accidental causes sustained whilst involved in the activities of fire control, attempting rescue (3.67) or escaping from the dangers of the fire, including blast and defenestration, except when a death occurred in sites with the right of extraterritoriality Note 2 to entry: Fire fatalities are composed of all persons discovered or declared dead on the location of the fire (3.58), during their transportation to the hospital or after their admission at the hospital. Note 3 to entry: A person who dies by fire resulting from vehicle accidents is included in the fire fatalities database if the death can be attributed to fire.
3.40	Fire casualty, Fire victim	person killed or injured as a direct effect of a fire without any limit of time following the date on which the injury was sustained Note 1 to entry: In some countries, limits of time are used. In such cases, this is noted.
3.42	Fire injury	person who is injured (but not fatally injured) as a result of a fire incident, without any limitation of time after the fire, Note 1 to entry: This includes being injured from natural or accidental causes sustained whilst involved in the activities of fire control, attempting rescue (3.67) or escaping from the dangers of the fire, including blast and defenestration and requiring first aid (3.48) at the scene (provided by anyone) or further medical treatment with or without any hospital admission. Note 2 to entry: A person who is injured by fire resulting from a vehicle accident is included in the fire injuries database if the injury can be attributed to fire. Note 3 to entry: In some countries, limits of time are used. In such cases, this is noted. Note 4 to entry: See also, minor injury (3.61), light injury (3.57), serious injury (3.73) and life threatening (3.56)
3.57	Light injury, Moderate injury	person who is hospitalized for 1 day to 3 days or requires 1 day to 3 weeks off work Note 1 to entry: See also, fire injury (3.42), minor injury (3.61), serious injury (3.73) and life threatening (3.56).
3.61	Minor injury	person who is hospitalized or off work for less than 1 day Note 1 to entry: See also, fire injury (3.42), light injury (3.57), serious injury (3.73) and life threatening (3.56)
3.63	Nature of casualty, Severity of casualty	stage of fire victim (3.40) EXAMPLE: Minor injury, light injury, serious injury, life threatening, death. Note 1 to entry: See also, fire injury (3.42), minor injury (3.61), light injury (3.57), serious injury (3.73) and life threatening (3.56).
3.73	Serious injury	person who is hospitalized for 4 days or more or has more than 3 weeks off work Note 1 to entry: See also, fire injury (3.42), minor injury (3.61), light injury (3.57) and life threatening (3.56).

Code	Terms	Definition(s)
3.78	Status of a victim	role of a victim (3.15) during a fire EXAMPLE: Civilian; firefighter (civilian or military, volunteer or professional, on-duty or off-duty or retired); other rescuer (civilian or military, volunteer or professional, on-duty or off-duty or retired); unknown.
3.84	Victim characteristics	information collected about victims (3.15)

The terms and definitions proposed by the ISO TS 17755-2 are inherently more than contradicting:

- Code 3.03: "victims" – the term refer to 3.15 "person killed or injured".
- Code 3.15: using the terms "casualty" and "victim", two situations are spoken of: "person killed or injured", i.e. "fire deaths" and "fire injured" are placed in one group, consequently the generic term is "victim" (see 3.40, person killed or injured).
- Code 3.18: Cause of casualty is associated with the "phenomenon causing death of a person in a fire", thus inconsistently with the term "fire death", because the term "fire fatality" actually stands for "fire deaths" (see 3.37). Thus, "fire casualty" logically means "fire injury" (person rescued from the fire) (see 3.42).
- Code 3.21: "Cause of casualty" - from the context it is not clear what is meant if "fire deaths", "fire injured" or both.
- Code 3.37: "Fatal fire casualty, Fire fatality, Fatal fire injury, Fire death" - through the combination with the word "fatal" one can understand intuitively that it is "fire death". However, the words "casualty" and "injury" are misleading, especially since the definition of "...person who has died... during a fire incident" is used. Some inconsistencies are present and it would be more appropriate to adopt "fatal fire death".
- Code 3.37: "Fatal fire injury" is described as a synonym of fatal fire casualty (3.37), fire fatality (3.37) and fire death (3.37). The term itself and the definition (refer to 3.37) can be misunderstood. If a person is injured (i.e. saved alive, in a fire), this is to be classified as a "fire injury". If the person dies from the injuries, then this person is to be classified as "fire death". The term "fatal fire injury" is misleading because it is difficult to be associate with "non-fatal fire injury". Regardless of this, the term "not fatally injured" (3.42) is used - also unclear.
- Code 3.40: "Fire casualty, Fire victim" defined as "person killed or injured as a direct effect of a fire". No clear separation of the terms is described here: see 3.15. If one speaks of "fire casualty" (3.40) or "casualty" (3.15), and of "fire victim" (3.40) or "victim" (3.15) - nothing changes in terms of content: "victim" remains the generic term for "dead and injured".
- Code 3.42: "Fire injury" is person who is injured (but *not fatally injured*) as a result of a fire incident. Thus, all other people involved are to be categorized either as "fire deaths" or simply as "affected by fire".
- All other codes continue to play a subordinate role.

### 3.8.2. Description of the current definitions in EU, Other European and Non-European countries

The definitions for fatalities and casualties of the EU, Other European and Non-European countries were evaluated, where available.

#### Fatalities/Deaths

- According to ISO TS 17755-2, a fire victim is a person killed or injured as a direct effect of a fire without any limit of time following the date on which the injury was sustained. Hungary has the same definition. In some countries, limits of time are used. For example, Finland, Denmark, Norway and Estonia use a limit of time of 30 days for the death after the fire. In Slovakia, it is 24 hours after the incident and in Sweden within 90 days of the fire. Italy does have a limit of time, namely "the time of the intervention".
- Most of the countries have a definition for victims.
- The following countries do not have a definition: Bulgaria, Czech Republic, France, Ireland, the Netherlands, Slovenia. Although these countries do not have a definition, the number of victims is collected in most of them.
- A very clear definition of victims is provided by Denmark: a person which is dead in a fire or within 30 days because of a fire, typically from smoke poison or burns.
- The existing definitions can be summarized as the number of fatal victims that died due to the consequences resulting from open or closed fire.
- When speaking of "death because of a fire", most countries mean "death from smoke poison or burns".
- Canada and the USA make a difference between civilian and fire service victims. In Canada, the classification of a fire death is: A person killed accidentally as a direct result of a fire or a person who dies from a fire injury within one year following the date on which the injury was sustained.
- Croatia also counts injured, rescued and missing persons as victims.

#### Type of fatality

- Most of the countries do not have a definition for type of fatality or the term is not specified.
- The following countries do have a definition: Romania, the Netherlands and the UK.
- The Netherlands divides types of fatalities into natural cause, suicide or accidental death by fire.
- Romania uses 3 categories: burned, asphyxiated and other causes.
- The UK classifies the cause and nature of fatality in the IRS.

#### Casualties/Injured people

According to the tables provided in Appendix I and Appendix II, information on what an injured person is, and the types of injury could be obtained in Estonia, Finland, France, Hungary, Italy, Romania, Slovenia, Sweden, Australia, Canada, New Zealand, Russia, UK and USA.

- In Estonia, there is a distinction between an evacuated, self-rescued and rescued person.
- The definition of casualty as a person injured in a fire is available in Finland, Hungary, Italy, Slovenia, Canada, New Zealand, Russia, UK and USA.
- In France, no definition for causality is present but types of injury are available
- In Romania, fire-related fatalities include any injury which is the direct result a fire incident.
- Injured people are estimated by the rescue service on site in Sweden.
- In Australia, a casualty is a person who dies or is physically injured as the result of an incident or the action of handling the incident and includes injuries sustained whilst responding to and returning from the incident. To be recorded, the injury must be severe enough to require treatment by a medical practitioner, regardless of whether treatment is actually received, or the injury must result in at least one day of restricted activity immediately following the incident. A death is recorded if it is attributable to the incident or the action of handling the incident.

It can be stated that:

- No uniform definition is used.
- Sometimes very different and sometimes contradicting terms are used:
  - Injured by fire,
  - Fire-related fatalities (e.g. not fire deaths),
  - Injured people and patients,
  - Casualty is a person who dies or is physically injured as the result of an incident,
  - Civilian - a person accidentally injured, member of a fire department accidentally injured,
  - Non-fatal casualties,
  - "casualties," which can either be fatal or non-fatal.

Regardless of this, it has been found that most countries still have definitions for the term "casualties". The terms can be found in the internal service instructions of the responsible ministries but sometimes not publicly available.

**Conclusions and recommendation:**

1. The terms must be standardized and defined as simply as possible in order to do justice to the linguistic diversity within the EU and to avoid misinterpretations during translation.
2. The first recommendation is therefore to use the term “fire death” for people who have died in a fire and the term “fire injury” for people injured in a fire.
3. The criteria for the term “fire death” must be uniformly specified by the specialist knowledge of medical doctors and forensic medicine experts.
4. The criteria for the term “fire injury” must be uniformly specified by the specialist knowledge of medical doctors, WHO experts, etc.
5. Persons who were neither killed nor injured by fire, but who are influenced by the consequences of the fire should be classified as affected persons.

#### 4. ANALYSIS OF THE FIELDS COLLECTED IN THE FIRE STATISTICS

The fields recorded in the fire statistics of the countries examined have been investigated in Part 2 of the summary table, as described in Section 1.2. A total of 21 EU and 8 Other European and Non-European countries have kindly provided information about their fire statistics. Due to the limited or no information received, Greece, Lithuania, Luxembourg, Malta, Portugal and Spain are not covered in this analysis.

The 8 Other European and Non-European countries have been selected based on their high accuracy in the fire statistics. They adopt a solid and complex systems for recording the information of the fire incidents and they have very extensive datasets. These are the reasons why they appear to cover more fields than those recorded by EU Member States. As described in Section 2 for each country, the data are mainly from the fire brigades, but they could belong to other sources such as insurance companies in Switzerland. Finally, as explained for Sweden, in some countries the recording system is composed of different datasets and the fields collected in the fire statistics could be covered by separated databases and not a unique one.

In Part 2 of the summary table, the fire statistics fields recorded by the relevant authorities have been classified according to the major areas of investigation described in Table 1 with a total of 98 subfields. Each authority or organization has inserted the data available in their fire statistics and it is possible to affirm that between 0 and 49% and between 50 and 74% of the total fields examined are usually covered by the fire statistics of the EU countries, and Other European and Non-European countries, respectively (Figure 1). Therefore, despite the difference in the number of datasets evaluated, it appears that in Other European and Non-European countries more detailed fire statistics are available.

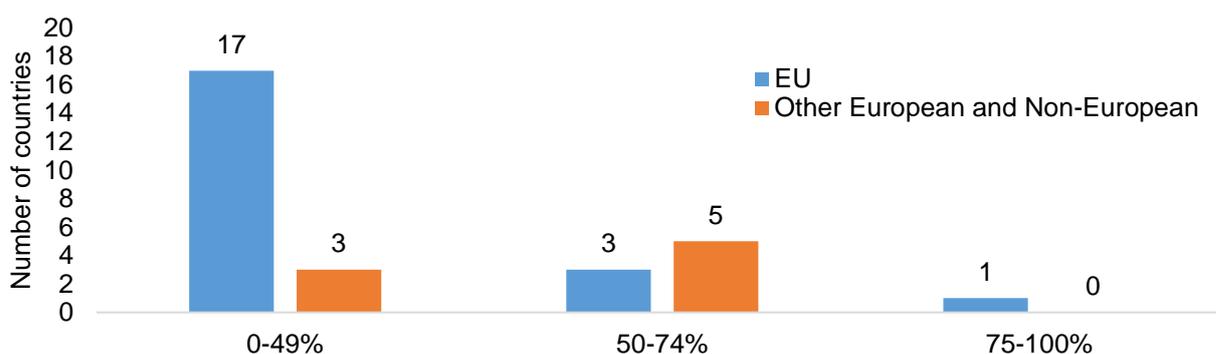


Figure 1: Data recorded in the fire statistics considering the total fields examined in Part 2 of the summary table for EU, Other European and Non-European countries.

In Figure 2, the fields related to the description of the fire incidents are introduced. The incident time, date and location are recorded for almost the total number of countries investigated despite their geographical location. Furthermore, the false alarms are recorded in 14 EU and 4 Other European and Non-European countries while the distinction between deliberate and accidental fires is less frequent (recorded in more than 9 and 5 EU and Other European and Non-European countries, respectively).

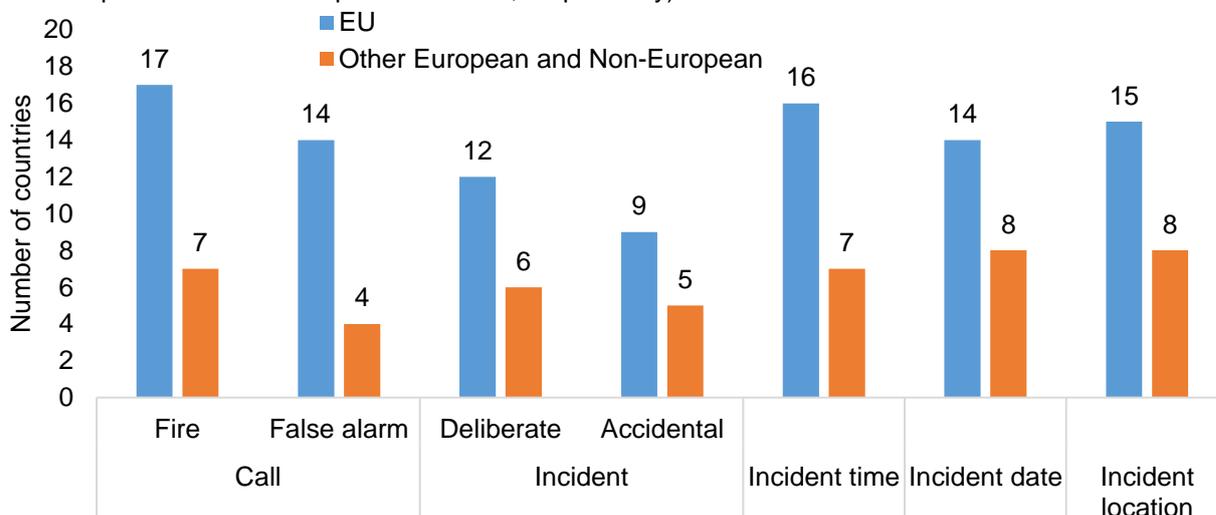
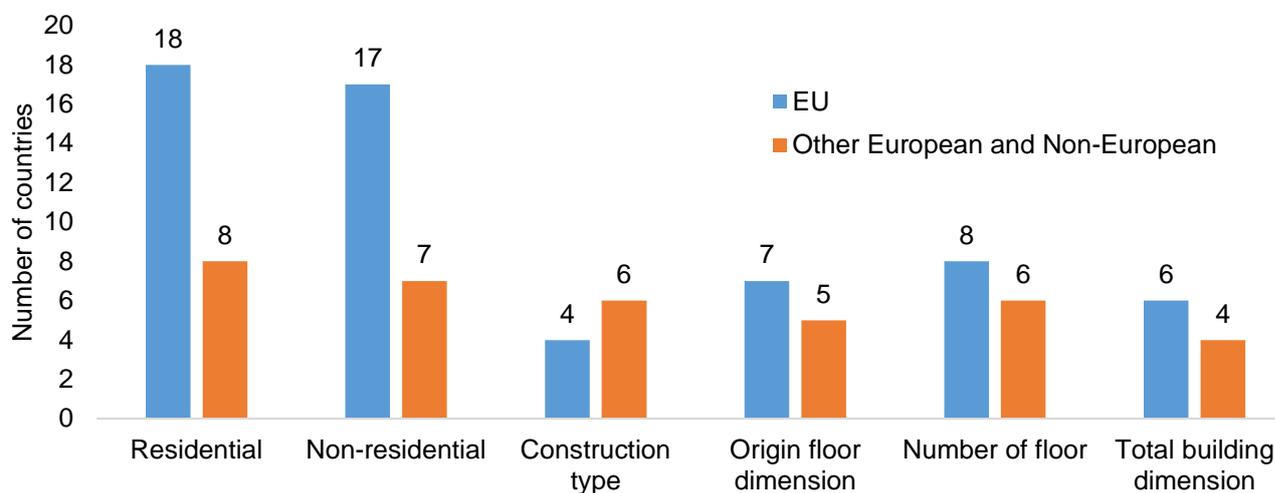


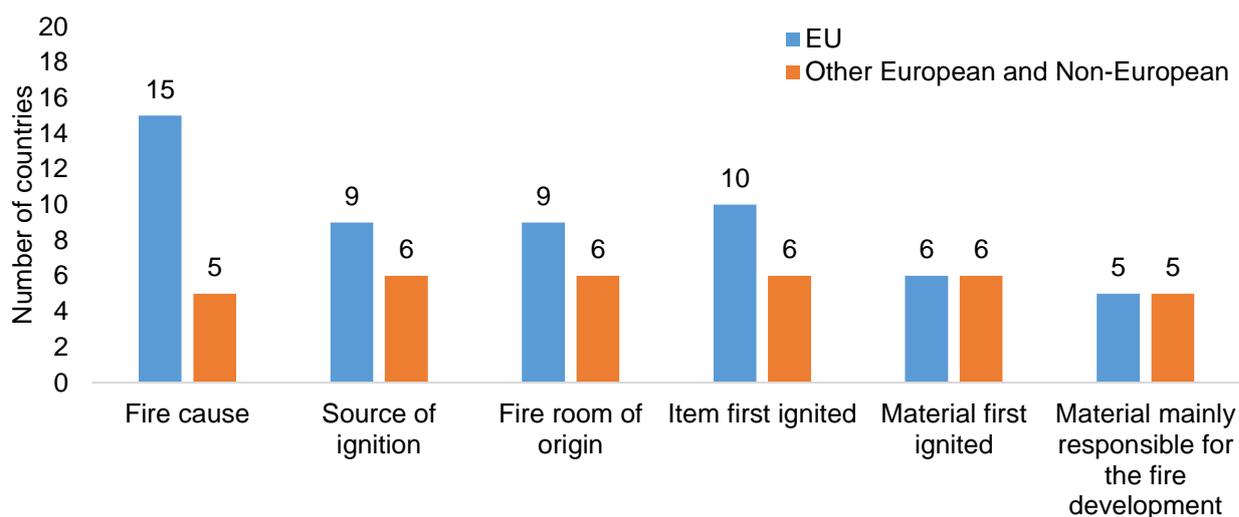
Figure 2: Fields recorded for the description of fire incidents in EU, Other European and Non-European countries.

For the description of the building involved in the fire incident, the classification of the building into residential and non-residential properties is usually available in 17 EU and 7 Other European and Non-European countries. Moreover, in several fire statistics, the building type is usually further classified in various sub-property types. The field related to the construction types is often available in Other European and Non-European countries (6) while it is present in only 4 EU countries. The number of floors, origin floor and total building dimension are recorded for a maximum of 8 EU countries and almost the total Other European and Non-European countries investigated (Figure 3).



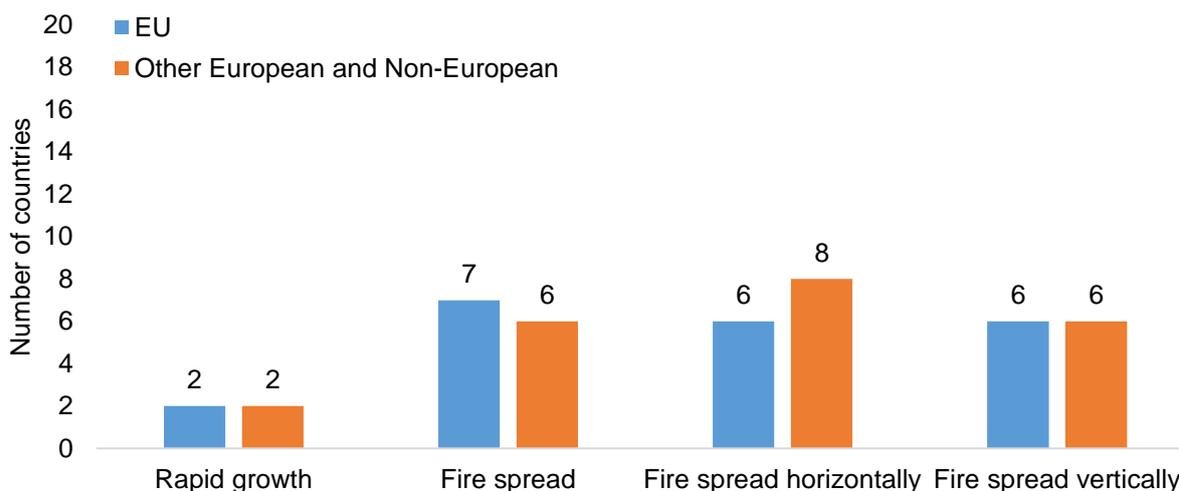
**Figure 3: Fields recorded for the building description in EU, Other European and Non-European countries.**

When the pre-fire conditions are analysed, fire causes are available in the fire statistics of 15 EU and 5 Other European and Non-European countries. For the factors contributing to ignition, source of ignition (9 & 6), fire room of origin (9 & 6), item first ignited (10 & 6), material first ignited (6 & 6) and material mainly responsible for the fire development (5 & 5) are available in the EU and Other European and Non-European countries as shown in Figure 4.



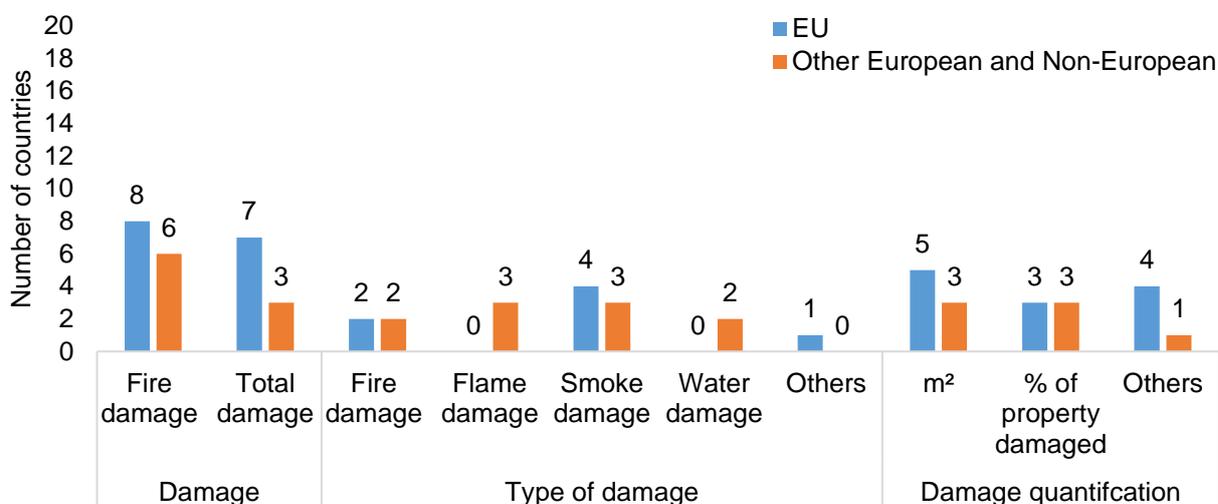
**Figure 4: Fields recorded for the fire causes in EU, Other European and Non-European countries.**

When the post-fire conditions are examined focused on the effects of the fire incident on the building, the analysis has been divided into the evaluation of fire spread, investigation and quantification of damage. According to Figure 5, the field related to the fire spread is usually present in 7 fire statistics of EU countries where 6 of them provide also a distinction between horizontal and vertical fire spread. In Other European and Non-European countries, fire spread is generally referred to as horizontal spread even if the vertical spread is recorded in 6 countries.



**Figure 5: Fields recorded for the fire consequences focused on the fire spread in EU, Other European and Non-European countries.**

The distinction between fire and total damage appears in 7 EU countries and 3 Other European and Non-European countries while damage is usually linked only to fire damage. This is also supported by the damage types recorded which are generally only related to fire damage while in 2 Other European and Non-European countries, the subdivision of damage in fire, flame, smoke and water damage is available. Furthermore, in Figure 6, it appears that fire damage is quantified based on m<sup>2</sup> and the percentage of property damage in 5 & 3 EU countries while both quantifications in 3 Other European and Non-European countries.



**Figure 6: Fields recorded for the fire consequences focused on the evaluation of damage in EU, Other European and Non-European countries.**

The evaluation of the fire safety measures is an essential aspect that should be covered in the fire incident investigation. The analysis developed by this research has subdivided the fire safety measures into alarms, automatic extinguishing systems (Figure 7) and other safety measures such as compartmentation, smoke extractors and others (Figure 8). Usually, the analysis of the presence and operation of alarms are recorded more often (11 & 9) than the type (7), effectiveness and failure (6) in EU countries. For the automatic extinguishing systems, the presence in a building is the field generally recorded (8) followed by operation and effectiveness (6), type (5) and failure (4) in EU countries. If the same analysis is repeated in Other European and Non-European countries, the fields recorded in a decreasing number of countries are operation and failure (8), type (7), presence (6) and effectiveness (5) for alarms while presence and type (7), operation and effectiveness (6), and failure (5) for automatic extinguishing systems. As described in Figure 7, almost the majority of Other European and Non-European countries provide detailed information about the alarms and automatic extinguishing systems.

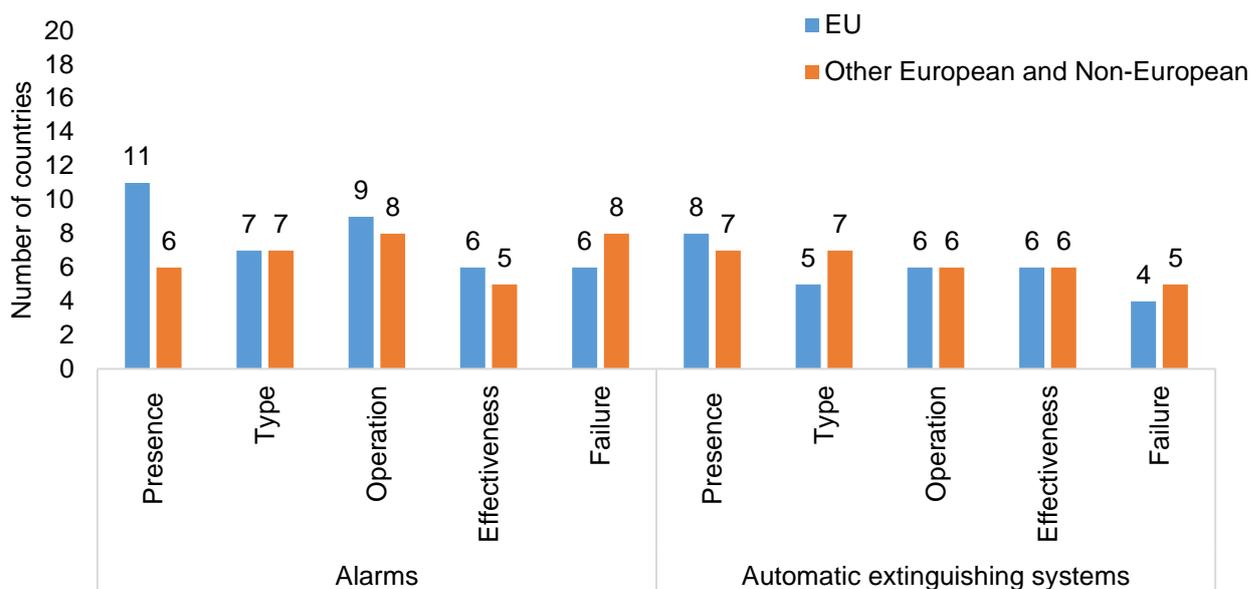


Figure 7: Fields recorded for fire safety measures focused on alarms and automatic extinguishing systems in EU, Other European and Non-European countries.

When other fire safety measures are investigated in Figure 8, the evacuation (8 & 4), the presence of fire brigade on site (7 & 4), smoke extractors (6 & 2) and compartmentation (5 & 3) are the fields highly recorded in EU, and Other European and Non-European countries, respectively. Fire barriers (4 & 1) and escape routes (3 & 2) are the fields recorded less often in EU, and Other European and Non-European countries while the field of safe areas is available only in 2 EU countries.

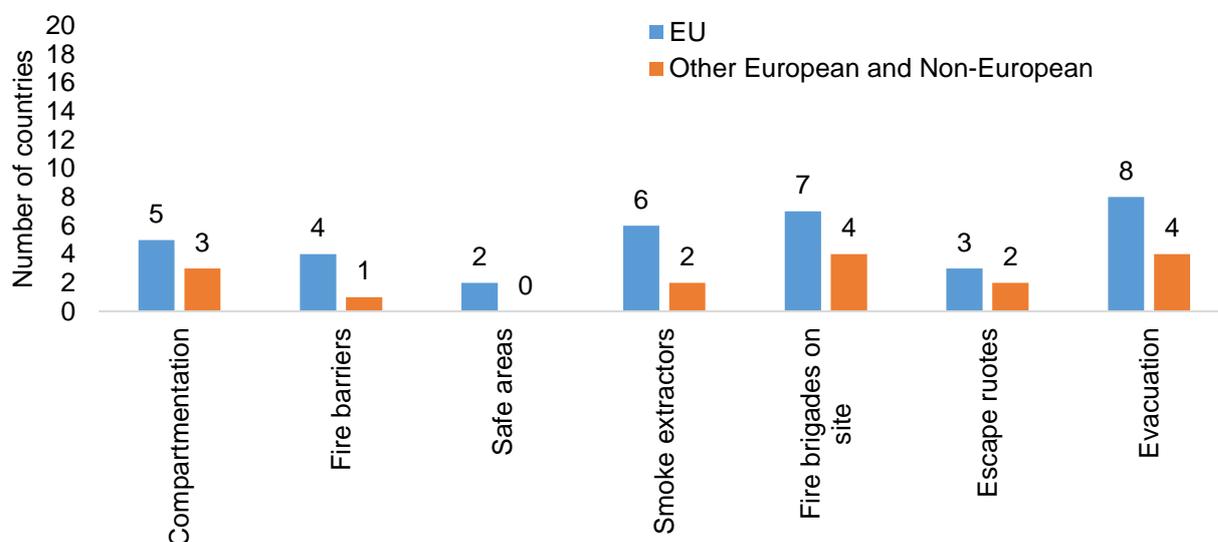


Figure 8: Fields recorded for other fire safety measures in EU, Other European and Non-European countries.

The response time to the fire incident has been classified according to the response of occupants and firefighters as illustrated in Figure 9. The response time of occupants is divided into the time between ignition to discovery and between discovery to call and these two time intervals are available in the fire statistics of 4 and 7 EU countries and both time intervals in 2 Other European and Non-European countries. The response time of the fire brigades is referred to the time between the notification of the fire incident and the arrival of the fire brigade at the fire scene. Moreover, the response time of the fire brigades is composed of 5 steps: notification, dispatch, preparation, travel time and set up time. Based on the information received, between 8 and 12 EU countries and between 1 and 8 Other European and Non-European countries mainly collect the above-mentioned time steps where the notification time is the field usually available in the fire statistics. The last two time intervals examined related to the response time are the occupant rescue and fire extinguishment that are present only in 4 and 5 EU countries and 1 and 2 Other European and Non-European countries, respectively.

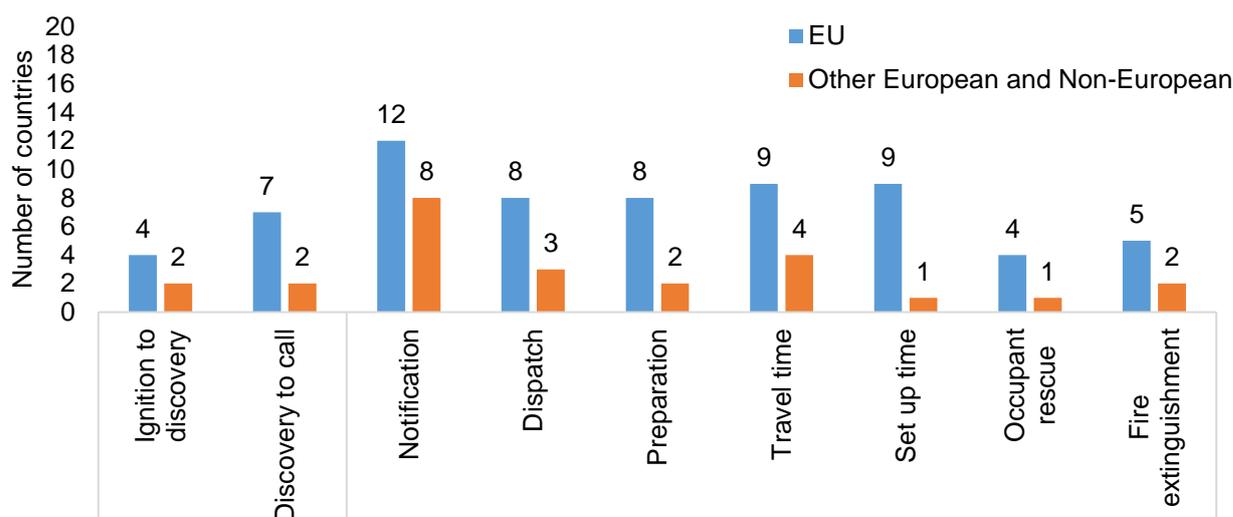


Figure 9: Fields recorded for the fire response time of occupants and fire brigades in EU, Other European and Non-European countries.

Two important areas of investigation highlighted in Table 1 are those of fatalities and casualties related to the life safety aspects derived by the fire incident. They have been investigated separately considering not only occupants but also firefighters. Starting with the analysis of fatalities of Figure 10, the number of victims (20), age (14) and gender (10) are the highest recorded fields in EU countries followed by cause of fatality (8), type of fatality (6) and disability (7). In Other European and Non-European countries, all the fields investigated for the description of fatalities are available for a minimum of 6 countries with the only exception of disability (4) and profession (2). The time between the incident and the fatality is available only in 6 EU and 3 Other European and Non-European countries. If the victims were occupants or firefighters is determined in 10 EU and 5 Other European and Non-European countries, respectively.

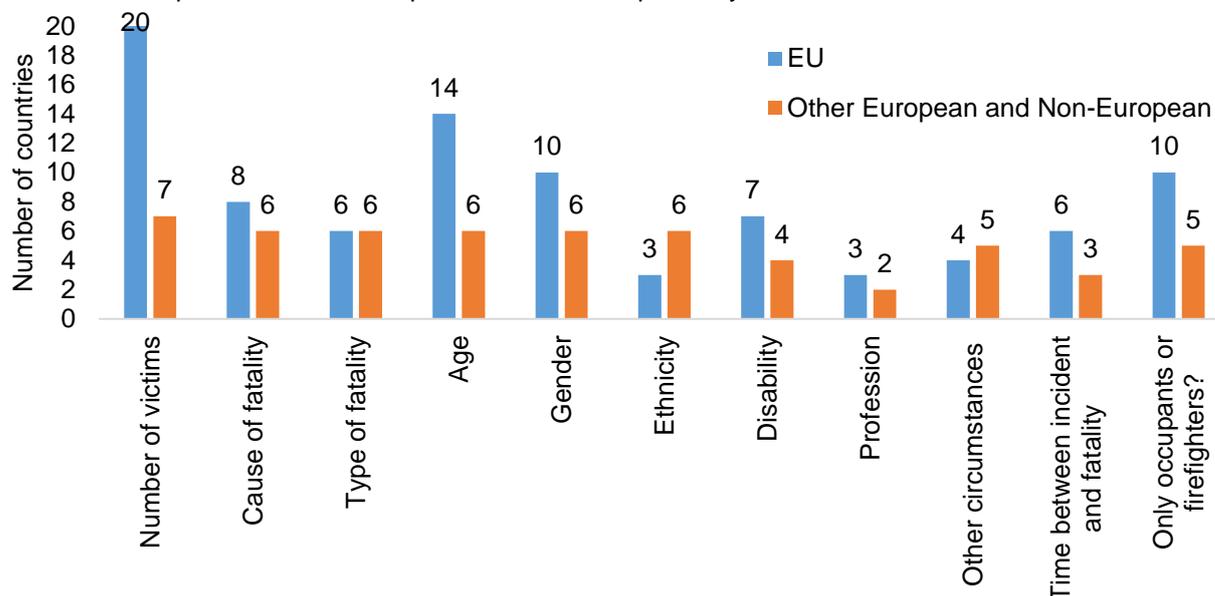


Figure 10: Fields recorded for fatalities in EU, Other European and Non-European countries.

The same analysis applied to casualties provides the outcome that casualties are recorded less often than fatalities. In particular, the fields available with a decreasing number of countries are the number of injured people (15), age (11), type of injury (8), gender (7) and cause of injury (5) in EU countries while the number of injured people (7), cause of injury, age, gender and disability (6) and type of injury (5) in Other European and Non-European countries. The time between the incident and the injury is recorded only in 2 EU and Other European and Non-European countries. The distinction if the injured people were occupants or firefighters is present in the fire statistics of 7 EU and 5 Other European and Non-European countries (Figure 11).

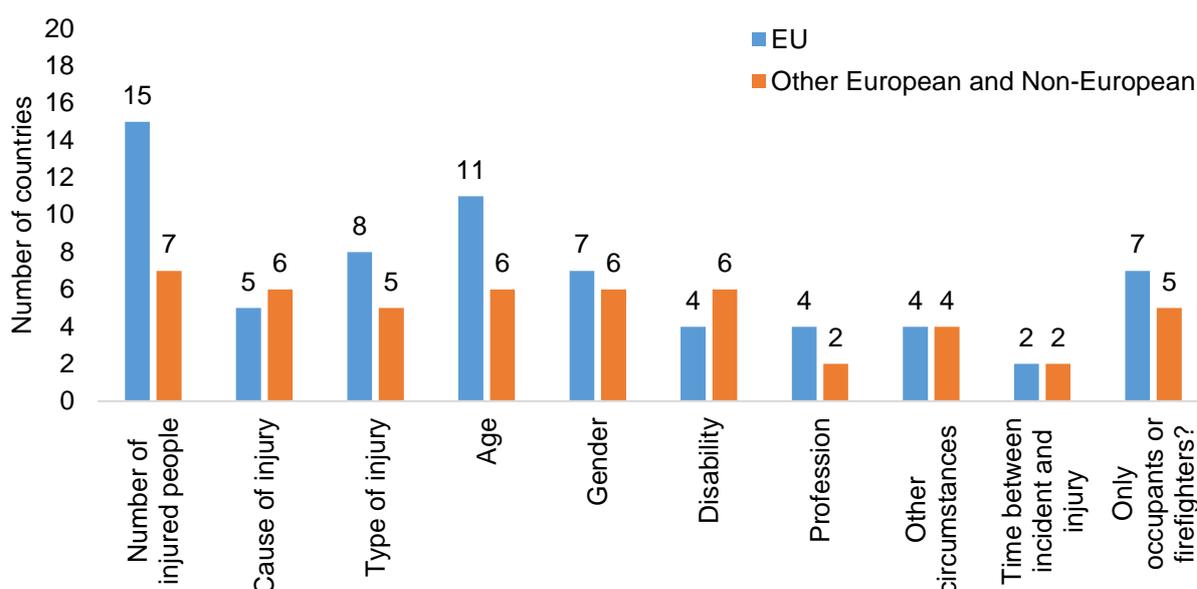


Figure 11: Fields recorded for casualties in EU, Other European and Non-European countries.

Finally, the evaluation of the financial costs derived by the fire incidents is usually classified according to direct and indirect financial losses. As described in Figure 12, the methodology for the evaluation of direct costs caused by fire incidents is usually collected in the fire statistics of 5 EU and 4 Other European and Non-European countries. In particular, the direct costs are evaluated considering mainly property (9 & 5) and medical care (1 & 3) in EU, and Other European and Non-European countries. For the indirect costs, temporal shelter and medical care are available in 1 EU (Denmark) and 1 Other European and Non-European countries (Norway).

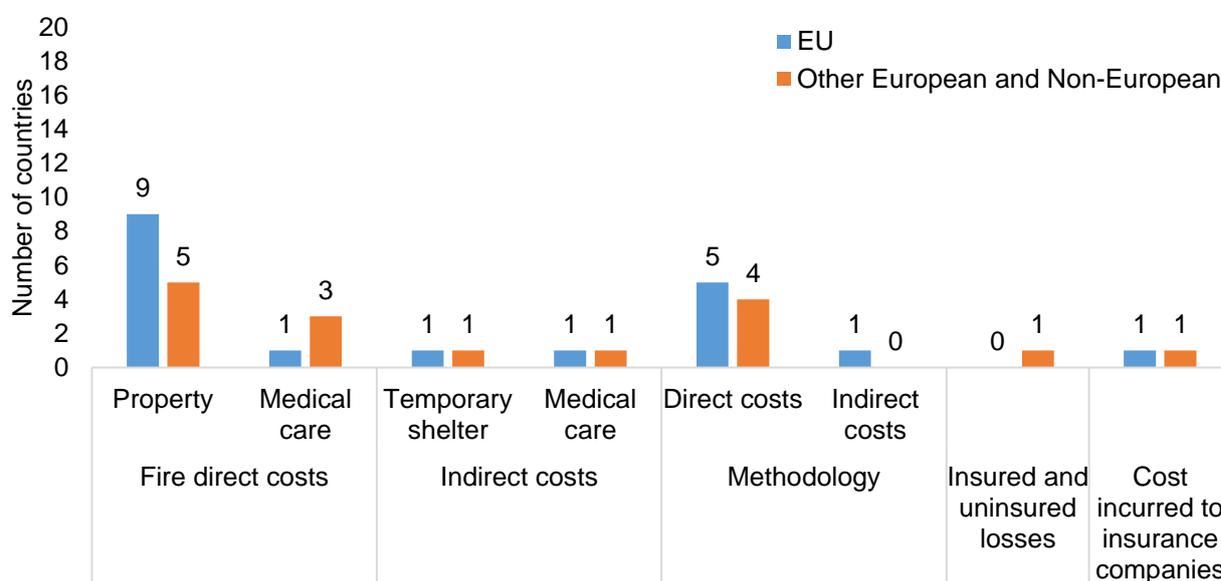


Figure 12: Fields recorded for the fire financial costs in EU, Other European and Non-European countries.

Based on the major areas of investigation, several subfields have been determined considering fire incident description, building characteristics, life safety aspects and fire financial costs collected in the fire statistics of the countries examined. Despite the difference in the number of countries investigated and geographical location (20 EU and 8 Other European and Non-European countries), the findings obtained show that the fire statistics of Other European and Non-European countries appear more detailed especially for what concerns the quantification of damage, the presence, operation and effectiveness of the fire safety measures and description of fatalities and casualties and, indeed, the fire statistics of Australia, Canada, New Zealand, Russia, UK and USA cover also the totality of the fields investigated.

## **5. CONCLUSIONS**

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Task 1 of the EU FireStat project had the aim to provide a general overview on the fire statistics of the 27 EU and 8 Other European and Non-European countries. The 8 Other European and Non-European countries have been chosen based on their structured and complex fire statistics and accuracy in the data elaboration.

In Task 1, summary tables for the countries investigated have been created and subdivided into two parts: Part 1 related to the definitions and Part 2 related to the fields covered by each fire statistics. The summary table usually includes 10 major areas of investigation determining pre- and post-fire conditions in buildings subjected to fire incidents. Considering the 35 countries examined, not all of them were able to provide a list of definitions and the fields recorded. Therefore, the differences in the number of countries considered for each analysis developed have to be based on the methodology and current practice available in current fire statistics.

In Section 2, short abstracts for the countries examined are presented with a clear description of the authority responsible for the fire statistics, the collection methodology, the number of datasets, how data are managed and explanations on the summary tables.

The research developed has been particularly focused on the available definitions to understand the meanings hidden behind the terminology used by each fire statistics. It is essential to have a clear understanding of the fields considered to be able to appropriately compare the data from various countries. The tables with the list of definitions are presented in Appendix I for EU countries and Appendix II for Other European and Non-European countries.

Moreover, a semantic analysis of the definitions has been developed for the examined countries and compared to those present in the ISO TS 17755-2 in Section 3. Such analysis has highlighted differences and analogies in the terms adopted by the various fire statistics. Finally, the fields collected have been investigated to understand the pre- and post-fire variables available in the fire statistics as described in Section 4 for EU and Other European and Non-European countries.

In the following Sections, specific and general conclusions of the work developed by Task 1 are provided.

### **5.1. OVERVIEW OF FIRE STATISTICS**

Our review of national fire data collection systems found that although there was some variation between countries in data collection methodologies, administrative procedures, and information sources, these differences represented differences in national approaches rather than differences on the basis of European Union membership or between European and non-European countries.

The collection of data on fire incidents is primarily the responsibility of fire services in all countries. Data collection originates with the information provided by fire brigades on the fires to which they respond. There are a small number of countries where public entities outside the fire service provide supplementary information to that collected by the fire service. This may include the collection of data on deaths and injuries by health and welfare bodies or by police departments or data on building damage by insurance companies.

The processing of data in most countries appears most often to be conducted by fire service authorities at the national level, although it may be performed at state or provincial levels in countries with more complex administrative systems. In some countries with decentralized structures, processing of data is primarily a state or provincial responsibility and may or may not be routinely consolidated at the national level for further processing. Responsibility for data processing at any level invariably resides with research units, regardless of whether they are part of emergency management bodies or broad statistical offices.

It was possible to identify fire data collection systems in which the reporting of fire incidents is mandatory such as in the Nordic countries and Estonia. However, even in well-established systems with strong participation at the local level (e.g. USA), compliance appears overwhelmingly to be based upon voluntary reporting of fire data. Within the individual national data collection systems, degrees of reporting compliance can be influenced by the support and resources available to encourage the reporting of data. Anecdotal information also suggests that the reporting of fire data may be less reliable in rural areas. However, there is generally little effort by fire data collection systems to assess how completely their methodologies capture the true number of fire incidents or the specific details for which information is sought. To our knowledge, the United States is the only country which attempts to estimate and correct for fires that go unreported in the national data collection system.

## **5.2. SEMANTIC ANALYSIS OF THE DEFINITIONS**

The analysis of the definitions presented in Section 3 provides insights on the meanings related to each variable collected in the various fire statistics. It is fundamental to understand what is covered by each field recorded to be able to appropriately use the data and compared them with other countries. The definitions gathered has been grouped according to the major areas of investigations defined in Task 1 and compared to those available in the ISO TS 17755-2 where possible.

Specific conclusions for each area of investigation are presented below:

Fire incidents:

- In the ISO TS 17755-2, definitions for accidental and fire false alarm are present as well as for arson, deliberate fire, incendiary fire, intentional fire and voluntary fire.
- Generally, in the EU countries, the definition of fire incident includes the various fire incident classifications while specific definitions for accidental, deliberate fire and fire false alarm are available in Estonia and Finland. In Romania and Hungary, only a definition for fire false alarm is present. No definition is provided in Italy and Ireland; however, fire incidents are recorded as false alarm in Italy and as false alarm, malicious and good intent in Ireland.
- In Canada and the USA, a general definition for fire incident is provided where accidental, deliberate fires and false alarms are recorded. A specific definition for accidental and deliberate fires is available in New Zealand, Russia and the UK. False alarms are defined in Norway while in Australia, Russia and the UK, false alarms are recorded in the fire statistics, but a proper definition is not available.

Building description:

- The ISO TS 17755-2 presents definitions for building, building fire, height of the building, dwelling fire, home fire, residential fire.
- Residential and non-residential buildings are recorded in EU, Other European and Non-European countries based on different classifications for the property types covered.

Fire causes:

- The ISO TS 17755-2 has definitions for fire causes, source of ignition and area of origin.
- Various countries mention that definitions are available but not provided.
- Several countries have no definition, but a dropdown menu is available.
- Some countries report concrete possibilities of a cause of the fire, others also first fuel and some circumstances of the fire incident (as stated in the ISO TS 17755-2). However, the fields collected could be difficult to compare statistically. Related to the source of ignition, there is also a deviation in reporting. Some fire statistics refer to heat transfer while others to type of energy that leads to a fire. In a few fire statistics, the material first ignited is reported in this category.

Fire consequences:

- Fire consequences are collected by 5 EU countries and 7 Other European and Non-European countries. Some countries report what is collected while others provide the definitions.
- Fire spread is similarly defined in Estonia, Finland, New Zealand, UK and USA and all these countries use the evaluation of fire spread "at the stop". This expression is adopted in the UK and it is referred to the time when the fire is extinguished. In Sweden, there is an evaluation of the size of the fire at arrival and departure or extent.
- In Australia, fire spread is mainly focused on the reason or factor that allowed the flame spread.
- For the horizontal and vertical fire spread, some countries separate the two terms while in the Netherlands they are combined.
- For the damage, there are some different definitions if the damage is caused by natural causes or accidents. The extent of damage is also evaluated in Canada while in Estonia, there is a mathematical equation to evaluate the damage.
- Various fire damage definitions are available where some of them are more theoretical while others are referred to the evaluation and the same comments can be applicable to the flame damage.

Fire safety measures:

- In the ISO TS 17755-2, only alarms are defined, referred to as the time to the notification to fire service or other local services. This is different from any definitions provided by the countries.
- Definitions are provided only in 6 EU countries and details are only available for 5 of them. For most of the EU countries, the terms are unclear or not reported. The field more consistently

reported are alarm, type of alarms and information on extinguishing systems. This is also applicable to the Other European and Non-European countries.

- There were probably some misunderstandings in the fields examined and inconsistencies in the interpretation of what these fire safety measures were referred to. For example, for the fire brigade on site, this was not always considered as the industrial fire brigade and not municipal fire brigade (in industrial buildings or factories there are private fire brigades on-site). Escape routes, evacuation and compartmentation, those measures are referred to fire safety design features but could also be interpreted if people were able to evacuate.
- Limited information is available for fire barriers, safe areas, and smoke extractor.
- Even in the USA and Canada, where the recording systems are very detailed, there are very few of these safety measures recorded.

#### Fire response:

- The fire response is composed of two parts: “occupant response” and “fire service response”.
- Fire service response time is constituted of several times such as alarm time, departure, arrival, and departure time. Some countries have definitions similar to the one provided by the ISO TS 17755-2 while in others, the fire service response time can be calculated based on the different entries provided.
- The term “occupant fire response” is more ambiguous. The UK has definitions for the time between ignition to discovery and discovery to call while other countries have definitions referred to the actions that the occupants take to control the fire.

#### Fire financial costs:

- In the ISO TS 17755-2, there are definitions for damage, direct losses specifying property damage and indirect losses.
- Direct and indirect financial costs of fire incidents are seldom evaluated in EU, Other European and Non-European countries.
- The evaluation of the direct financial costs of building fires are usually referred to the damage caused by the fire to the property and this could also include contents.
- The indirect financial costs of fire, in Russia, are referred to the material losses due to violation of economic plans in the economy (e.g. a decline in production, a decline in trade and banking operations, a decrease in income, losses due to delays in the transport of goods) while in Slovenia, they are related to the cost of the firefighting operations.
- It is also important to specify that there could be some data related to the costs provided by insurance and it is essential to relate the origin of the data to the source as described in the abstracts provided in Section 2.

#### Fatalities and casualties:

- A description of the definitions available in the ISO 17755-2 is provided. The terms casualty or victims are equally used and referred to a person killed or injured. This can cause misunderstandings in the following definitions. It would be suggested to adopt fatalities for deaths and casualties for injured people.
- Fatalities:
  - Victims and type of fatality are examined. In the investigated countries, a clear distinction between fatalities and casualties is not available and the two terms are sometimes not distinguished. Moreover, in some countries, the term fatality is referred to occupants and in others to fire brigades. Most of the countries have definitions referred to the victims killed as a consequence of the fire.
  - Several countries establish a limit of time in the death of victim while in the ISO TS 17755-2 “a fire victim is a person killed or injured as a direct effect of a fire without any limit of time”.
  - In Canada and the USA, a distinction between civilian and fire service victims is present.
  - The type of fatality is available only in the Netherlands, Romania and the UK.
- Casualties:
  - While in some countries there is a clear distinction between people killed or injured in a fire addressed with two separated terms, in others, they are recorded in a unique field and defined with a unique definition.

The understanding of terminology is essential, and it is therefore unfortunate that different countries have dissimilar meanings for the above-mentioned terms. It is sometimes clear how specific terms refer to different

aspects. From the evaluation of the information obtained, it is possible to confirm that the accuracy of the definitions available for specific fields of the fire statistics is supported by the high number of countries collecting those particular fields. The highest is the number of countries in which a particular field is collected, the more accurate are the definitions available. This is also supported by the fields recorded in the various fire statistics examined in Section 4. For example, the fire incident description is often collected, and this determines the precision of the definitions provided while when fire safety measures are considered, the few definitions available and recorded do not have consistency in their meanings in the various countries. It is, therefore, important to understand the meaning of the variables collected in the fire statistics to be able to provide adequate comparisons and correct evaluations of the aspects included.

### **5.3. FIELDS RECORDED IN THE FIRE STATISTICS**

The analysis developed in Section 4 is focused on the fields recorded in the various fire statistics examined. A total of 98 fields of investigation have been considered and subdivided according to major areas such as fire incidents, building description, fire causes, fire consequences, fire safety measures, fire financial costs and fatalities and casualties. The EU Member States that provided the list of fire statistical fields recorded have been compared to 8 Other European and Non-European countries. It is important to affirm that the 8 Other European and Non-European countries have been chosen on the basis of their structured and detailed fire statistics which continuously undergo improvements and optimizations. Therefore, the comparisons provided for the various areas of investigation need to be interpreted considering the differences that inevitably arise.

Usually, fire incidents are described considering the incident time, date and location in a maximum of 16 and 8 while the distinction between accidental and deliberate fire is recorded in 9 and 5 EU and Other European and Non-European countries, respectively. The description of the property type subdivided into residential and non-residential buildings is available in the majority of countries examined while further building characteristics are seldom recorded. Fire causes are available in the fire statistics of 15 EU and 5 Other European and Non-European countries and the other fields related to the source of ignition, item and material first ignited, material mainly responsible for the development of the fire and fire room of origin are determined in a maximum of 10 EU and 6 Other European and Non-European countries.

For the consequences of fire, fire spread is recorded in 7 EU countries and in the majority of Other European and Non-European countries. When fire damage is investigated, the number of EU countries decreases for what concerns how damage is recorded. In particular, it appears that a distinction between fire and total damage is available only in 7 EU countries and in 5 of them damage is recorded in m<sup>2</sup>. In 2 Other European and Non-European countries, the fire damage is also classified according to types of damage such as fire, flame, smoke and water damage. For the evaluation of the fire safety measures, the various fire statistics seem to record more often alarms and automatic extinguishing systems than compartmentation, smoke extractors, fire barriers, escape routes and others. In particular, the fields related to the description of the alarms and automatic extinguishing systems mainly cover presence, operation, type and reasons for failure. Another important consideration is that the understandings of the other fire safety measures have not always been correctly evaluated and this is also supported by the description provided in Section 3.5 and by the limited number of countries which collect these fields.

The response time is usually referred as the time between the notification of the fire incidents to the fire brigade and the arrival of the fire brigade at the fire scene. Only in 4 EU countries and 2 Other European and Non-European countries, the time between ignition to discovery and between discovery to call are available. The fire financial costs are usually related to the direct losses of the property in 9 and 5 and to the medical care in 1 and 3 EU and, Other European and Non-European countries, respectively. The indirect financial costs are recorded for temporary shelter and medical care only in Denmark and Norway.

Finally, the number of fatalities are recorded in 20 and 7 while the number of casualties in 15 and 7 EU and, Other European and Non-European countries, correspondingly. The fields related to the number of deaths and injured people are mainly focused on the description of the person affected providing the age, gender and type of fatality or injury.

The fields recorded more often are those related to the description of the fire incidents, fatalities and casualties. However, as already described in Section 5.2, the variables covered by these fields can be referred to as different interpretations in the various countries examined. Therefore, it is suggested to link the considerations presented for the analysis of the definitions with the elaborations of the fields recorded by the various statistics and to the information related to the collection methodologies described in the short abstract of each country.

#### **5.4. FINAL CONCLUSIONS OF TASK 1**

Our review of fire data collection measures within and outside the European Union is critical for understanding the degree of commonality across the various systems and also for identifying opportunities and challenges in any efforts to create uniform measures that will facilitate comparisons in fire experience. The ability to research variations in fire experience on the basis of comparable variables should facilitate the ability of policymakers and the fire safety community to identify opportunities for introducing improvements in fire safety practices in their own countries.

It is clear that meaningful comparison of fire incidents is influenced by similarities or differences in the way critical data elements are defined and measured. In this review, we found considerable variation between national data collection systems both in relation to the number of data elements they included and in the way in which these elements were defined and measured. Indeed, such differences were found to extend in some cases to data collection systems by separate jurisdictions within the same country. An additional complication identified in this review is that different institutions may serve as data providers in different countries, and different institutions may employ their own forms of measurement.

Although it was not possible to identify information on data collection measures from a number of countries, it appears that fire data collection systems in the European Union fall into different tiers with respect to the amount of information collected. Some systems collect a limited amount of fairly basic information, such as information on the date, time, and location of the fire, type of fire (building, vehicle, etc.), type of building, fire cause, and number of deaths or injuries. Countries with more advanced data collection systems include to varying degrees a number of additional data elements. These may determine information on the room where the fire originated, degree of fire spread, material contributing to fire spread, type of equipment involved in the fire, information on victim characteristics and involvement with the fire, types of fire safety measures, and other relevant information.

As our review indicates, there is also substantial variation in the amount and type of information sought by data elements that are common to different data collection instruments. For instance, spread of fire may be recorded on the basis of number of rooms involved or some other physical measure, while automatic extinguishing equipment as to whether it was present or absent or involved specific types of equipment. It appears that some of the most detailed national fire data collection systems are represented by countries outside the European Union, as exemplified by New Zealand, Canada, and the United States.

Looking forward, comparability of fire data between systems will require the development and adoption of a core set of measures that have common categories or classifications. In light of our findings, it does not seem realistic to expect that those countries with less advanced histories of fire data collection can simply adopt the more detailed data collection systems that have been built over time in countries with more extensive practices and traditions. It may be useful as an initial step to explore the feasibility of identifying a set of major indicators with moderate levels of detail that could form a common content for a unified fire data collection instrument. Development of a limited set of common measures would not preclude individual countries with more mature data collection systems from collecting additional and more detailed information in areas of particular interest or concern. Over time, participation in a common data collection system may encourage countries with less mature systems to enhance their data collection practices and to add data elements to the common core.

**Task 1**  
**FINAL REPORT**

**APPENDIX I - EU COUNTRIES, DEFINITIONS**

<b>AUSTRIA DEFINITIONS 1/1</b>			
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	b	<p>Fire Incident report (Fire service Graz)</p> <p>DMBUE (Datenmanagement in der Brandursachenermittlung) / SIZ (Sicherheitsinformationszentrum)  <a href="http://www.siz.cc/bund/sicherheit/show/231">http://www.siz.cc/bund/sicherheit/show/231</a></p> <p>BVS - Brandverhütungsstelle für Oberösterreich</p> <p>Property loss : <a href="https://www.bvs-ooe.at/services-und-leistungen/brandschadenstatistiken/">https://www.bvs-ooe.at/services-und-leistungen/brandschadenstatistiken/</a></p> <p>Landesstelle Steiermark, <a href="http://www.bv-stmk.at/index.php/statistik">http://www.bv-stmk.at/index.php/statistik</a></p>
	Deliberate fire	b	
		False alarm	
<b>BUILDING DESCRIPTION</b>	Building fire	b	
	Residential buildings	b	
	Non-residential buildings	b	
<b>FIRE CAUSES</b>	Fire causes	a	
	Source of ignition	a	
	Area of fire origin	a	
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	a	
	Fire horizontal spread	a	
	Fire vertical spread	a	
	Damage	a	
	Fire	a	
	Flame	b	
	Smoke	a	
	Water	a	
Total			
<b>FATALITIES</b>	Victims	a	
	Type of fatality	b	
<b>CASUALTIES</b>	Injured person	a	
	Type of injury	b	
<b>FIRE SAFETY MEASURES</b>	Alarm	a	
	Type of alarms	a	
	Automatic extinguishing systems	b	
	Type of automatic extinguishing systems	b	
	Compartmentation	b	
	Fire barriers	b	
	Safe areas	b	
	Smoke extractors	b	
	Fire brigades on site	b	
	Escape routes	b	
	Evacuation	b	
<b>FIRE RESPONSE</b>	Fire service time of response	a	
	Occupant fire response	a	
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	b	
	Indirect financial costs	b	
<b>FIRE PREVENTION</b>	Fire regulations	b	
	Fire prevention	b	

BULGARIA DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението" <a href="http://www.mvr.bg/gdpbzn">http://www.mvr.bg/gdpbzn</a>
	Deliberate fire	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population" <a href="http://www.mvr.bg/gdpbzn">http://www.mvr.bg/gdpbzn</a>
	False alarm	c		
<b>BUILDING DESCRIPTION</b>	Building fire	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Residential buildings	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"
	Non-residential buildings	c		
<b>FIRE CAUSES</b>	Fire causes	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Source of ignition	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"
	Area of fire origin	c		
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Fire horizontal spread	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"
	Fire vertical spread	c		
	Damage	c		
	Fire	c		
	Flame	c		
	Smoke	c		
	Water	c		
Total	c			
<b>FATALITIES</b>	Victims	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Type of fatality	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"

BULGARIA DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>CASUALTIES</b>	Injured person	c		
	Type of injury	c		
<b>FIRE SAFETY MEASURES</b>	Alarm	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Type of alarms	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"
	Automatic extinguishing systems	c		
	Type of automatic extinguishing systems	c		
	Compartmentation	c		
	Fire barriers	c		
	Safe areas	c		
	Smoke extractors	c		
	Fire brigades on site	c		
<b>FIRE RESPONSE</b>	Escape routes	c		
	Evacuation	c		
<b>FIRE RESPONSE</b>	Fire service time of response	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Occupant fire response	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Indirect financial costs	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"
<b>FIRE PREVENTION</b>	Fire regulations	c	The studied sources have no link to definitions	Главна дирекция "Пожарна безопасност и защита на населението"
	Fire prevention	c	The studied sources have no link to definitions	General Directorate "Fire Safety and Protection of the Population"

CROATIA DEFINITIONS 1/1					
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE	
FIRE INCIDENT	Accidental fire	No list of all definitions	Number of fires by size collected by Croatian Firefighting Association	<p>Vatronet: Fire-fighting net</p> <p>GIS i sustav za praćenje vozila- GIS and tracking system</p> <p>Sustav za uzbunjivanje-Alarm system</p> <p>Interaktivna baza opasnih tvari: Dangerous materials</p> <p>SPIS: Central portal of internet pages of fire-fighting organizations</p> <p>UVI: Incident management system.</p> <p>Instructions for use are published only for Geo information and tracking system</p> <p>(<a href="http://www.hvz.hr/informatizacija/sustav-za-pra%C4%87enje-vozila">http://www.hvz.hr/informatizacija/sustav-za-pra%C4%87enje-vozila</a> ); the other web-applications have no written manuals (is planned to be made in near future), but our office gives assistance if problems with use</p> <p>(<a href="http://www.hvz.hr/informatizacija/korisni%C4%8Dka-podr%C5%A1ka">http://www.hvz.hr/informatizacija/korisni%C4%8Dka-podr%C5%A1ka</a> ) and organize in each county educations each year for each application</p>	
	Deliberate fire		Fires by fire objects (buildings types, sectors of industry, etc.) collected by Croatian Firefighting Association		
	False alarm		Fire causes collected by Ministry of interior		
BUILDING DESCRIPTION	Building fire				
	Residential buildings				
FIRE CAUSES	Non-residential buildings				
	Fire causes				
	Source of ignition				
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Area of fire origin				
	Fire spread				
	Fire horizontal spread				
	Fire vertical spread				
	Damage				
	Fire				
	Flame				
	Smoke				
	Water				
FATALITIES	Total				
	Victims		Number of victims (deaths, injured, rescued persons, missing persons) collected by Ministry of interior		
CASUALTIES	Type of fatality				
	Injured person				
FIRE SAFETY MEASURES	Type of injury				
	Alarm				
	Type of alarms				
	Automatic extinguishing systems				
	Type of automatic extinguishing systems				
	Compartmentation				
	Fire barriers				
	Safe areas				
	Smoke extractors				
	Fire brigades on site				
	Escape routes				
FIRE RESPONSE	Evacuation				
	Fire service time of response				
FIRE FINANCIAL COSTS	Occupant fire response				
	Direct financial costs				
FIRE PREVENTION	Indirect financial costs				
	Fire regulations and prevention				

CZECH REPUBLIC DEFINITIONS 1/1			
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS
FIRE INCIDENT	Accidental fire	The number of fires is shown in the statistics, but definitions are not available.	Definitions are given by the laws and government decisions and other internal acts
	Deliberate fire		
	False alarm		
BUILDING DESCRIPTION	Building fire	The type of building affected by fires is shown in the statistics, but definitions are not available.	
	Residential buildings		
	Non-residential buildings		
FIRE CAUSES	Fire causes	The cause of fires is shown in the statistics, but definitions are not available.	
	Source of ignition		
	Area of fire origin		
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	c	
	Fire horizontal spread	c	
	Fire vertical spread	c	
	Damage	c	
	Fire	c	
	Flame	c	
	Smoke	c	
	Water	c	
Total	c		
FATALITIES	Victims	The number of fires deaths shown in the statistics, but definitions are not available.	
	Type of fatality		
CASUALTIES	Injured person	The number of fires injuries shown in the statistics, but definitions are not available.	
	Type of finjury		
FIRE SAFETY MEASURES	Alarm	c	
	Type of alarms	c	
	Automatic extinguishing systems	c	
	Type of automatic extinguishing systems	c	
	Compartmentation	c	
	Fire barriers	c	
	Safe areas	c	
	Smoke extractors	c	
	Fire brigades on site	c	
	Escape routes	c	
Evacuation	c		
FIRE RESPONSE	Fire service time of response	Please see to column DEFINITIONS	
	Occupant fire response	Please see to column DEFINITIONS	
FIRE FINANCIAL COSTS	Direct financial costs	Please see to column DEFINITIONS	
	Indirect financial costs	Please see to column DEFINITIONS	
FIRE PREVENTION	Fire regulations	c	
	Fire prevention	c	

DENMARK DEFINITIONS 1/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	c	Maybe police has a definition	
	Deliberate fire	c	Maybe police has a definition	
	False alarm	a	There are two types of false alarm. "Blind" alarm: An alarm which is given accidental or in good faith without fire or risk of a fire or any damage which require or could require the fire brigade. A False alarm: An Alarm which is given intentionally and in bad faith without fire or risk of a fire or any damage which requires or could require the fire brigade or where there are no other damage.	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
BUILDING DESCRIPTION	Building fire	a	The building description is defined in a "pick list" which specifies which type of building, that is on fire	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Residential buildings	a	The building description is defined in a "pick list" which specifies which type of building, that is on fire	
	Non-residential buildings	a	The building description is defined in a "pick list" which specifies which type of building, that is on fire	
FIRE CAUSES	Fire causes	a	In the database the fire cause is described in a dropdown menu with suggestions of different fire causes	
	Source of ignition	a	In the database the source of ignition is described in a dropdown menu with suggestions of different sources of ignition. Heat source (open flame, spark, glow, lightning, etc.) Material that was first ignited (paper, cardboard, plastic, textile, wood, etc.) Equipment involved in the ignition (machines, combustion plants, electrical installations, etc.), including make, model and serial number Object that was subsequently ignited (building construction, furniture, storage, waste storage in container, etc.)	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Area of fire origin	a	In the database the place of origin is described in a dropdown menu with suggestions of different places. Origin of fire (corridor area, kitchen, barn, etc.) is recorded.	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	a	In the database a possible fire spread is described in a dropdown menu with suggestions of different scenarios of fire spread. Evaluation of the extent of fire at arrival a (smoke development, visible flames, etc.).	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	b		
	Fire	b		
	Flame	b		
	Smoke	b		
	Water	b		
Total	b			

DENMARK DEFINITIONS 2/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FATALITIES</b>	Victims	a	A fatality in a fire is defined as a person which is dead in a fire or within 30 days because of a fire, typically from smoke poison or burns. A "Fatal fire" is a fire where one or more persons is killed in a fire. "Accidental Fatal fire": when started because of an accidental human act or failure in the electric equipment or an external cause. "Deliberate Fatal fire (dødsbrand)": when deliberately is started either by the victim or another person with the intention to start a fire.	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Type of fatality	c		
<b>CASUALTIES</b>	Injured person	c		
	Type of injury	c		
<b>FIRE SAFETY MEASURES</b>	Alarm	a	Detector number, Detector type, Cause of the alarm (tobacco smoking, steam, craftsman work, technical faults, etc.)	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Type of alarms	a	Ion detector, optical smoke detector, thermodetector, multifunction detector	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Automatic extinguishing systems	a		Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Type of automatic extinguishing systems	a		Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Compartmentation	a	Fire spread from hearth spaces, including presumed cause of the fire spread (open standing doors, holes in floor separation, etc.) Fire technical equipment and functionality (smoke alarm, fire blanket, fire technical installations lationer m.v.)	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Fire barriers	a	Included in compartmentation.	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Safe areas	b		
	Smoke extractors	a		Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Fire brigades on site	b		
	Escape routes	b		
Evacuation	b			

DENMARK DEFINITIONS 3/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE RESPONSE	Fire service time of response	a	Alarmed (date and time) Departure (date and time) Promotion at the scene of the accident (date and time) Released from place of injury (date and time) Ready at station (date and time)	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a>
	Occupant fire response	c		
FIRE FINANCIAL COSTS	Direct financial costs	b		
	Indirect financial costs	b		
FIRE PREVENTION	Fire regulations	a	If it is regulated by DEMA's preparedness act.	Beredskabsstyrelsen (DEMA) <a href="http://www.brs.dk">http://www.brs.dk</a> Trafik- bygge- og boligstyrelsen
	Fire prevention	c		

**Useful links for Denmark:**

Beredskabsstyrelsen DEMA ([www.brs.dk](http://www.brs.dk)):

<https://brs.dk/da/nyheder-og-publikationer/publikationer2/alle-publikationer/2018/dodsbrandsrapport-2018/>

Beredskabsstyrelsen DEMA ([www.brs.dk](http://www.brs.dk)):

<https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/forskning-statistik-og-analyse/odin-dokumenter/-liste-foerste-melding-ordlyd-.pdf>

Beredskabsstyrelsen DEMA ([www.brs.dk](http://www.brs.dk)):

<https://www.retsinformation.dk/eli/retsinfo/2015/9111>

Beredskabsstyrelsen DEMA ([www.brs.dk](http://www.brs.dk)):

<https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/forskning-statistik-og-analyse/odin-dokumenter/-notat-blinde-falske-reelle-alarmer-2.pdf>

Beredskabsstyrelsen DEMA ([www.brs.dk](http://www.brs.dk)): Trafik- bygge- og boligstyrelsen

ESTONIA DEFINITIONS 1/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	a	Unexpected and unintended event, which causes damage to persons life, property or environment. Crucial elements of accident are suddenness, involuntary and damage.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Deliberate fire	a	Intentional activity, which purpose is to make harm to another person, using fire for it.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	False alarm	a	A false alarm of an automatic fire alarm system is an alarm caused by other factors than a fire.	Fire Safety Act
BUILDING DESCRIPTION	Building fire	a	A building is a construction work that has an interior space that is separated from the external environment by the roof and other parts of the building envelope	Building Code
	Residential buildings	b	House, block of flats, dormitory, auxiliary buildings	
	Non-residential buildings	b	Public buildings, industrial buildings	
FIRE CAUSES	Fire causes			
	Soruce of ignition	a	Original spark, flame, hot object, which causes ignition	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Area of fire origin			
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	a	Fire expansion both in the room of origin as well as from room to room or from building to building.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	a	Property damage = [(building square metre value) * (burnt area square metre)] * [(100% - depreciation percentage) + sanitary repairs + renovation + capital repairs + warranty repair] / 100 <i>(Right now this formula undergoes changes)</i>	Estonian Academy of Security Sciences
	Fire	a	Combustion process, which is characterized by heat release, smoke and/or flames.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Flame	a	Combustion zone in the vapor phase which emits light.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Smoke	a	A visible suspension of solid and/or liquid particles in gas formed by combustion or pyrolysis.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Water	b		
Total	b			

ESTONIA DEFINITIONS 2/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FATALITIES</b>	Victims	a	According to the decree No. 444 of 28.12.2015 of the director general of the Rescue Board, a person deemed to have died in fire if they died due to the consequences resulting from open or closed fire in a building or outside the building on site or within 30 days after the fire occurrence. The person is also deemed to have died in fire whose cause of death has been falling or jumping from a burning building or collapsing of burning constructions, health problems occurred due to fire (stroke, heart attack etc.), if there is reason to assume based on the collected data that the fire has started before the health problem and the occurrence of fire is the cause of the health problem, or carbon monoxide poisoning as a result of closed burning process.	Definition by Estonian Rescue Board <a href="https://www.rescue.ee/">https://www.rescue.ee/</a>
	Type of fatality			
<b>CASUALTIES</b>	Injured person	a	Evacuated from a fire - a person who is being led by a firefighter or on the instructions of the person applied to the rescue work out of a potentially endangered area. Self-rescued from a fire – a person, who has independently left the dangerous environment. Rescued from a fire – a person, who is helped out from dangerous environment by other people, including by firefighter or by a person, who is applied for rescue work.	Definition by Estonian Rescue Board <a href="https://www.rescue.ee/">https://www.rescue.ee/</a>
	Type of injury	b		
<b>FIRE SAFETY MEASURES</b>	Alarm	b		
	Type of alarms	a	1) an autonomous fire alarm sensor; 2) an autonomous fire alarm system; 3) an automatic fire alarm system;	Fire Safety Act
	Automatic extinguishing systems	a	System or equipment, which is meant for detecting and extinguishing fire in the early stage or localising the fire making it possible to extinguish the fire with other means.	Määrus "Ehitisele esitatavad tuleohutusnõuded ja nõuded tuletõrje veevarustusele" (regulation "Fire safety requirements for building and requirements for fire water supply")
	Type of automatic extinguishing systems	b		

ESTONIA DEFINITIONS 3/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Compartmentation	a	Load-bearing or non-load-bearing structure of a building which is fire-retardant and forms a fire-retardant section.	Määrus "Ehitisele esitatavad tuleohutusnõuded ja nõuded tuletõrje veevarustusele" (regulation "Fire safety requirements for building and requirements for fire water supply")
	Fire barriers	a	A part of the room or room of a building on one floor or through several floors, which is separated from the surrounding parts of the building in such a way, that the spread of fire in or out of that part of the building is prevented for a predetermined time.	Määrus "Ehitisele esitatavad tuleohutusnõuded ja nõuded tuletõrje veevarustusele" (regulation "Fire safety requirements for building and requirements for fire water supply")
	Safe areas	a	Area, from where person is evacuated or ordered to shade and where is allowed to be only people, who are directly involved with rescue work, where only persons directly involved in the rescue work and persons and equipment authorized by the rescue worker are permitted	Määrus "Päästesündmusel osalevate riigi- ja kohaliku omavalitsuse asutuste ning isikute koostöö kord" (Regulation "Procedure for co-operation between state and local government agencies and persons participating in a rescue event")
	Smoke extractors	a	A smoke extraction system permanently installed in the building which consists of a smoke outlet, a smoke extraction fan, a starting device and so one.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Fire brigades on site			
	Escape routes	a	Single part of the building, which may form part of the fire compartment, as well as one or more fire compartments and from which the exit from the building begins. The evacuation area is generally considered to be on the one floor level.	Määrus "Ehitisele esitatavad tuleohutusnõuded ja nõuded tuletõrje veevarustusele" (regulation "Fire safety requirements for building and requirements for fire water supply")
	Evacuation	a	Forced movement of building users to a place of safety in the event of fire, risk of fire or in another dangerous situation.	Määrus "Ehitisele esitatavad tuleohutusnõuded ja nõuded tuletõrje veevarustusele" (regulation "Fire safety requirements for building and requirements for fire water supply")
<b>FIRE RESPONSE</b>	Fire service time of response	a	Period from the departure order given by Emergency Alarm Center to the moment when rescue team has reached to the scene.	Definition by Estonian Rescue Board
	Occupant fire response	b		

ESTONIA DEFINITIONS 4/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE FINANCIAL COSTS	Direct financial costs	a	The amount of damage to the building caused by the fire in monetary terms. Damage to furniture or the environment is not taken into account.	Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms)
	Indirect financial costs	b	No	
FIRE PREVENTION	Fire regulations	a	Fire safety requirement is a technical regulation or restriction on activities for the purpose of ensuring the fire safety of buildings, operation of devices or activities of persons and the possibility of evacuation and rescue operations in the case of an outbreak of fire.	Fire Safety Act
	Fire prevention	a	Prevention work means raising people's awareness and readiness in order to prevent and prepare for a rescue event, collecting information about a rescue event that has taken place and about people's awareness and readiness, and analysing such information.	Rescue Act

#### Useful links for Estonia:

Building Code: <https://www.riigiteataja.ee/en/eli/520112020001/consolide>

Definition by Estonian Rescue Board

Definition by Estonian Rescue Board: <https://www.rescue.ee/>

Definition by Estonian Rescue Board: <https://www.rescue.ee/>

Estonian Academy of Security Sciences

Fire Safety Act: <https://www.riigiteataja.ee/en/eli/521012019007/consolide>

Määrus "Ehitisele esitatavad tuleohutusnõuded ja nõuded tuletõrje veevarustusele" (regulation "Fire safety requirements for building and requirements for fire water supply"): <https://www.riigiteataja.ee/akt/104042017014?leiaKehtiv>

Määrus "Päästesündmusel osalevate riigi- ja kohaliku omavalitsuse asutuste ning isikute koostöö kord" (Regulation "Procedure for co-operation between state and local government agencies and persons participating in a rescue event"): <https://www.riigiteataja.ee/akt/114012011005?leiaKehtiv>

Päästetöö terminite seletav sõnaraamat (Glossary of rescue terms): <https://digiriul.sisekaitse.ee/handle/123456789/963>

Rescue Act: <https://www.riigiteataja.ee/en/eli/513072020003/consolide>

FINLAND DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	a	Accidental fires include those where the motive for the fire was presumed to be either accidental, negligent or not known (or unspecified).	<a href="http://prontonet.fi">http://prontonet.fi</a>
	Deliberate fire	a	Deliberate fires include those where the motive for the fire was 'thought to be' or 'suspected to be' deliberate. This includes fires to an individual's own property, others' property or property of an unknown owner.	
	False alarm	a	No fire at the scene	
BUILDING DESCRIPTION	Building fire	a	Lots of building characteristics are reported on separated Building form.	
	Residential buildings	a	Detached house, attached house or block of flats, free-time residents	
	Non-residential buildings	a	Commercial building, office building, office building, transport and communication building, institutional and healthcare building, assembly building, educational building, industrial building, warehouse, building for fire services, agricultural building or other building	
FIRE CAUSES	Fire causes	a	Cause of fire, cause of ignition	
	Source of ignition	a	Several sources of ignition are listed.	
	Area of fire origin	a	Room/compartment of origin is recorded.	
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	a	Evaluation of the extent of flame and smoke damage at arrival, at largest and at stop.	
	Fire horizontal spread	a	Horizontal area damage in m <sup>2</sup> by flame and smoke are recorded.	
	Fire vertical spread	a	Spreading to next or previous level recorded.	
	Damage	a	Square meters and Euros	
	Fire	a	Square meters and Euros	
	Flame	a	Square meters and Euros	
	Smoke	a	Square meters and Euros	
	Water	a	Square meters and Euros	
FATALITIES	Total	a	Square meters and Euros	
	Victims	a	Death caused by fire	
CASUALTIES	Type of fatality	a	immediately or within 30 days	
	Injured person	a	Injured by fire	
FIRE SAFETY MEASURES	Type of injury	a	Serious or mild	
	Alarm	a	Alarm presence, type, location, operation and reason for failure are recorded.	
	Type of alarms	a	Type of smoke alarm	
	Automatic extinguishing systems	a	Sprinkler or not	
	Type of automatic extinguishing systems	a	Type of sprinkler	
	Compartmentation	a	Type of compartment	
	Fire barriers	a	Included in compartmentation.	
	Safe areas	b		
	Smoke extractors	a	Automatic or manual	
	Fire brigades on site	a	Arrival time	
	Evacuation	a	Were they, could they be used, were there Lightning data on people evacuated with or without assistance.	

FINLAND DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE RESPONSE</b>	Fire service time of response	a	Time of arrival	<a href="https://prontonet.fi/">https://prontonet.fi/</a>
	Occupant fire response	a	Times after call recorded. in case of human loss Time before call recorded.	
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	a	Estimated by fire and smoke and water	
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	a	if the fire safety regulations apply	
	Fire prevention	b		

FRANCE DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	b		
	Deliberate fire	b		
	False alarm	b		
BUILDING DESCRIPTION	Building fire	b		
	Residential buildings	a	There are definitions for different types of buildings in French regulations for dwellings (by type and height). These are also used in Fire statistics from firefighters	Arrêté du 31 janvier 1986 relatif à la protection contre l'incendie des bâtiments d'habitation <a href="https://www.legifrance.gouv.fr/loda/id/JORFTE_XT000000474032/2020-10-20/">https://www.legifrance.gouv.fr/loda/id/JORFTE_XT000000474032/2020-10-20/</a>
	Non-residential buildings	a	There are definitions for different types of public buildings (by type and height). These are also used in Fire statistics from firefighters	Règlement de sécurité contre l'incendie relatif aux établissements recevant du public <a href="https://www.legifrance.gouv.fr/loda/id/LEGITE_XT000020303557/2020-10-20/">https://www.legifrance.gouv.fr/loda/id/LEGITE_XT000020303557/2020-10-20/</a>
FIRE CAUSES	Fire causes	b		
	Source of ignition	b		
	Area of fire origin	b		
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	b		
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	b		
	Fire	b		
	Flame	b		
	Smoke	b		
	Water	b		
FATALITIES	Total	b		
	Victims	a	No official definition, but in practice all the deaths which occurred on the scene of a fire are taken into account in the database realized by the Home Ministry. Deaths (due to acute fire effects) of firefighters, fire officers, fire brigade personnel and other emergency responders are also reported. Fire casualties which will die at the hospital or during their transportation to the hospital by EMS are not taken into account	
	Type of fatality	b		
CASUALTIES	Injured person	c		
	Type of Injury	b	Before 2011 there were 3 types of injuries: Severe, light, involved. Between 2011-2017 there were 3 types of injuries: With medical care, non-medical care, involved. from 2017: there are 3 types of injuries absolute emergency; relative emergency, involved.	

FRANCE DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE SAFETY MEASURES	Alarm	b		
	Type of alarms	b		
	Automatic extinguishing systems	b		
	Type of automatic extinguishing systems	b		
	Compartmentation	b		
	Fire barriers	b		
	Safe areas	b		
	Smoke extractors	b		
	Fire brigades on site	b		
	Escape routes	b		
	Evacuation	b		
FIRE RESPONSE	Fire service time of response	b		
	Occupant fire response	b		
FIRE FINANCIAL COSTS	Direct financial costs	b		
	Indirect financial costs	b		
FIRE PREVENTION	Fire regulations	b		
	Fire prevention	b		

GERMANY DEFINITIONS 1/1				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	b	Police might have definition	Einsatzbericht - Brand / Evaluierungsbogen zu Maßnahmen des Vorbegehenden Brand- und Gefahrenschutzes / Jahresbericht
	Deliberate fire	b	Police might have definition	
	False alarm	c	Three words in German language.	
BUILDING DESCRIPTION	Building fire	b		
	Residential buildings	b		
	Non-residential buildings	b		
FIRE CAUSES	Fire causes	a	Defintions not publicly available	
	Soruce of ignition	a		
	Area of fire origin	a		
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	a		
	Fire horizontal spread	a		
	Fire vertical spread	a		
	Damage			
	Fire			
	Flame			
	Smoke			
	Water			
FATALITIES	Victims	a	Definition not publicly available	
	Type of fatality	b		
CASUALTIES	Injured person	a	Definition not publicly available	
	Type of injury	b		
FIRE SAFETY MEASURES	Alarm	a	Defintions not publicly available	
	Type of alarms	a		
	Automatic extinguishing systems	a		
	Type of automatic extinguishing systems	a		
	Compartmentation	a		
	Fire barriers	a		
	Safe areas	a		
	Smoke extractors	a		
	Fire brigades on site	a		
	Escape routes	a		
FIRE RESPONSE	Evacuation	a		
	Fire service time of response	a		
FIRE FINANCIAL COSTS	Occupant fire response	a		
	Direct financial costs	a		
FIRE PREVENTION	Indirect financial costs	a		
	Fire regulations	a		
	Fire prevention	a		

HUNGARY DEFINITIONS 1/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	b		
	Deliberate fire	b		
	False alarm	a	False alarm: There is no incident at the indicated location, no event requiring the intervention of firefighters, only an event deemed to be by a caller or fire alarm device (the notifier misjudged the event). The use of detection and surveillance tools does not mean intervention, e.g. lamp, thermal imager, gas sensor. But here counted chimney fires that do not require the intervention of firefighters and the fire does not spread from the chimney to its surroundings.	National Directorate General for Disaster Management (NDGDM) filling instructions to fire and technical rescue report (FTRR)
BUILDING DESCRIPTION	Building fire	b		
	Residential buildings	b		
	Non-residential buildings	b		
FIRE CAUSES	Fire causes	a	There is a difficult fire cause structure with nine main classes and several sub-classes (from electrical power to other), which all have a description.	National Directorate General for Disaster Management (NDGDM) filling instructions to fire investigation data sheet.
	Source of ignition	b		
	Area of fire origin	b		
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	b	We interpreted it, but we do not have definition about it. We have definition about protection against the fire spread	National Fire Protection Regulations - Ministry of the Interior
	Fire horizontal spread	b	We interpreted it, but we do not have definition about it.	
	Fire vertical spread	b	We interpreted it, but we do not have definition about it. We have definition about protection against facade fire spread	National Fire Protection Regulations - Ministry of the Interior
	Damage	b	We interpreted, but we have no definition about it.	
	Fire	a	The process of combustion which endangers or damages life, physical integrity, or material goods	Fire protection law
	Flame	b	We interpreted it, but we do not have definition about it.	
	Smoke	b	We interpreted it, but we do not have definition about it. We have definition about heat and smoke protection: a set of solutions to limit the spread of heat and smoke in the event of a fire, to ensure its extraction and smoke extraction	National Fire Protection Regulations - Ministry of the Interior
	Water	b	We interpreted it, but we do not have definition about it.	
Total				

HUNGARY DEFINITIONS 2/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FATALITIES</b>	Victims	a	The number of death persons (determined by a doctor) found at the scene of the fire, if the cause of death was the result of, or in connection with the fire. If a person dies during transport to the hospital or later in the hospital, he/she does not have to be included to the report from the fire.	National Directorate General for Disaster Management (NDGDM) filling instructions to fire and technical rescue report (FTRR)
	Type of fatality	b		
<b>CASUALTIES</b>	Injured persons	a	The number of persons injured on the site as a result of fire must be reported.	National Directorate General for Disaster Management (NDGDM) filling instructions to fire and technical rescue report (FTRR)
	Type of injury	b		
<b>FIRE SAFETY MEASURES</b>	Alarm	a	Alarm presence, type, location, operation and reason for failure are recorded.	On rules for the investigation of fires
	Type of alarms	a	What does it come from: fire alarm system, phone, speech other; type of detection: smoke, flame, aspiration system, line fire alarm, heat, combined alarm; where does it come from: below ground level, above ground level	On rules for the investigation of fires
	Automatic extinguishing systems	a	Built-in extinguishing equipment: fixed, automatic or manual start-up, non-fire-fighting equipment, installed in a building or outdoors, used to extinguish a fire, facilitate intervention, prevent the spread of fire, reduce fire damage with the permission of the fire protection authority,	National Fire Protection Regulations - Ministry of the Interior
	Type of automatic extinguishing systems	a	Sprinklers; Water mist; Gaseous system - halon substitute; Gaseous system - other; Pressurisation; Smoke ventilation; Drencher; Foam; Powder; Other	
	Compartmentation	a	The approximate size of the compartment is recorded. The compartment classification is the following: Stopped/checked spread; Breached - current building work; Breached - previous building work; Breached - fire doors left open or incorrectly fitted; Damage to compartmentation; Fire spread through gaps or voids in construction; No compartmentation in building; Not applicable; Other	On rules for the investigation of fires
	Fire barriers	c		
	Safe areas	a	Temporary safe areas: means a room, group of rooms or space which, in the event of a fire, is designed to ensure the safety of persons fleeing or who have fled there temporarily, until a rescue or further escape is carried out	National Fire Protection Regulations - Ministry of the Interior

HUNGARY DEFINITIONS 3/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Smoke extractors	a	Heat and smoke extraction device: a device which, in the event of a fire, ensures the flow of heat and smoke to the open air by forced flow	National Fire Protection Regulations - Ministry of the Interior
	Fire brigades on site	a	Facility firefighter: a person who performs the task of a firefighter in the organization of the main occupational facility fire brigade or an occasional facility fire brigade or who manages the professional duties of the facility fire brigade, who is registered and certified as a facility firefighter	On the rules for municipal and institutional fire brigades and the contribution to the maintenance of a professional fire brigade, a municipal fire brigade and a voluntary fire brigade association
	Escape routes	a	The transport route used by the fleeing persons, which ensures the safety of the fleeing persons in the second stage of evacuation in the event of a fire - on the route following the door for evacuation of the room in the case of a public accommodation for the period necessary to escape	National Fire Protection Regulations - Ministry of the Interior
	Evacuation	a	Departure and removal of persons in the building, building, special structure, outdoors in case of fire, which lasts from leaving the place of residence until reaching the temporary protected space or the safe space	National Fire Protection Regulations - Ministry of the Interior
<b>FIRE RESPONSE</b>	Fire service time of response	a	The alerted fire vehicle of a professional fire brigades must leave its position within 2 minutes after alert and start moving. The standard alert time of fire vehicles with replaceable superstructures is six minutes.	39/2011. (XI. 15.) Order of the Minister of the Interior about the general rules of fire fighting and technical rescue of fire brigade, Section 37
	Occupant fire response	a	Anyone who detects a fire, or its imminent danger must report it immediately to the authorities. Those subject to the scope of the law are obliged to participate in firefighting - without compensation - with the personal participation that can be expected on the basis of their age, health and physical condition, and with communication of data.	Act XXXI. of 1996 about the protection against fire, technical rescue and fire brigade, Section 5 (1), Section 6 (1)
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	b		
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	b		
	Fire prevention	a	The system of fire protection legislation, standards, authorial regulations and their enforcement in order to prevent the occurrence of fires, to prevent their spread and to ensure the basic conditions of firefighting, which have to be maintained during construction and use.	Act XXXI. of 1996 about the protection against fire, technical rescue and fire brigade, Section 4 c)

**Useful links for Hungary:**

39/2011. (XI. 15.) Order of the Minister of the Interior about the general rules of fire fighting and technical rescue of fire brigade, Section 37:

[http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=138182.291370](http://njt.hu/cgi_bin/njt_doc.cgi?docid=138182.291370)

Act XXXI. of 1996 about the protection against fire, technical rescue and fire brigade, Section 5 (1), Section 6 (1):

[http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=26565.383670](http://njt.hu/cgi_bin/njt_doc.cgi?docid=26565.383670)

Act XXXI. of 1996 about the protection against fire, technical rescue and fire brigade, Section 4 c): [http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=26565.383670](http://njt.hu/cgi_bin/njt_doc.cgi?docid=26565.383670)

Fire protection law: [http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=26565.383670](http://njt.hu/cgi_bin/njt_doc.cgi?docid=26565.383670)

National Directorate General for Disaster Management (NDGDM) filling instructions to fire and technical rescue report (FTRR) only for registered users available in Hungarian

National Directorate General for Disaster Management (NDGDM) filling instructions to fire investigation data sheet only for registered users available in Hungarian

National Fire Protection Regulations - Ministry of the Interior: [http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=172805.371247](http://njt.hu/cgi_bin/njt_doc.cgi?docid=172805.371247)

On rules for the investigation of fires: [http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=138282.372056](http://njt.hu/cgi_bin/njt_doc.cgi?docid=138282.372056)

On the rules for municipal and institutional fire brigades and the contribution to the maintenance of a professional fire brigade, a municipal fire brigade and a voluntary fire brigade association: [http://njt.hu/cgi\\_bin/njt\\_doc.cgi?docid=140054.326158](http://njt.hu/cgi_bin/njt_doc.cgi?docid=140054.326158)

IRELAND DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	b		
	Deliberate fire	b		
	False alarm	a	Fire false alarm: Malicious, Good Intent	Fire statistics operational
<b>BUILDING DESCRIPTION</b>	Building fire	a	Fires are recorded in Domestic buildings, Institutions, Industrial, Commercial, Service and Other	Fire statistics operational
	Residential buildings	a	Domestic buildings: Chimney Fires in Houses; Other House Fires; Apartments, flats and bedsitters; Caravans/Mobile Homes.	Fire statistics operational
	Non-residential buildings	a	Institutions: Hospitals; Schools; Other institutions	Fire statistics operational
			Industrial: Factories, Chemical Plants; Storage Buildings/Warehouses	Fire statistics operational
			Commercial: Shops/Supermarkets; Offices; Hotels/Guesthouses/Boarding Houses, etc.	Fire statistics operational
Service: Places of Public Entertainment (Dance Halls, Discos, Cinemas, Theatres, Bingo Halls); Public Houses; Restaurants	Fire statistics operational			
<b>FIRE CAUSES</b>	Fire causes	a	Chimneys/Flues/Soot/Hot Ashes; Smoking Materials; Matches/Cigarette Lighters; Rubbish Burning; Using Fuels to Kindle Fires; Cooking and Heating; Electrical Equipment; Other Equipment; Electrical Wiring Installations; Explosions; Malicious; Other Suspected Causes; Unknown Causes	Fire statistics operational
	Source of ignition	b		
	Area of fire origin	a	Kitchen; Bedroom; Living room; Other specify	Fire fatalities report
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	b		
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	b		
	Fire	b		
	Flame	b		
	Smoke	b		
	Water	b		
Total	b			
<b>FATALITIES</b>	Victims	b		
	Type of fatality	b		
<b>CASUALTIES</b>	Injured person	b		
	Type of injury	b		

IRELAND DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Alarm	b		
	Type of alarms	b		
	Automatic extinguishing systems	b		
	Type of automatic extinguishing systems	b		
	Compartmentation	b		
	Fire barriers	b		
	Safe areas	b		
	Smoke extractors	b		
	Fire brigades on site	b		
<b>FIRE RESPONSE</b>	Escape routes	b		
	Evacuation	b		
<b>FIRE FINANCIAL COSTS</b>	Fire service time of response	b		
	Occupant fire response	b		
<b>FIRE PREVENTION</b>	Direct financial costs	b		
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	b		
	Fire prevention	a		

ITALY DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	b		Statistical Yearbook of the Italian National Fire Brigade (1st January - 31st December 2017) <a href="http://www.vigilfuoco.it/asp/ReturnDocum ent.aspx?IdDocum ento=13103">http://www.vigilfuoco.it/asp/ReturnDocum ent.aspx?IdDocum ento=13103</a> <a href="http://www.vigilfuoco.it/asp/ReturnDocum ent.aspx?IdDocum ento=13103">http://www.vigilfuoco.it/asp/ReturnDocum ent.aspx?IdDocum ento=13103</a>
	Deliberate fire	b		
	False alarm	a	False alarms	
BUILDING DESCRIPTION	Building fire	b		
	Residential buildings	a	Residential Places and Homes: Private flats and homes; Generic building; Others; Private parking; Gypsy camps; Temporary buildings; waste storage rooms; Switchboard room	
	Non-residential buildings	a	Places for specific uses; Storages of solid combustibles; Commercial and sales stores; Agricultural and farming places; Traffic and parking areas; Mountain areas; Other places	
FIRE CAUSES	Fire causes	a	Causes provoking need of rescue to persons; Causes of accident of transportation means and vehicles; Cause of fire ignition (Chimney and/or Owen ducts; cigarette butts and matches; Electrical causes; Fault on heating production plants; Fireworks; Glitter from friction of mechanic parts; Household appliances; Lack of safety and cautioned measures of management; lighting; Other; Over heating of engines machines; Self combustion); Malicious/Intentional causes; Not being possible to evaluate; Causes of Other type of intervention	
	Source of ignition	b		
	Item and Material first ignited	a	Solid combustible; Other flammables and combustibles; Building products; Transportation means; Others	
	Area of fire origin	b		
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	b		
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	b		
	Fire	b		
	Flame	b		
	Smoke	b		
	Water	b		
Total	b			
FATALITIES	Victims	a	Victims recorded at the time of the intervention	
	Type of fatality	b		
CASUALTIES	Injured person	a	People injured during the incident	
	Type of injury	b		

ITALY DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Alarm	b		Statistical Yearbook of the Italian National Fire Brigade (1st January - 31st December 2017) <a href="http://www.vigilfuoco.it/asp/ReturnDocument.aspx?IdDocumento=13103">http://www.vigilfuoco.it/asp/ReturnDocument.aspx?IdDocumento=13103</a> <a href="http://www.vigilfuoco.it/asp/ReturnDocument.aspx?IdDocumento=13103">http://www.vigilfuoco.it/asp/ReturnDocument.aspx?IdDocumento=13103</a>
	Type of alarms	b		
	Automatic extinguishing systems	b		
	Type of automatic extinguishing systems	b		
	Compartmentation	b		
	Fire barriers	b		
	Safe areas	b		
	Smoke extractors	b		
	Fire brigades on site	b		
	Escape routes	b		
<b>FIRE RESPONSE</b>	Evacuation	b		
	Fire service time of response	a		
<b>FIRE FINANCIAL COSTS</b>	Occupant fire response	b		
	Direct financial costs	b		
<b>FIRE PREVENTION</b>	Indirect financial costs	b		
	Fire regulations	b		
	Fire prevention	a	Fire prevention activities of the fire brigades	

NETHERLANDS DEFINITIONS 1/2			
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS
<b>FIRE INCIDENT</b>	Accidental fire	a	
	Deliberate fire	a	
	False alarm	b	
<b>BUILDING DESCRIPTION</b>	Building fire	b	
	Residential buildings	a	Buildings where people live for at least 6 months a year (houseboat and holiday home can be included)
	Non-residential buildings	a	All building types that are not residential
<b>FIRE CAUSES</b>	Fire causes	a	Human interacting (smoking etc), technical cause of building, technical of appliances (type and brand), thunder.
	Source of ignition	a	Kinetisch, moleculair, aardse inwerking, kosmische inwerking, elektrisch (22 subcatgeories)
	Area of fire origin	a	Hallway, basement, fuse box, extra kitchen hallway first floor, hallway second floor, toilet, stairs, kitchen, living room, bedroom, study, bathroom, shed, garage, chimney, balcony, attic, roof, terrace
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	a	Combination of fire horizontal spread+vertical spread
	Fire horizontal spread	c	Inside or outside the building
	Fire vertical spread	c	Inside the building: how many floors did the fire cover?
	Damage	b	
	Fire	b	
	Flame	b	
	Smoke	b	
	Water	b	
<b>FATALITIES</b>	Total	b	
	Victims	c	Involved occupants of the building
<b>CASUALTIES</b>	Type of fatality	a	Based upon if the victim died due natural cause (and started fire afterwards), suicide or accidently
	Injured person	b	
<b>FIRE SAFETY MEASURES</b>	Type of injury	b	
	Alarm	b	
	Type of alarms	b	
	Automatic extinguishing systems	b	
	Type of automatic extinguishing systems	b	
	Compartmentation	b	
	Fire barriers	b	
	Safe areas	b	
	Smoke extractors	b	
	Fire brigades on site	b	
	Escape routes	b	
Evacuation	a	When the victim was not in a direct threat but was helped by the fire brigade. Evacuation is when the occupants leave their homes for a short period of time.	

NETHERLANDS DEFINITIONS 2/2			
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS
<b>FIRE RESPONSE</b>	Fire service time of response	a	Time between emergency call and arrival of the fire brigade at the building
	Occupant fire response	a	If there is an attempt to put out the fire by an occupant (by means of water, fire extinguisher, a lit of a pot, fire blanket)
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	b	
	Indirect financial costs	b	
<b>FIRE PREVENTION</b>	Fire regulations	b	
	Fire prevention	b	

ROMANIA DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	
FIRE INCIDENT	Fires	a	Fire - self-sustaining combustion, which takes place without control in time and space, which causes loss of life and / or material damage and requires an organized intervention in order to interrupt the burning process	LAW no. 307 of July 12, 2006 (* republished *) on fire protection <a href="https://www.lege-online.ro/lr-LEGE-307%20-2006-(212916)-(1).html">https://www.lege-online.ro/lr-LEGE-307%20-2006-(212916)-(1).html</a>
	False alarm	a	False alarm - Upon arrival of the crews at the scene it is found that it does not exist	Internal procedure (Order of the General Inspector of IGSU)
BUILDING DESCRIPTION	Building fire	b	There is no official definition - fire occurs in one or more buildings	Internal procedure - nomenclatures
	Residential buildings	b	There is no official definition - fire occurs in one or more apartment buildings	Internal procedure (Order of the General Inspector of IGSU)
	Non-residential buildings	b	There is no official definition - fire occurs in one or more non-residential buildings	Internal procedure (Order of the General Inspector of IGSU)
FIRE CAUSES	Fire causes (probable source of ignition; the means that produced the ignition; the first material to ignite and the determining circumstances that led to ignition)	a	Probable cause of fire - the sum of the factors that contribute to the initiation of the fire, which usually consists of the probable source of ignition, the means that caused the ignition, the first material that ignited, and the determining circumstances that led to its outbreak.	Internal procedure - nomenclatures with the 4 categories (Order of the General Inspector of IGSU)
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	c	Evaluation of the extent of flame damage at stop	Internal procedure (Order of the General Inspector of IGSU)
	Fire horizontal spread			
	Fire vertical spread			
	Damage	a	Estimation of damage caused by fire (area affected by fire in m <sup>2</sup> )	Internal procedure (Order of the General Inspector of IGSU)
	Fire			
	Flame			
	Smoke			
Water				
Total				
FATALITIES	Victims	a	Fire-related fatalities are, in general, those that would not have otherwise occurred had there not been a fire. This includes any fatal casualty which is the direct result of injuries caused by a fire incident.	Internal procedure (Order of the General Inspector of IGSU)
	Type of fatality		Depending on the cause of death they are divided into 3 categories: burned, asphyxiated and other causes. They are also divided in 6 age categories.	Internal procedure (Order of the General Inspector of IGSU)
CASUALTIES	Injured person		Fire-related fatalities are, in general, those that would not have otherwise occurred had there not been a fire. This includes any injury which is the direct result a fire incident.	Internal procedure (Order of the General Inspector of IGSU)
	Type of injury		Depending on the cause of injury they are divided into 3 categories: burns, intoxicated with smoke and other causes. They are also divided in 6 age categories.	Internal procedure (Order of the General Inspector of IGSU)

ROMANIA DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	
<b>FIRE SAFETY MEASURES</b>	Alarm			
	Type of alarms			
	Automatic extinguishing systems			
	Type of automatic extinguishing systems			
	Compartmentation			
	Fire barriers			
	Safe areas			
	Smoke extractors			
	Fire brigades on site			
	Escape routes			
	Evacuation	a	Yes, the number of people evacuated with or without assistance.	
<b>FIRE RESPONSE</b>	Fire service time of response	a	Response time - the interval between the moment of receiving the emergency call and the arrival of the first crew at the place of intervention.	Internal procedure (Order of the General Inspector of IGSU)
	Occupant fire response			
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs			
	Indirect financial costs			
<b>FIRE PREVENTION</b>	Fire regulations			
	Fire prevention			

SLOVAKIA DEFINITIONS 1/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	a	A fire is any unwanted burning in which the lives or health of individuals or animals, property or the environment are immediately endangered, which results in damage to property, the environment or which results in the injury or death of a natural person or animal.	Zákon NR SR č. 314/2001 Z. z. o ochrane pred požiarimi
	Deliberate fire	b		
	False alarm	a	A false alarm is an emergency call when there is no or no emergency	STN ISO 8421-8 (92 002) ISO 8421-8: 1990
BUILDING DESCRIPTION	Building fire	b		
	Residential buildings	a	The residential part of a building is the part of the building that contains flats or a flat intended for long-term housing; the residential part of the building should have a separate entrance from the public space	STN 73 4301
	Non-residential buildings	b		
FIRE CAUSES	Fire causes	b		
	Soruce of ignition	c		
	Area of fire origin	c		
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	b		
	Fire horizontal spread	b		
	Fire vertical spread	c		
	Damage	b		
	Fire	c		
	Flame	c		
	Smoke	c		
FATALITIES	Victims	a	killed persons are persons who died in the place of the accident (or in the place of fire), or when being transported to hospital, or within 24 hours after the accident.	Statistical Yearbook of the Slovak Republic 2019
	Type of fatality	b		
	Injured person	b		
CASUALTIES	Type of injury	b		

SLOVAKIA DEFINITIONS 2/3

	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE SAFETY MEASURES	Alarm	a	The electrical fire alarm must identify at least one physical or chemical phenomenon caused by a fire in the guarded area, acoustically or optically signal an alarm in or around the guarded area and control the equipment connected to it.	Vyhláška Ministerstva vnútra Slovenskej republiky č. 726/2002 Z.z., ktorou sa ustanovujú vlastnosti elektrickej požiarnej signalizácie, podmienky jej prevádzkovania a zabezpečenia jej pravidelnej kontroly
	Type of alarms	b		
	Automatic extinguishing systems	a	A stable fire extinguishing device is an extinguishing device which contains, in particular, a stable source of extinguishing agent, a distribution pipe, a drain fitting, a trigger mechanism and a signaling device.	Vyhláška Ministerstva vnútra Slovenskej republiky č. 169/2006 Z.z., o konkrétnych vlastnostiach stabilného hasiaceho zariadenia a polostabilného hasiaceho zariadenia a o podmienkach ich prevádzkovania a zabezpečenia ich pravidelnej kontroly
	Type of automatic extinguishing systems	b		
	Compartmentation	b		
	Fire barriers	a	A fire and a barrier is a barrier in the entire thickness of the thermal insulation contact system, which limits the spread of fire through the thermal insulation contact system and along the outer surface of the perimeter wall with thermal protection by the thermal insulation contact system.	STN 73 2901
	Safe areas	b		
	Smoke extractors	a	The fire smoke extractor is a manually or automatically controlled stable fan that can be operated to remove smoke and hot gases from a building engulfed in fire.	STN ISO 8421-8 (92 002) ISO 8421-8: 1990
	Fire brigades on site	b		
	Escape routes	a	An escape route is a permanently free road or space in or on a building which allows the safe evacuation of persons from the building or from a fire compartment endangered by fire to an open space or to an area which is not endangered by fire.	Vyhláška Ministerstva vnútra Slovenskej republiky č.94/2004 Z.z., ktorou sa ustanovujú technické požiadavky na protipožiarnu bezpečnosť pri výstavbe a pri užívaní stavieb
	Evacuation	a	Evacuation is the removal of endangered persons, animals or things from a certain area	Zákon Národnej rady Slovenskej republiky č. 42/1994 Z. z. o civilnej ochrane obyvateľstva

SLOVAKIA DEFINITIONS 3/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE RESPONSE</b>	Fire service time of response	b		
	Occupant fire response	b		
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	a	Direct material loss is the sum of losses calculated from estimated residual value of tangible fixed assets, materials and other values destroyed by the fire.	Statistical Yearbook of the Slovak Republic 2019
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	b		
	Fire prevention	a	Fire prevention includes measures to prevent or limit the effects of a fire	STN ISO 8421-1 (92 002) ISO 8421-1: 1987

SLOVENIA DEFINITIONS 1/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	a	An incident is an event or a group of events that are caused by uncontrolled natural or other forces, which can endanger the life or health of people and animals. It can also cause damage of property, cultural heritage and the environment in such extend, that it is required to use special measures, forces and resources to control the incident, since regular activities, forces and resources are not sufficient [1] Fire is a process of rapid burning that is spreading uncontrollably in time and space. The fire characteristics are energy release together with smoke, toxic gases and flames. The consequence of rapid burning is an explosion [2].	[1] ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN) , [2] Zakon o varstvu pred požarom
	Deliberate fire	c		
	False alarm	c		
BUILDING DESCRIPTION	Building fire	a	<p><b>Article 17 (fire safety)</b></p> <p>(1) In order to reduce the risk to people in or near them and the environment, facilities must ensure fire safety and enable effective and safe action by firefighters and rescuers. A sufficient amount of water for extinguishing must be provided.</p> <p>(2) The load-bearing structure of a building must maintain the required load-bearing capacity for a certain period of time in the event of a fire. To limit the rapid spread of fire throughout the building, building elements must be used that are difficult to ignite, emit small amounts of heat and smoke when ignited, and limit the rapid spread of fire over the surface.</p> <p>(3) In order to limit the spread of fire throughout the building, the building must be divided into fire sectors.</p> <p>(4) Facilities must provide a sufficient number of properly carried out evacuation routes and exits at appropriate locations so that people can leave them quickly and safely. To ensure the rapid and safe evacuation of people and the rapid intervention of firefighters and rescuers in the facility, fire alarm and alarm systems must be installed.</p> <p>(5) Unobstructed and safe access for firefighting and rescue must be provided in and around facilities.</p> <p>(6) Appropriate fire-fighting systems and devices and equipment must be installed or installed in the facilities.</p> <p>(7) The external walls and roofs of buildings, partition walls, together with doors, windows and other penetrations, must reduce the risk of the fire spreading to neighboring buildings.</p>	(1) Gradbeni zakon (Uradni list RS, št. 61/17, 72/17 – popr. in 65/20) (2) Pravilnik o požarni varnosti v stavbah (Uradni list RS, št. 31/04, 10/05, 83/05, 14/07, 12/13 in 61/17 – GZ) (3) TSG-1-001:2019 Tehnična smernica - požarna varnost v stavbah
	Residential buildings	a	Residential buildings are defined as buildings of which at least half of the usable floor area is used for residential purposes. In case less than half of the usable floor area is used for residential purposes, the building is categorised as non-residential, depending on the purpose of the building.	(1) TSG_V_006_201 8 Razvrščanje objektov
	Non-residential buildings	a	The non-residential buildings are mainly used for non-residential purposes. In case more than half of the floor area is used for residential purposes, the building is defined as residential.	(2) Uredba o razvrščanju objektov (Uradni list RS, št. 37/18)

SLOVENIA DEFINITIONS 2/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE CAUSES</b>	Fire causes	a	The perpetrator of an accident is every physical or legal person that causes an incident due to their improper behaviour and is therefore legally responsible. The unknown perpetrator is every physical or legal person, which causes an accident but is unknown to the authority at the time of the rescue and assistance.	ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN)
	Sorce of ignition	b		
	Area of fire origin	b		
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	b		
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	a	Damage that is caused by natural or other accident includes direct damage, costs of interventions and measures with which they prevent the possible spread of harmful effects. / Damage that is caused by natural or other accident is assessed based on the decision of The Administration of the Republic of Slovenia for Civil Protection and Disaster Relief that defines the size of the area, commission group for assessment as well as other questions that are significant for the comprehensive evaluation of the damage. The initiative for the beginning of the damage assessment may be given by The Administration of the Republic of Slovenia for Civil Protection and Disaster Relief, ministry, or any organisation where the damage occurred.	ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN)
	Fire	b		
	Flame	b		
	Smoke	b		
	Water	b		
Total	a	Material and other damage caused by natural or other incidents is assessed based on the methodology prescribed by the government.	ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN)	
<b>FATALITIES</b>	Victims	b		
	Type of fatality	b		
<b>CASUALTIES</b>	Injured person	a	Injured people and patients are everyone that was injured during an incident regardless of their gender, age or citizenship.	ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN)
	Type of injury	b		

SLOVENIA DEFINITIONS 3/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Alarm	c	<p>(1) Protection includes organisational, technical and other measures as well as the use of technical and other resources for the direct protection of people, animals, property, cultural heritage and environment ahead of the consequences caused by the natural and other incidents.</p> <p>(2) Fire protection measures are all spatial, construction, technological and organisational measures which reduce the fire risk and ensure fire safety. (2) Fire safety includes the safety of people, animals and property in case of a fire. With this law, the fire protection measures ensure the safety of people, animals, property and prevent the occurrence of major fires.</p> <p>(2) Active fire protection measures are all technical and organisational measures, which are intended for fire extinguishing. Among these measures are included the systems, devices, equipment and procedures for fire detection and extinguishing as well as for the removal of heat and smoke in case of a fire. (2) The active fire protection includes systems and equipment that are installed and intended for reducing the risk of people, animals, property as well as for detection, extinguishing of the fire and removing the smoke and heat in case of a fire.</p>	(1) ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN) / (2) Zakon o varstvu pred požarom
	Type of alarms	c		
	Automatic extinguishing systems	c		
	Type of automatic extinguishing systems	c		
	Compartmentation	c		
	Fire barriers	c		
	Safe areas	c		
	Smoke extractors	c		
	Fire brigades on site	c		
	Escape routes	c		
Evacuation	c			
<b>FIRE RESPONSE</b>	Fire service time of response	a	(1) Rescue includes measures and procedures for rescuing people, whose lives or health are endangered, rescuing of animals, property as well as a cultural heritage from the consequences of natural and other incidents. (2) The system of informing firefighters is part of the protection against natural and other accidents, and it includes a system of observation, information and alarming. (2) The time for the arrival of the fire brigades to the scene of an accident is comprised of the time from receiving the call to activating the fire unit, the time to transfer the call, the time required for arrival of the firefighters on the scene of the accident. The arrival time is also dependent on the type of a fire unit, the route to the fire scene and area where the accident occurred.	(1)ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN), / (2) Zakon o gasilstvu (ZGas)
	Occupant fire response	b		

SLOVENIA DEFINITIONS 4/4				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE FINANCIAL COSTS	Direct financial costs	a	Physical or legal person who intentionally caused an accident or because of negligence and the incident induced costs due to the emergency is required to cover the following: costs of the rescue intervention, costs of restoration to the previous condition, costs of compensation for physical and legal people. / Funds for assessing the damage in the event of a natural or other incident is provided by the government.	ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN)
	Indirect financial costs	a	The owner or manager of the facility is obliged to cover the costs of performing firefighting operations. The costs of the intervention that arise due to the tasks performed by the fire brigade are covered by the municipality. Irrespective of the previous two sentences, the costs of the intervention are covered by: <ol style="list-style-type: none"> <li>1. The person responsible for the accident that was caused intentionally or due to negligence</li> <li>2. Whoever is not taking precautions when transporting, storing or carrying out other tasks with toxic substances</li> <li>3. Whoever is not organising that the firefighters to be present at an event or activity according to the regulations</li> <li>4. Whoever is on purpose contacting the fire unit without reason</li> </ol> The costs of interventions that arise due to the interventions performed outside of the municipality of the fire unit are covered by the Republic of Slovenia if the intervention was performed on the basis of national protection.	Zakon o gasilstvu (ZGas)
FIRE PREVENTION	Fire regulations	a	(1) Preventive measures count as all measures that prevent the accident or with which the consequences are reduced. (2) Preventive fire protection measures are all spatial, construction, technological, technical and organisational measures that reduce the possibility of a fire and when it occurs to ensure the safe evacuation of people and property as well as prevent the fire spread.	(1) ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN) / (2) Zakon o varstvu pred požarom
	Fire prevention	a		

**Useful links for Slovenia:**

(1) Gradbeni zakon (Uradni list RS, št. 61/17, 72/17 – popr. in 65/20) (2) Pravilnik o požarni varnosti v stavbah (Uradni list RS, št. 31/04, 10/05, 83/05, 14/07, 12/13 in 61/17 – GZ) (3) TSG-1-001:2019 Tehnična smernica - požarna varnost v stavbah":

<http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7108>

TSG\_V\_006\_2018 Razvrščanje objektov: [https://www.gov.si/assets/ministrstva/MOP/Dokumenti/Graditev/TSG\\_V\\_006\\_2018.pdf](https://www.gov.si/assets/ministrstva/MOP/Dokumenti/Graditev/TSG_V_006_2018.pdf)

Uredba o razvrščanju objektov (Uradni list RS, št. 37/18): <http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED7671>

Zakon o gasilstvu (ZGas): <http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO301#>

ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN): <http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO3647>

ZAKON o varstvu pred naravnimi in drugimi nesrečami (ZVNDN): <http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO364>

Zakon o varstvu pred požarom: <https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina?urlid=20073&stevilka=102>

SWEDEN DEFINITIONS 1/2			
	GENERIC GROUPS	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	Fire or fire incident: In Swedish fire is to some extent defined by language, we have separate words for unwanted and wanted fires (like a fire for heating your house). In addition a definition like "uncontrolled flame, glow or smoke that caused damage" for Brand (fire). Fire incident is defined as danger that a flame, glow, smoke or heating of flammable material might cause damage	
	Deliberate fire		
	False alarm		
<b>BUILDING DESCRIPTION</b>	Building fire	Building is a permanent construction with a roof or roof and walls placed on gr ground or partly below ground or placed for a long period at a certain place in water constructed so that people can be in it.	not defined
	Residential buildings		Separate definition for each category, hospital, elderly home, industry etc.
	Non-residential buildings		
<b>FIRE CAUSES</b>	Fire causes		
	Source of ignition		Definitions/clarification for some of the ignition sources
	Area of fire origin		Definitions/clarification for some of the fire origins
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread		A note that many buildings consist of only one fire compartmentation
	Fire horizontal spread		
	Fire vertical spread		
	Damage		
	Fire		
	Flame		
	Smoke		
	Water		
<b>FATALITIES</b>	Victims	The definition for fatality differs for the different sources. In the fire database, all people (except fire fighter) who died at scene are counted. In the fire death statistics it is people who dies within 90 days of the fire as a direct consequence of the fire, i.e. not when trying to flee the fire etc. In the socialstyrelsen data it is only Swedish citizens that are counted.	
<b>CASUALTIES</b>	Type of fatality		
	Injured person	An estimate of the rescue service on site	
	Type of injury		

SWEDEN DEFINITIONS 2/2			
	GENERIC GROUPS	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Alarm	No special definitions	
	Type of alarms		
	Automatic extinguishing systems		
	Type of automatic extinguishing systems		
	Compartmentation		
	Fire barriers		
	Safe areas		
	Smoke extractors		
	Fire brigades on site		
	Escape routes		
Evacuation			
<b>FIRE RESPONSE</b>	Fire service time of response		
	Occupant fire response		
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	Potentially provided by insurance company	
	Indirect financial costs	Potentially provided by insurance company	
<b>FIRE PREVENTION</b>	Fire regulations		
	Fire prevention		

APPENDIX II - OTHER EUROPEAN AND NON-EUROPEAN COUNTRIES, DEFINITIONS

AUSTRALIA DEFINITIONS 1/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	c		Australian Incident Reporting System (AIRP). The AIRS includes definitions and it is composed of 10 parts as follows: A. Incident report header B. False alarm C. Hazardous materials D. Casualties, rescue and evacuation E. Ignition (all fires) F. Firefighting G. Bush, Forest, Grass fires H. Dollar loss fires I. Mobile property J. Structure fires
	Deliberate fire	c		
	False alarm	a		
	Type of incident	a	Building fire; structure; explosion; rupture; event	
<b>BUILDING DESCRIPTION</b>	Complex	a	A complex is a property complying with all three of the following: <ul style="list-style-type: none"> <li>• a property under one management or ownership and;</li> <li>• located within a continuous boundary and;</li> <li>• with multiple uses i.e.</li> </ul> (a) a single building with two or more property uses, or (b) more than one building with the same or different fixed property uses, or (c) other multiple uses.	
	Building fire	a	Determining which major division, the fixed property falls within will assist in finding the correct subdivision. Three digits must be recorded for this code. <ul style="list-style-type: none"> <li>• Public Assembly Property Division 1</li> <li>• Educational Property Division 2</li> <li>• Institutional Property Division 3</li> <li>• Residential Property Division 4</li> <li>• Shop/Store, Office Property Division 5</li> <li>• Primary Industry, Utility, Defence Property Division 6</li> <li>• Manufacturing Property Division 7</li> <li>• Storage Property Division 8</li> <li>• Special Property Division 9</li> <li>• Unclassified Division 0</li> </ul> For each of them property subtypes are available	
	Structure type	a	The type of structure, in terms of its configuration, in which the fire has occurred.	
	Construction type	a	The way in which the structure is constructed in terms of its resistivity to fire and fire spread.	
<b>FIRE CAUSES</b>	Fire causes			
	Material contributing most to fire intensity	a	The type of material which generated the most heat and flame.	
	Material generating most smoke	a	The type of material which generated the most smoke.	
	Area of fire origin	a	The area within a property where the fire originated. The Area of Fire Origin is defined by its use at the time of the fire ignition.	

AUSTRALIA DEFINITIONS 2/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Factor contributing to flame spread	a	The most important factor or avenue that allowed rapid, unusual or intense flame spread (char) beyond the room or area of origin.	Australian Incident Reporting System (AIRP).
	Fire horizontal spread	a	Fire confined to item, room, floor	
	Fire vertical spread	a	Fire confined to structure or extent beyond structure	
	Damage	b		
	Fire	b		
	Flame	a	The extent of the area burned or charred by flame impingement	
	Smoke	a	The extent of the smoke and heat scorch or browned damage to the structure.	
	Water	c	The extent of the damage to the building and contents or beyond caused by water or other extinguishing agents.	
Total	b			
<b>FATALITIES</b>	Victims	a	The number of brigade personnel fatalities attributed to the incident or the action of handling the incident. The number of fatalities that are attributable to the incident or the action of handling the incident.	
	Type of fatality	b		
<b>CASUALTIES</b>	Injured person	a	A casualty is a person who dies or is physically injured as the result of an incident or the action of handling the incident and includes injuries sustained whilst responding to and returning from the incident. To be recorded, the injury must be severe enough to require treatment by a medical practitioner, regardless of whether treatment is actually received, or the injury must result in at least one day of restricted activity immediately following the incident. A death is recorded if it is attributable to the incident or the action of handling the incident.	
	Type of injury	b		
<b>FIRE SAFETY MEASURES</b>	Alarm	a	The presence of smoke alarms/detectors in the structure involved in fire.	
	Type of alarms	a		
	Automatic extinguishing systems	a	The status and operation of sprinklers in the structure involved in fire.	
	Type of automatic extinguishing systems	a		
	Compartmentation	a	The size of the smallest compartment within which the fire is contained as found on arrival	
	Fire barriers	b		
	Safe areas	b		
	Smoke extractors	b		
	Fire brigades on site	b		
<b>FIRE RESPONSE</b>	Escape routes	b		
	Evacuation	b		
	Fire service time of response	a	Time of the incident and control or stop time	
	Occupant fire response	b		

AUSTRALIA DEFINITIONS 3/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE FINANCIAL COSTS</b>	Dollar loss	a	The estimated monetary value of the damage to property and contents caused by fire and firefighting operations. Do not include land value.	Australian Incident Reporting System (AIRP).
	Property	a	The reporting officer's estimation of the value of the property. Do not include the value of the contents. Property includes buildings, structures and mobile property. The contents within structures, material stored in yards, the payloads of mobile property and crops and plantations are recorded in Item H3 Estimated Value of Contents	
	Contents	a	The reporting officer's estimation of the value of the contents (includes crops).	
	Insurance	a	Whether the contents or structure or both were insured.	
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	b		
	Fire prevention	b		

CANADA DEFINITIONS 1/1					
GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE		
Fire incident	a	Any instance of destructive or uncontrolled burning, including explosion of combustible solids, liquids, or gases.	<p>Statistics Canada. National Fire Incident Database (NFID). Data Dictionary (v2.0), February 2017 <a href="http://nfidcanada.ca/wp-content/uploads/2017/09/NFID-Data-Dictionary_final.pdf">http://nfidcanada.ca/wp-content/uploads/2017/09/NFID-Data-Dictionary_final.pdf</a></p>		
Damage	a	<b>Extent of Damage</b> is the total extent of damage caused by actual burning or charring and includes damage caused by heat (browning, blistering, etc.), smoke, water and other extinguishing agents. <b>Codes:</b> Confined to room of origin, Confined to object of origin, Confined to part of room/area of origin, Confined to floor of origin, Confined to building of origin, Beyond building of origin, Confined to roof, Unclassified, Unknown.			
		<b>Automatic Fire Detection System:</b> Automatic Fire Detection System may be installed throughout the buildings in which case the system is classified as "complete", or in parts of the building only, such as in storage areas or air handling systems, in which case the system is classified as "partial". Automatic Fire Detection System may also be central station supervised or directly connected to fire alarm headquarters or provided with local alarms only, which fact should be indicated by using the appropriate classification. In addition, Automatic Fire Detection System may operate on the heat detection principle, either fixed temperature or rate-of-rise, or on the detection of products of combustion or smoke principle, which fact is indicated by using the appropriate classification. Note: Installation of smoke alarms in a dwelling unit is not a fire alarm system.			
		Sprinkler Protection may be installed throughout the building in which case the system should be classified as "complete", or in part of the building only. If there are less than 10 sprinklers, the building is considered to be not sprinklered (exception: some properties may be completely protected by a sprinkler system with less than 10 sprinkler heads). Where a structure has been sprinklered in conformance with NFPA 13 it will be considered to be fully protected by a sprinkler system.			
		Compartmentation		b	
		Fire barriers		b	
Safe areas	b				
Smoke extractors	b				
Fire brigades on site	a	Yes			
Escape routes	b				
Evacuation	b				
Fatalities	a	<b>Civilian:</b> A person killed accidentally as a direct result of a fire or a person who dies from a fire injury within one year following the date on which the injury was sustained, providing the person was not a member of a fire department. When there is doubt about a suicide or murder, the person has been classified as a fire death. <b>Fire Service:</b> A member of a fire department killed accidentally while in the process of fighting a fire or who died from a fire action injury within one year following the date on which the injury was sustained.			
Casualties	a	<b>Civilian:</b> A person accidentally injured as a direct result of a fire or a person who dies from a fire injury within one year following the date on which the injury was sustained, unless this person was a member of a fire department. When there is doubt about a suicide or murder, the person has been classified as a fire death. <b>Fire Service:</b> A member of a fire department accidentally injured while in the process of fighting a fire or who died from a fire action injury within one year following the date on which the injury was sustained. A firefighter accidentally injured while en-route to or returning from the scene of an actual fire is considered a fire action injury.			

NEW ZEALAND DEFINITIONS 1/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	a	Fires where the proven cause does not involve an intentional human act to ignite or spread fire into an area where the fire should not be.	NZPF 921
	Deliberate fire	a	Incendiary - An unlawful, deliberately-lit fire where, given the known information the fire is likely to be a result of malicious intent or reckless disregard of others and property, to cause unlawful damage	FENZ P3
	False alarm	a	False alarm: good intent; accidental operation; defective apparatus; malicious; alarm agent in attendance; nothing on indicator panel; undetermined.	FENZ SMS
<b>BUILDING DESCRIPTION</b>	Building fire	a	Referred to as a 'structure fire', either with or without damage	
	Residential buildings	a	A building where a person or persons normally live. Does not include hotels, temporary accommodation or hostels	FENZ SMS
	Non-residential buildings	a	Nil - field breaks down into general property use. 'General Property Use' is defined as 'the board use of the location where the emergency has occurred.	FENZ SMS
<b>FIRE CAUSES</b>	Fire causes	a	The circumstances, conditions, or agencies that brought about or resulted in the fire or explosion incident, damage to property resulting from the fire or explosion incident, or bodily injury or loss of life resulting from the fire or explosion incident.	FENZ P3
	Source of ignition	a	The source of heat energy that brought about ignition	FENZ SMS
	Area of fire origin	a	The general location where the fire started	FENZ SMS
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	a	Not defined but extent of damage is recorded.	
	Fire horizontal spread	a	Measured in squared metres	FENZ SMS
	Fire vertical spread	a	captured in square metres and a description of the extent as noted to the right.	FENZ SMS
	Damage	a	Measured by floors affected x Sq metres per floor	FENZ SMS
	Fire	a	See below	FENZ SMS
	Flame	a	The approximate floor area of the structure that was affected by flame	FENZ SMS
	Smoke	a	The approximate floor area of the structure that was affected by smoke	FENZ SMS
	Water	a	The approximate floor area of the structure that was affected by water	FENZ SMS
	Total	a	All damage measured in square metres	FENZ SMS
<b>FATALITIES</b>	Person injured	a	The most serious injury suffered by the injured person	FENZ SMS
	Type of injury	a	Burn; crush; cut, laceration, abrasion; deceased; respiratory – fire related (smoke/heat); respiratory – non fire related (eg asthma); fracture; heart attack, stroke; heat stroke/stress; unconscious; other; bleeding: major; bleeding: minor; shock; sprain, strain	
<b>CASUALTIES</b>	Injured person	a	Our fire reporting captures injuries to non-FENZ staff (see screen shot right) referring to them as 'Casualty'. The term 'Casualty' is not defined.	
	Type of injury	a	In reports, we classify causes of death as: avoidable – where measures such as education programmes, building design, fire safety systems, smoke alarms could have prevented the death; or non-avoidable – for example, self-immolation or murder, where these measures are unlikely to have made any difference.	Fire Investigation technical manual

NEW ZEALAND DEFINITIONS 2/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE SAFETY MEASURES	Alarm	a	'Type of Fire Alarm' described as 'the type of fire alarm system that activated'	
	Type of alarms	a	The report presents a selection of alarm types to choose from - refer right.	
	Automatic extinguishing systems	b	No definition within reporting system but refer to drop down right	
	Type of automatic extinguishing systems	b	No definition within reporting system but refer to drop down right	
	Compartmentation	a	A definition used in our fire engineering and built environment work but do not capture this specifically in incident reporting therefore no definition is contained within our fire reporting	NZ Building Code
	Fire barriers	a	as above	
	Safe areas	a	Place of Safety - a place of safety in the vicinity of a building from which people may safely disperse after escaping the effects of a fire. It may be a place such as a street, open space, public space or an adjacent building	NZ Building Code
	Smoke extractors		as above, the equipment adopted by fire brigade for the extraction of smoke is recorded	
	Fire brigades on site	b	Not provided in our fire statistics definitions.	
	Escape routes	a	Recorded only if occupants could or couldn't escape safely- actual definition in the Fire Safety Procedure and Evac scheme Regs	
	Evacuation	a	The reporting asks for evacuation status and adds 'was the location of the emergency fully evacuated during the emergency'. We also have Fire Safety, Evacuation Procedures and Evacuation Schemes Regulations 2018. These require buildings to have a 'means of escape from fire' either by "The owner of a building must have a procedure in place (evacuation procedure) for the safe, prompt, and efficient evacuation of the building's occupants in the event of a fire emergency requiring evacuation, or an evacuation scheme to enable the safe, prompt and efficient evacuation of the building's occupants in the event of a fire emergency evacuation.	Fire and Emergency Fire Safety, Evacuation Procedures and Evacuation Schemes Regulations 2018.
FIRE RESPONSE	Fire service time of response	a	This is a paraphrase of text taken from an agreement we have with government. The time taken from first becoming aware of an emergency to the time our first resource arrives.	Statement of Performance 2020/21
	Occupant fire response	b	No definition but our report asks "Was the fire out or under control when FENZ arrived?" and then requires a selection from a drop down list what equipment was used to control the emergency.	
FIRE FINANCIAL COSTS	Direct financial costs	b	No definition an 'activity based costing model' is used to seek recovery or provide an indication of a cost of response to an emergency.	
	Indirect financial costs	b	as above, no content loss and business interruption considered	

NEW ZEALAND DEFINITIONS 3/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE PREVENTION	Fire regulations	a	New Zealand has the Fire and Emergency Act 2017 (FENZ Act) which established Fire and Emergency NZ (the fire service) and sets out its mandate. The FENZ Act uses a term 'Relevant fire safety legislation' and states that this includes the Act itself, any regulations made under this Act, and any provisions of the following Acts (or regulations made under those Acts) under which FENZ has functions: Building Act 2004, Local Government Act 2002, Local Government Act 1974, Hazardous Substances and New Organisms Act 1996, Radiation Safety Act 2016, Sale and Supply of Alcohol Act 2012	Fire and Emergency Act 2017
	Fire prevention	a	The Fire and Emergency Act 2017 states a main function of Fire and Emergency NZ is 'to provide fire prevention' however it doesn't define what fire prevention is.  The following explanation of fire prevention is contained within the National Risk Reduction Strategy 2019-2029. "Reducing risk is the single most effective thing we can do in seeking to protect New Zealand's people, property and environment. As well as preventing incidents occurring in the first place, reducing the frequency of incidents, and mitigating the impacts of an emergency are also core risk reduction interventions. Furthermore, a crucial part of risk reduction is helping individuals and communities prepare or unavoidable emergencies, so that such incidents have less impact and they are able to recover more quickly".	National Risk Reduction Strategy 2019-2029

NORWAY DEFINITIONS 1/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
FIRE INCIDENT	Accidental fire	c	Maybe police has a definition	The Norwegian Directorate for Civil Protection (DSB) <a href="https://www.brannstatistik.no/brus-ui/">https://www.brannstatistik.no/brus-ui/</a>
	Deliberate fire	c	Maybe police has a definition	
	False alarm	a	There are two types of false alarm. "ABA Feil i Bruk" og "ABA teknisk/ukjent" alarm: An alarm which is given accidental or in good faith without fire or risk of a fire or any damage which require or could require the firebrigade. A False alarm "Falsk ABA": An Alarm which is given intentionally and in bad faith without fire or risk of a fire or any damage which requires or could require the firebrigade or where there are no other damage.	
BUILDING DESCRIPTION	Building fire	a	The building description is defined in a "pick list" which specifies which type of building, that is on fire	
	Residential buildings	a	The building description is defined in a "pick list" which specifies which type of building, that is on fire	
	Non-residential buildings	a	The building description is defined in a "pick list" which specifies which type of building, that is on fire	
FIRE CAUSES	Fire causes	a	In the database the fire cause is described in a dropdown menu with suggestions of different fire causes	
	Source of ignition	a	In the database the source of ignition is described in a dropdown menu with suggestions of different sources of ignition. Heat source (open flame, spark, glow, lightning, etc.) Material that was first ignited (paper, cardboard, plastic, textile, wood, etc.). Equipment involved in the ignition (machines, combustion plants, electrical installations, etc.), including make, model and serial number. Object that was subsequently ignited (building construction, furniture, storage, waste storage in container, etc.).	
	Area of fire origin	a	In the database the place of origin is described in a dropdown menu with suggestions of different places. Origin of fire (corridor area, kitchen, barn, etc.) is recorded.	

NORWAY DEFINITIONS 2/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	a	In the database a possible fire spread is described in a dropdown menu with suggestions of different scenarios of fire spread. Evaluation of the extent of fire at arrival (smoke development, visible flames, etc.).	
	Fire horizontal spread	b		
	Fire vertical spread	b		
	Damage	b		
	Fire	b		
	Flame	b		
	Smoke	b		
	Water	b		
Total	b			
<b>FATALITIES</b>	Victims	a	A fatality in a fire is defined as a person which is dead in a fire or within 30 days because of a fire, typically from smoke poison or burns. A "Fatal fire" is a fire where one or more persons is killed in a fire. "Accidental Fatal fire" : when started because of an accidental human act or failure in the electric equipment or an external cause. "Deliberate Fatal fire (dødsbrand)": when deliberately is started either by the victim or another person with the intention to start a fire.	The Norwegian Directorate for Civil Protection (DSB) <a href="https://www.brannstatistik.no/brus-ui/">https://www.brannstatistik.no/brus-ui/</a>
	Type of fatality	c		
<b>CASUALTIES</b>	Injured person	c		
	Type of injury	c		
<b>FIRE SAFETY MEASURES</b>	Alarm	a	Detector number, Detector type, Cause of the alarm (tobacco smoking, steam, craftsman work, technical faults, etc.)	
	Type of alarms	a	ion detector, optical smoke detector, thermodetector, multifunction detector	
	Automatic extinguishing systems	a		
	Type of automatic extinguishing systems	a		
	Compartmentation	a	Fire spread from main spaces, including presumed cause of the fire spread (open standing doors, holes in floor, separation, etc.) Fire technical equipment and functionality (smoke alarm, fire blanket, fire technical installations)	
	Fire barriers	a	Included in compartmentation.	
	Safe areas	b		
	Smoke extractors	a		
Fire brigades on site	b			
Escape routes	b			
Evacuation	b			

NORWAY DEFINITIONS 3/3				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE RESPONSE</b>	Fire service time of response	a	Alarmed (date and time) Departure (date and time) Promotion at the scene of the accident (date and time) Released from place of injury (date and time) Ready at station (date and time)	The Norwegian Directorate for Civil Protection (DSB) <a href="https://www.brannstatistikk.no/brus-ui/">https://www.brannstatistikk.no/brus-ui/</a>
	Occupant fire response	c		
<b>FIRE FINANCIAL COSTS</b>	Direct financial costs	b		
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	a	If it is regulated by Norwegian legislation. Justis- og beredskapsdepartementet LOV-2019-12-20-95 fra 01.11.2020.	
	Fire prevention	c		

RUSSIA DEFINITIONS 1/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Accidental fire	a	Uncontrolled burning, causing material damage, harm to the life and health of citizens, the interests of society and the state	<a href="https://os-info.ru/pozharnaya-bezopasnost/slovar-terminov-pozharnoj-bezopasnosti.html">https://os-info.ru/pozharnaya-bezopasnost/slovar-terminov-pozharnoj-bezopasnosti.html</a>
	Deliberate fire	a	Deliberately or inadvertently setting fire to objects in such a way that the fire is able to spread further spontaneously after removing the ignition means.	
	False alarm	a	False alarm	
<b>BUILDING DESCRIPTION</b>	Building fire	a	Fire in aboveground construction with premises for living and (or) activities of people, location of production facilities, storage of products or keeping animals	
	Residential buildings	a	Apartment buildings for permanent residence of people and dormitories for living during the period of work or study	
	Non-residential buildings	a	Buildings which are not apartment buildings for permanent residence of people and dormitories for living during the period of work or study	
<b>FIRE CAUSES</b>	Fire causes	a	Phenomenon or circumstance directly causing the occurrence of a fire	
	Source of ignition	a	Energy agent that initiates combustion	
	Area of fire origin	a	The place where the fire originated	
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	a	Increase in the combustion zone and / or the likelihood of exposure to hazardous fire factors	
	Fire horizontal spread	c		
	Fire vertical spread	c		
	Damage	a	Direct material damage from a fire is understood as material values estimated in monetary terms, destroyed and (or) damaged as a result of exposure to hazardous fire factors and their associated manifestations.	
	Fire	a	Uncontrolled burning, causing material damage, harm to the life and health of citizens, the interests of society and the state	
	Flame	a	Combustion process accompanied by flame or glow	
	Smoke	a	Aerosol formed by liquid and (or) solid products of incomplete combustion of materials	
	Water	c		
<b>FATALITIES</b>	Total	c		
	Victims	a	A person whose death occurred as a result of exposure to hazardous factors of a fire	
<b>CASUALTIES</b>	Type of fatality	c		
	Injured person		A person who was injured or suffered material losses as a result of exposure to hazardous factors of a fire	
	Type of injury	c		

RUSSIA DEFINITIONS 2/2				
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Alarm	a	Fire detector that responds to factors accompanying a fire	<a href="https://os-info.ru/pozharnaya-bezopasnost/slovar-terminov-pozharnoj-bezopasnosti.html">https://os-info.ru/pozharnaya-bezopasnost/slovar-terminov-pozharnoj-bezopasnosti.html</a>
	Type of alarms	c		
	Automatic extinguishing systems	a	Fire extinguishing installation, automatically triggered when the controlled factor (s) of the fire exceed the set threshold values in the protected area	
	Type of automatic extinguishing systems	c		
	Compartmentation	c		
	Fire barriers	a	A building structure with a standardized fire resistance limit and a structural fire hazard class of a structure, a volumetric element of a building or other engineering solution designed to prevent the spread of fire from one part of a building, structure, structure to another or between buildings, structures, structures, green spaces	
	Safe areas	a	An area where people are protected from the effects of fire hazards or where there are no fire hazards	
	Smoke extractors	a	The smoke exhaust system is a specialized complex of ventilation equipment designed for the prompt removal of combustion products from the premises, for removing smoke from the evacuation routes of people and contributing to the correct organization of measures to eliminate the fire.	
	Fire brigades on site	c		
	Escape routes	a	An exit leading to the escape route directly outside or into a safe area	
<b>FIRE RESPONSE</b>	Evacuation	a	The process of organized independent movement of people directly outside or into a safe area from premises where there is a possibility of exposure of people to dangerous fire factors	
	Fire service time of response	a	Time from the moment of the alarm signal until the moment of arrival of the first fire brigade	
<b>FIRE FINANCIAL COSTS</b>	Occupant fire response	c		
	Direct financial costs	a	Direct material damage from a fire is understood as material values estimated in monetary terms, destroyed and (or) damaged as a result of exposure to hazardous fire factors and their associated manifestations.	
<b>FIRE PREVENTION</b>	Indirect financial costs		Material losses due to violation of economic plans in the economy, i.e. a decline in production, a decline in trade and banking operations, a decrease in income, losses due to delays in the transport of goods ...	
	Fire regulations	a	A set of provisions establishing the procedure for compliance with fire safety requirements and standards during the construction and operation of the facility	
	Fire prevention	a	A set of organizational and technical measures aimed at ensuring the safety of people, preventing a fire, limiting its spread, as well as creating conditions for successful fire extinguishing	

SWITZERLAND DEFINITIONS 1/1			
	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	REFERENCE
FIRE INCIDENT	Accidental fire	a	Erfassungsbogen Brandschutz
	Deliberate fire	a (arson)	
	False alarm	b	
BUILDING DESCRIPTION	Building fire	a	
	Residential buildings	a	
	Non-residential buildings	a	
FIRE CAUSES	Fire causes	a	
	Source of ignition	a	
	Area of fire origin	a	
FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES	Fire spread	a	
	Fire horizontal spread	a	
	Fire vertical spread	a	
	Damage	a	
	Fire	a	
	Flame	b	
	Smoke	a	
	Water	a	
	Total		
FATALITIES	Victims	a	
	Type of fatality	b	
CASUALTIES	Injure person	a	
	Type of injury	b	
FIRE SAFETY MEASURES	Alarm	a	
	Type of alarms	a	
	Automatic extinguishing systems	a	
	Type of automatic extinguishing systems	a	
	Compartmentation	a	
	Fire barriers	a	
	Safe areas	a	
	Smoke extractors	a	
	Fire brigades on site	a	
	Escape routes	a	
Evacuation	a		
FIRE RESPONSE	Fire service time of response	a	
	Occupant fire response	a	
FIRE FINANCIAL COSTS	Direct financial costs	a	
	Indirect financial costs	a	
FIRE PREVENTION	Fire regulations	a	
	Fire prevention	a	

UK DEFINITIONS 1/3

	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE INCIDENT</b>	Primary	a	Primary fires are generally more serious fires that harm people or cause damage to property. Primary fires are defined as fires that cause damage by fire/heat/smoke and meet at least one of the following conditions: any fire that occurred in a (non-derelect) building, vehicle or (some) outdoor structures; any fire involving fatalities, casualties or rescues; any fire attended by five or more pumping appliances.	Fire statistics definitions, Home Office
	Secondary	a	Secondary fires are generally small outdoor fires, not involving people or property. These include refuse fires, grassland fires and fires in derelict buildings or vehicles, unless these fires involved casualties or rescues, or five or more pumping appliances attended, in which case they become primary other outdoor fires.	
	Chimney	a	Chimney fires are fires in buildings where the flame was contained within the chimney structure and did not involve casualties, rescues or attendance by five or more pumping appliances. Chimneys in industrial buildings are not included.	
	Accidental fire	a	Accidental fires include those where the motive for the fire was presumed to be either accidental or not known (or unspecified).	
	Deliberate fire	a	Deliberate fires include those where the motive for the fire was 'thought to be' or 'suspected to be' deliberate. This includes fires to an individual's own property, others' property or property of an unknown owner. Despite deliberate fire records including arson, deliberate fires are not the same as arson. Arson is defined under the Criminal Damage Act of 1971 as 'an act of attempting to destroy or damage property, and/or in doing so, to endanger life'.	
	Late fire	a	Late fire calls are fires attended by a FRS which were known to be extinguished when the call was made (or to which no call was made) and the fire came to the attention of the FRS by other means (e.g. press report or inquest). Such fires are reported if an attendance is made (even if for inspection only) but are not reported if no attendance is made.	
	False alarm	a		
<b>BUILDING DESCRIPTION</b>	Building fire		Building characteristics are reported: number of floors below and above the ground level.	Incident Recording System (Home Office)
	Residential buildings	a	Dwellings (residential homes and HMOs) and Other residential (hostel, B&Bs, Nursing homes, Students halls of residence, etc.)	
	Non-residential buildings	a	Offices, shops, factories, warehouses, restaurants, cinemas, public buildings, religious buildings, agricultural buildings, railway stations, sheds, etc.	

UK DEFINITIONS 2/3

	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE CAUSES</b>	Fire causes	a	Several causes of fire are listed.	Incident Recording System (Home Office)
	Source of ignition	a	Several sources of ignition are listed. The item/material damaged first is recorded.	
	Area of fire origin	a	Room/compartment of origin is recorded.	
<b>FIRE CONSEQUENCES IN TERMS OF UNIT MEASURES</b>	Fire spread	a	Evaluation of the extent of flame and heat damage at arrival and at stop.	Incident Recording System (Home Office)
	Fire horizontal spread	a	Horizontal area damage in m2 by flame and heat is recorded.	
	Fire vertical spread			
	Damage			
	Fire	a	The total horizontal area damaged by the flame and/or heat (in square metres) at the stop of the fire.	
	Flame	a	A question of the IRS is if there is a presence of heat and smoke damage only	
	Smoke			
Water				
	Total	a	The total horizontal area damaged by the flame, heat, smoke and/or water (in square metres) at the stop of the fire.	
<b>FATALITIES</b>	Victims	a	Fire-related fatalities are, in general, those that would not have otherwise occurred had there not been a fire. i.e. 'no fire = no death'. This includes any fatal casualty which is the direct or indirect result of injuries caused by a fire incident. Even if the fatal casualty dies subsequently, any fatality whose cause is attributed to a fire is included, sometimes following road traffic collisions. For the purpose of publications, published figures include the number of fatal casualties which were either recorded as 'fire related' or 'don't know', grouped together as fire-related deaths; thus excluding only those that were recorded as 'not fire-related'. In the iRS, there is a question about if the casualty been reconciled against the appropriate death certificate.	Fire statistics definitions, Home Office
	Type of fatality	a	Cause and nature of fatality is specified in the IRS.	
<b>CASUALTIES</b>	Injured person	a	Non-fatal casualties have, since the introduction of the IRS, been split into four sub-categories, defined as: · Hospital severe – at least an overnight stay in hospital as an in-patient · Hospital slight – attending hospital as an outpatient (not a precautionary check) · First Aid given – first aid given at scene (by anyone), including after a precautionary check · Precautionary check – a precautionary check (to attend hospital or to see a doctor) was recommended (by anyone)	Fire statistics definitions, Home Office
	Type of injury	a	Cause and nature of injury is specified in the IRS.	

UK DEFINITIONS 3/3

	GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
<b>FIRE SAFETY MEASURES</b>	Alarm	a	Alarm presence, type, location, operation and reason for failure are recorded.	Incident Recording System (Home Office)
	Type of alarms	a	Smoke alarm – 1 year battery; Smoke alarm - long life battery; Smoke alarm – mains; Smoke alarm - mains and battery; Smoke alarm - Battery type not known; Mains security system including smoke alarm; Other; Not known	
	Automatic extinguishing systems	a		
	Type of automatic extinguishing systems	a	Sprinklers; Water mist; Gaseous system - halon; Gaseous system - other; Pressurisation; Smoke ventilation; Drencher; Foam; Powder; Other	
	Compartmentation	a	The approximate size of the compartment is recorded. The compartment classification is the following: Stopped/checked spread; Breached - current building work; Breached - previous building work; Breached - fire doors left open or incorrectly fitted; Damage to compartmentation; Fire spread through gaps or voids in construction; No compartmentation in building; Not applicable; Other	
	Fire barriers	a	Included in compartmentation.	
	Safe areas			
	Smoke extractors			
	Fire brigades on site			
<b>FIRE RESPONSE</b>	Escape routes	a	OK – no visible concerns; Exits locked; Exits blocked (e.g. Materials stored blocking exit); Exit route blocked by smoke/flames; Poor implementation e.g. doors swing the wrong way; Contents contributing to abnormal fire spread /smoke production; Not applicable; Other	Incident Recording System (Home Office)
	Evacuation	a	Yes, data on people evacuated with or without assistance. No, escape routes.	
<b>FIRE FINANCIAL COSTS</b>	Fire service time of response	a	Time when the appliance is mobilised and when it arrives at the fire scene are recorded in the IRS.	Incident Recording System (Home Office)
	Occupant fire response	a	The time between ignition and discovery and between discovery and call are recorded.	
<b>FIRE PREVENTION</b>	Direct financial costs	b		Incident Recording System (Home Office)
	Indirect financial costs	b		
<b>FIRE PREVENTION</b>	Fire regulations	a	In the IRS, there is a question if the fire safety regulations apply.	Incident Recording System (Home Office)
	Fire prevention	c		

**Useful links for the UK:**

Fire statistics definitions, Home Office:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/858045/fire-statistics-definitions-160120.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/858045/fire-statistics-definitions-160120.pdf)

Incident Recording System (Home Office):

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/716887/incident-recording-system-questions-and-lists-version-1.6-XML-Schemas-v1-0p-from-April-2012.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716887/incident-recording-system-questions-and-lists-version-1.6-XML-Schemas-v1-0p-from-April-2012.pdf)

USA DEFINITIONS 1/1			
GENERIC GROUPS	a. Yes, the definition exists b. No, the definition not available c. Term not specified or unclear	DEFINITIONS	REFERENCE
Fire incident	a	<b>Incident Types:</b> Structure fire, Fire in Mobile Property Used as Fixed Structure;; Building fire; Confined fire (Cooking fire without extension beyond cooking vessel, Chimney or Flue Fire confined to chimney or flue, Incinerator overload but no flame damage outside incinerator, Fuel burner; boiler without flame damage outside fire box, Commercial compactor confined to contents, Trash or rubbish fire in structure but no damage to structure of contents).	National Fire Incident Reporting System 5.0 Complete Reference Guide, January 2015; NFPA 901 Standard Classifications for Incident Reporting and Fire Protection Data.
Damage	a	<b>Fire Spread:</b> Confined to room of origin, Confined to floor of origin, Confined to building of origin, Beyond building of origin. <b>Number of stories:</b> minor damage, significant damage, heavy damage, extreme damage <b>Estimated Dollar Losses:</b> Property; Contents	
Alarm	a	Type <b>Detector Type:</b> Smoke, Heat, Combination Smoke and Heat, Sprinkler Water Flow Detection, More than One Type, Other	
Automatic extinguish system	a	Type <b>Type of Automatic Extinguishing System:</b> Wet pipe, Dry pipe, Other, Dry Chemical, Foam, Halogen-Type, Carbon Dioxide, Other Special Hazard System	
Compartmentation	b		
Fire barriers	b		
Safe areas	b		
Smoke extractors	b		
Fire brigades on site	a	Yes	
Escape routes	b		
Evacuation	b		
Fatalities	a	<b>Civilian:</b> Within 1 year. Gender, Age, Race, Severity, Cause, Human Factors Contributing to Injury, Factors Contributing to Injury, Activity When Injured, Location at Time of Incident, General Location at Time of Incident, Story at Start of Incident, Story when Injury Occurred, Specific Location at Time of Injury, Primary Apparent Symptom, Primary Area of Body Injured. <b>Fire Service:</b> Gender, Age, Career/Volunteer, Date and Time, Usual Assignment, Physical Condition Immediately Prior, Severity, Activity at Time of Injury, Primary Symptom, Cause, Object Involved, Primary Body Part, Factor Contributing, Where Injury Occurred, Specific Location, Vehicle Type, Protective Equipment and Type, Protective Equipment Problem,	
Casualties	a	Civilian and Fire Service. Note that NFIRS refers to "casualties," which can either be fatal or non-fatal. Fatalities are captured under "Severity of Injury" field. "Severity of Injury" classifications:	

**Useful links for the USA:**

NFIRS: [https://www.usfa.fema.gov/downloads/pdf/nfirs/NFIRS\\_Complete\\_Reference\\_Guide\\_2015.pdf](https://www.usfa.fema.gov/downloads/pdf/nfirs/NFIRS_Complete_Reference_Guide_2015.pdf)

NFPA 901: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=901>

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