



100 CITIES – 100 YEARS

Evaluation Of Urban Fire Risks

EXPOSEE

Over the centuries, cities became economic, scientific, administrative and cultural centers of the countries. This process accelerated especially in the 20th century. Life in the cities has become very pleasant for their inhabitants.. Notwithstanding these manifold benefits of city life, the administrations of urban centers are increasingly confronted with problems: The streets of the cities are suffering from the ever increasing mass of vehicles. Noise and air pollution are the result. Housing is scarce in the centers. They cities grow in height and on the outskirts. The supply of drinking water is a problem in many places. Waste management is a major organizational and technical challenge for the city administration. One of the most important issues within the increasingly complex infrastructure of large cities is the safety and security factor. It is no coincidence that the municipalities have set up special services that deal with these problems: police, fire brigade, emergency services, disaster services for the gas, electricity, gas supply and communication networks (telephone, Internet). Purpose of the book is to take a closer look at the subject of fire safety. In the last century, cities have experienced a variety of revelations with the introduction of new building materials, new types of buildings, and new ways of using the buildings. Many advances in fire prevention have been made. Nevertheless, the fire danger in the cities is not banished.

Bruschlinsky / Sokolov / Wagner et.al
Center of Fire Statistics (CTIF)

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FAQ and Project Diary

Dear Sir or Madam, dear colleagues and friends!

The table below shows the activities undertaken for moving forward with the project. All news and changes in the project are displayed here. Please search for

Date	Remark / Contact person / organization	Content, remark
2019 -04- 02	What is the definition of "technical aid"?	It is well-known to all that internationally, there is no uniform definition. Since the project is dedicated to fire risks, all other types of fire service operations categorized accordingly. Under the term "technical aid," we understand all types of fire service calls that are not defined as "fires" or "ambulance calls". That means that technical aid calls cover all traffic accidents, hazmat calls, industrial accidents, water rescue, animal rescue, calls connected with bad weather (floods, storms and so on).
2019 -04- 07	What are the main categories of fire service calls related to the book project?	The main categories of fire service calls related to the book project are: <ul style="list-style-type: none"> • Fires • Technical aid • Ambulance calls Other calls (service to the public – non-emergency activities).
2019 -04- 08	Why are other terms used in the text beside the phrase "Fire department"?	The different terms based on historical and regional conditions. In North America, for example, the term Fire Department is used. Europe usually uses the term Fire Brigade . Next, the term " Fire Service " is used. After all, some fire departments call themselves part of the local Civil Defense . There are also organizational differences: professional fire brigades, volunteer fire brigades and industrial fire brigades. The fire brigades have emerged historically different: public fire departments, military fire brigades or private fire brigades. After all, there are many hybrid forms between paid and unpaid fire departments. In the project, every fire brigade is allowed to make a speech as she sees fit; that does not change the fire risks.
2019 -04- 09	How is the circumstance of the change of the area of a city handled?	In the history of the cities, as a rule, the city area grew. In many cases, neighboring communities were incorporated into the city. With this measure, the cities tried to cover the need for land for housing, industry, etc. Incorporations are a tried and tested means of keeping population density at a tolerable level. Otherwise, there will be

Date	Remark / Contact person / organization	Content, remark
		<p>difficulties in developing the infrastructure. Classic examples of radical urban expansion is the formation of Greater Berlin and Greater London. The participating cities are invited to display significant territorial extensions in the database. Associated with this, the number of inhabitants often changes. For the respective year so the appropriate information on the area, the number of inhabitants and the number of fires, etc. are to make.</p>
<p>2019 -04- 10</p>	<p>Dear Authors, please inform the participating cities about your motivation to stage this great project! We want to know: who are you? What is your relationship with the fire departments? What personal reasons are driving you?</p>	<p>Nikolay Bruschlinsky, Professor Doctor, has been working as a scientist at the Moscow Fire Academy since the 1960s. He is a professional mathematician; has been confronted with the question: how to build a rational system of fire departments in the big cities of the World? Together with the former CTIF President Gunnar Haurum (Denmark), he developed creating a world fire service statistics. This work began in 1995 with the publication of the first CTIF report. Now 25 years have passed - this statistic is unique in the whole World: https://www.ctif.org/index.php/world-fire-statistics</p> <p>He has also developed a scientifically founded theory about the fire risks in the states of the World. This mathematical-statistical model used in our project as the basis for assessing the fire risks of cities.</p> <p>Sergei Sokolov is a trained fire officer and has taken an academic career. After completing his master's degree, he earned his doctorate and habilitation and now works as a lecturer and head of a scientific chair at the Moscow Fire Academy. Like Nikolay Bruschlinsky, he is a member of the CTIF Statistic Center and a member of the German Fire Protection Association. Sergey comes from a family of firefighters - the father was the chief officer of the fire brigade and was deployed at the reactor accident in Chernobyl. There he received a high radioactive dose. Sergey's brother is a fire officer in the Moscow Fire Brigade.</p> <p>Peter Wagner started his firefighting career in the former East Berlin. After completing his training at the fire service school, he was on duty at a fire station as a firefighter. There he was with his father, more than 40 years in the fire department, in the same fire station shift. He still remembers the eyes</p>

Date	Remark / Contact person / organization	Content, remark
		<p>of his mother, who saw every other day, as husband and son together leave the apartment to drive to the fire service in the big city of Berlin: Are you coming home healthy? Later he studied fire safety and security engineering in the Moscow Fire-Academy. Finishing study he worked as shift and station officer within the fire brigade of eastern Berlin. After that he experienced the reunification of Germany and especially the city of Berlin. After some time he completed his doctoral thesis. Now he is watching the development of the two children and the two grandchildren. He is currently head of the Department of Leadership Training at the Berlin Fire and Rescue Academy. Peter is very active in the CTIF, the EFSCA and the FEU - these are the leading fire brigade organizations in Europe.</p>
2019-05-16	<p>President of Federation of the European Union Fire Officers Associations (FEU), https://www.f-e-u.org/index.php</p>	<p>Peter Wagner participated at FEU Council Meeting in Porto (Portugal). A presentation about the book project was made. FEU is interested in support.</p>
2019-05-16	<p>Directora Ejecutiva de Organizatio De Bomberos Americanos (O.B.A.) https://www.bomberosamericanos.org/en/</p>	<p>During FEU meeting in Porto (Portugal) Lucia Vilarino, as representant of Organizatio De Bomberos Americanos expressed interest in cooperation in the proposed project.</p>
2019-05-22	<p>President of European Fire Service Colleges' Association (EFSCA) https://www.efsc.org/</p>	<p>Peter Wagner participated at EFSCA annual conference in Tallinn (Estonia). A presentation about the book project was made. EFSCA is interested in support.</p>
2019-09-15	<p>President of DFV (National Firefighter Federation of Germany)</p>	<p>Proposed participation of the Center of Fire Statistics of CTIF at INTERSCHUTZ 2020 in Hannover to present the World Fire Statistics and the book project "100-Years – 100 Cities ...".</p>
2019-10-25	<p>Center of Fire Statistics (CFS) of CTIF participated at "Fire, Rescue & New Challenges - CTIF Seminar in Ostrava October 25-26 2019</p>	<p>Prof. Dr. Sokolov Sergei is vice chief of the CFS and professor of the Academy of the State Fire Service of Emercom of Russia. The priority areas of his activity are fire statistics and computer modeling of emergency services operations. His presentation discusses the results of the CFS activity for 24 years. The CFS was founded in 1995. Since 1995 the CFS has published 25 reports in English, Russian and German. Additionally, various CFS descriptions have been translated into five other languages - Polish, Spanish, Hungarian, Turkish, and Persian. All reports of the CFS since 2005 are available on the CTIF website for free download.</p> <p>For 24 years, the Center has analyzed 92 million fires and 1 million victims of these fires. The research includes almost 90 countries of the World and the 100 largest cities of the World.</p>

Date	Remark / Contact person / organization	Content, remark
		All data presented in the report based on information sent by the national committees of the countries to the CFS and official statements of the fire services of these countries. The work carried out over 24 years allows us to answer the questions: How many fires are on the Earth? How many fire deaths and fire injuries on the Earth? How much "cost" of fires? And many others.
2020-04-05	Some authors suggested that the current status for each city should show at different points in the document, but only temporarily in the table of contents	Status of chapter shown in the table of contents of each city. The following information is constantly updated: [00% -Data_00% -Text_00% Risks] - Share of statistical data, the share of written text passages, and share of the identified fire risks. So there are two basic situations: either [00% -Data_00% -Text_00% Risks] - the city in charge has provided absolutely no information or [95% -Data_95% -Text_95% Risks] - the city in charge has provided all data (the remaining 5% are reserved for proofreading by experts).
2020-05-07	When will the book be published?	The book will be published in 2011 due to the circumstances associated with the corona pandemic and the relocation of INTERSCHUTZ to next year.
2020-05-10	Is it possible to better visualize the status of the chapter?	Thanks a lot for the advice! We propose to use three colors: Red – poor status, Yellow – in progress, and Green – functional status. Please check status of your chapter and send a feedback.
2020-05-30	New date for publishing the book?	We try realize May 2021.
2020-05-31	Can you please mark the positions better with updates?	Thanks for the hint! Updated text passages are marked with the word (and highlighted in color). We hope it is now easier to find. Please use the search function in the PDF program to search for search.
2020-06-01	Proposal for Book title:	As the aim of the book is the evaluation of fire risks in large cities its proposed the following title name: " 100 Cities – 100 Years - Evaluation Of Urban Fire Risks "; There should be a clear distinction from forest fires
2020-06-13	There are dates in the "Notable Fires" table. The format of this information should be explained at the end of the table.	The following explanation is inserted in the footnote of the table: Date - YYYY-MM-DD .
2020-06-14	Please indicate the name of the country according to the name of the city.	We use: http://www.unece.org/cefact/locode/countries.html , UN/LOCODE Country names ISO 3166-1

Date	Remark / Contact person / organization	Content, remark																							
2020 -06- 22	Directora Ejecutiva de Organizatio De Bomberos Americanos (O.B.A.) https://www.bomberosamericanos.org/en/	Latin America and the Caribbean (by UN definition) now enter the project: Ecuador, Guatemala, Argentina, and Uruguay.																							
2020 -06- 26	Summary of cities participating/included in the project? We are missing ten more cities.	<table border="1"> <thead> <tr> <th>Region</th> <th>Cities, total</th> <th>Cities, %</th> </tr> </thead> <tbody> <tr> <td>Africa</td> <td>2</td> <td>2</td> </tr> <tr> <td>Americas</td> <td>25</td> <td>28</td> </tr> <tr> <td>Asia</td> <td>27</td> <td>30</td> </tr> <tr> <td>Europe</td> <td>34</td> <td>38</td> </tr> <tr> <td>Oceania</td> <td>2</td> <td>2</td> </tr> <tr> <td>Total</td> <td>90</td> <td>100</td> </tr> </tbody> </table>	Region	Cities, total	Cities, %	Africa	2	2	Americas	25	28	Asia	27	30	Europe	34	38	Oceania	2	2	Total	90	100		
Region	Cities, total	Cities, %																							
Africa	2	2																							
Americas	25	28																							
Asia	27	30																							
Europe	34	38																							
Oceania	2	2																							
Total	90	100																							
2020 -07- 31	Can the city get the book "100 Cities - 100 Years" when participating in this project? Does the city have to pay for participating in the project or receiving the book?	<ol style="list-style-type: none"> 1. After publishing the book, every city gets a copy of the book. 2. Participation in the project is free, with no fees. 																							
2020 -12- 03	Status	<p>We have currently almost completed work on the Japanese cities: Kobe, Kyoto, Nagoya, Osaka, Sapporo, Tokyo, and Yokohama.</p> <p>In the meantime, colleagues from the Italian fire brigades have joined our project: Bari, Bologna, Florence, Genoa, Milan, Naples, Palermo, Rome, San Marino, Turin, Vatican City, and Venece.</p> <p>The work for the chapters of the cities of South America has actively started: Bogota, Buenos Aires, Montevideo, Quito, Rio de Janeiro, Santiago de Chile, Sao Paulo, Valparaiso, Mexico City, and Lima.</p> <p>In the appendix to this email you will find the description of the current project status.</p> <p>We ask all cities to continue working on the respective chapter and to send you the information step by step.</p>																							
2020 -12- 03	Summary of cities participating/included in the project? We are missing cities: North America, Africa.	<table border="1"> <thead> <tr> <th>Region</th> <th>Cities, total</th> <th>Cities, %</th> </tr> </thead> <tbody> <tr> <td>Africa</td> <td>2</td> <td>2</td> </tr> <tr> <td>Americas</td> <td>29</td> <td>27</td> </tr> <tr> <td>Asia</td> <td>26</td> <td>24</td> </tr> <tr> <td>Europe</td> <td>48</td> <td>45</td> </tr> <tr> <td>Oceania</td> <td>2</td> <td>2</td> </tr> <tr> <td>Total</td> <td>107</td> <td>100</td> </tr> </tbody> </table>	Region	Cities, total	Cities, %	Africa	2	2	Americas	29	27	Asia	26	24	Europe	48	45	Oceania	2	2	Total	107	100		
Region	Cities, total	Cities, %																							
Africa	2	2																							
Americas	29	27																							
Asia	26	24																							
Europe	48	45																							
Oceania	2	2																							
Total	107	100																							

Chapter of book project

The preliminary outline of the book is displayed below.

Used temporary abbreviations:

- City of XXX - your city, could appear here!
- (by YYY) - the name of the author of this chapter is still specified
- [Y=AAAA-BBBB] – Time interval for which data is currently available
- [done] - This entry made when the respective subchapter was written
- Status of chapter [00%-Data_00%-Text_00% Fire Risks] – a share of finished work.

In the book, all named cities are represented. The list is continually expanding until we reach the number of 100. It intended to enumerate the cities in the final form in alphabetical order per continent.

0. Prolog (by Center of Fire Statistics of CTIF)

1. Forewords

- 1.1. Foreword from CFO of FD of Africa (by YYY)
- 1.2. Foreword from CFO of FD of North America (by YYY)
- 1.3. Foreword from CFO of FD of South America (by YYY)
- 1.4. Foreword from CFO of FD of Asia (by YYY)
- 1.5. Foreword from CFO of FD of Arab Countries (by YYY)
- 1.6. Foreword from CFO of FD of Europe (by YYY)
- 1.7. Foreword from CFO of FD of Oceania (by YYY)
- 1.8. Foreword from The Geneva Association (by YYY)
- 1.9. Foreword from the President of CTIF (by YYY)
- 1.10. Foreword from Metro Fire Chiefs Association (by Russ Sanders)
- 1.11. Foreword from NFPA (by Marty Ahrens)
- 1.12. Foreword from CFPA EUROPE (by YYY)

2. Introduction

- 2.1. How to read the publication? (by YYY)
- 2.2. Urban Fire Risks - Review of literature
- 2.3. Development of the cities (by YYY)
 - 2.3.1. About the term "City"
 - 2.3.2. Criteria "migration to cities vs. urban exodus" - population figures
 - 2.3.3. Criteria "working vs. education and health" – industrialization and service sectors
 - 2.3.4. Criteria "moving vs. walking factor" – development of transportation means
 - 2.3.5. Criteria "living factor vs. leisure" – buildings and housing opportunities."
 - 2.3.6. Criteria "power consumption vs. environmental protection" – fight for water and air
 - 2.3.7. Squaring the cities with economic, environmental, ecology, social requirements, where is a question about fire safety?

- 2.3.8. Further challenges – fire safety and smart cities
- 2.4. What happens on a normal day in a big city? (by Peter Wagner)
- 2.5. Triage "Dangers - Risks – Safety" (by Nikolay Bruschlinsky)
 - 2.5.1. Definitions
 - 2.5.2. Fires
 - 2.5.3. Fire victims
 - 2.5.4. Fire Damage
 - 2.5.5. Fire objects
 - 2.5.6. Historical reconstruction of fire risks
 - 2.5.7. Assessment of current fire risks
 - 2.5.8. Forecast of the development of fire risks
- 2.6. Fire Departments (by YYY)
- 3. Fires in the cities of the continents (by representatives of cities)
 - 3.1. Africa
 - 3.1.1.City of Cape Town (South Africa) written by YYY
 - 3.1.1.1. History of the city
 - 3.1.1.2. History of firefighting
 - 3.1.1.3. Notable fires
 - 3.1.1.4. Fire risks
 - 3.1.1.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
 - 3.1.2.City of Tshwane / Pretoria (South Africa) written by YYY
 - 3.1.2.1. History of the city
 - 3.1.2.2. History of firefighting
 - 3.1.2.3. Notable fires
 - 3.1.2.4. Fire risks
 - 3.1.2.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
 - 3.2. Americas
 - 3.2.1.City of Baltimore (United States) written by YYY
 - 3.2.1.1. History of the city
 - 3.2.1.2. History of firefighting
 - 3.2.1.3. Notable fires
 - 3.2.1.4. Fire risks [Y=1859-1903]
 - 3.2.1.5. Status of chapter [45%-Data_00%-Text_00% Fire Risks]
 - 3.2.2.City of Bogota (Colombia) written by YYY **NEW**
 - 3.2.2.1. History of the city
 - 3.2.2.2. History of firefighting
 - 3.2.2.3. Notable fires
 - 3.2.2.4. Fire risks [Y=1859-1903]
 - 3.2.2.5. Status of chapter [45%-Data_00%-Text_00% Fire Risks]
 - 3.2.2.6.
 - 3.2.3.City of Boston (United States) written by YYY
 - 3.2.3.1. History of the city
 - 3.2.3.2. History of firefighting

- 3.2.3.3. Notable fires
- 3.2.3.4. Fire risks [Y=1873-2013; 2018]
- 3.2.3.5. Status of chapter [95%-Data_00%-Text_00% Fire Risks]
- 3.2.4. City of Buenos Aires (Argentina) written by Rafael Daniel De Wouters **NEW**
 - 3.2.4.1. History of the city
 - 3.2.4.2. History of firefighting
 - 3.2.4.3. Notable fires
 - 3.2.4.4. Fire risks [Y=1873-2013; 2018]
 - 3.2.4.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.2.5. City of Calgary (Canada) written by Steve Dongworth
 - 3.2.5.1. History of the city
 - 3.2.5.2. History of firefighting
 - 3.2.5.3. Notable fires
 - 3.2.5.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.5.5. Status of chapter [10%-Data_00%-Text_00% Fire Risks]
- 3.2.6. City of Chicago (United States) written by YYY
 - 3.2.6.1. History of the city
 - 3.2.6.2. History of firefighting
 - 3.2.6.3. Notable fires
 - 3.2.6.4. Fire risks [Y=1863-1921; 1966; 1972-1990]
 - 3.2.6.5. Status of chapter [45%-Data_00%-Text_00% Fire Risks]
- 3.2.7. City of Edmonton (Canada) written by Ken Block
 - 3.2.7.1. History of the city
 - 3.2.7.2. History of firefighting
 - 3.2.7.3. Notable fires
 - 3.2.7.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.7.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.8. City of Fairfax County (United States) written by Thomas Arnold
 - 3.2.8.1. History of the city
 - 3.2.8.2. History of firefighting
 - 3.2.8.3. Notable fires
 - 3.2.8.4. Fire risks [Y=2010-2018, under construction]
 - 3.2.8.5. Status of chapter [10%-Data_95%-Text_10% Fire Risks]
- 3.2.9. Guatemala City (Guatemala) written by Miriam Morales, Marco España, Kevyn Edoardo González García **NEW**
 - 3.2.9.1. History of the city
 - 3.2.9.2. History of firefighting
 - 3.2.9.3. Notable fires
 - 3.2.9.4. Fire risks [Y=AAAA-BBBB, under construction]
 - 3.2.9.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.2.10. Guayaquil (Ecuador) written by Cinthya Chávez, Goldy Rivas **NEW**
 - 3.2.10.1. History of the city
 - 3.2.10.2. History of firefighting

- 3.2.10.3. Notable fires
- 3.2.10.4. Fire risks [Y=AAAA-BBBB, under construction]
- 3.2.10.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.2.11. City of Hartford (United States) written by C. Cooper, H. Tulier, M. Eremita, L. Cieri
 - 3.2.11.1. History of the city
 - 3.2.11.2. History of firefighting
 - 3.2.11.3. Notable fires
 - 3.2.11.4. Fire risks [Y=AAAA-BBBB, under construction]
 - 3.2.11.5. Status of chapter [00%-Data_95%-Text_00% Fire Risks]
- 3.2.12. City of Houston (United States) written by YYY
 - 3.2.12.1. History of the city
 - 3.2.12.2. History of firefighting
 - 3.2.12.3. Notable fires
 - 3.2.12.4. Fire risks [Y=AAAA-BBBB, under construction]
 - 3.2.12.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.13. Kansas City (United States) written by YYY
 - 3.2.13.1. History of the city
 - 3.2.13.2. History of firefighting
 - 3.2.13.3. Notable fires
 - 3.2.13.4. Fire risks [Y=AAAA-BBBB, under construction]
 - 3.2.13.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.2.14. City of Lima (Peru) written by YYY **NEW!**
 - 3.2.14.1. History of the city
 - 3.2.14.2. History of firefighting
 - 3.2.14.3. Notable fires
 - 3.2.14.4. Fire risks [Y=1992-2019, under construction]
 - 3.2.14.5. Status of chapter [30%-Data_10%-Text_05% Fire Risks]
- 3.2.15. Mexico-City (Mexico) written by XXXX **NEW!**
 - 3.2.15.1. History of the city
 - 3.2.15.2. History of firefighting
 - 3.2.15.3. Notable fires
 - 3.2.15.4. Fire risks [Y=1900-2018, under construction]
 - 3.2.15.5. Status of chapter [20%-Data_95%-Text_80% Fire Risks]
- 3.2.16. City of Montevideo (Uruguay) written by Lucas Cardoso, Martín Miguez **NEW!**
 - 3.2.16.1. History of the city
 - 3.2.16.2. History of firefighting
 - 3.2.16.3. Notable fires
 - 3.2.16.4. Fire risks [Y=1900-2018, under construction]
 - 3.2.16.5. Status of chapter [00%-Data_00%-Text_05% Fire Risks]
- 3.2.17. New York City (United States) written by Peter Wagner
 - 3.2.17.1. History of the city
 - 3.2.17.2. History of firefighting
 - 3.2.17.3. Notable fires

- 3.2.17.4. Fire risks [Y=1866-1915; 1960-2018]
- 3.2.17.5. Status of chapter [60%-Data_00%-Text_00% Fire Risks]
- 3.2.18. City of Oklahoma (United States) written by YYY
 - 3.2.18.1. History of the city
 - 3.2.18.2. History of firefighting
 - 3.2.18.3. Notable fires
 - 3.2.18.4. Fire risks [Y=AAAA-BBBB, under construction]
 - 3.2.18.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.2.19. City of Philadelphia(United States) written by Adam Thiel
 - 3.2.19.1. History of the city
 - 3.2.19.2. History of firefighting
 - 3.2.19.3. Notable fires
 - 3.2.19.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.19.5. Status of chapter [15%-Data_00%-Text_00% Fire Risks]
- 3.2.20. City of Phoenix (United States) written by Scott Walker
 - 3.2.20.1. History of the city
 - 3.2.20.2. History of firefighting
 - 3.2.20.3. Notable fires
 - 3.2.20.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.20.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.21. City of Quito (Ecuador) written by Diana Realpe **NEW**
 - 3.2.21.1. History of the city
 - 3.2.21.2. History of firefighting
 - 3.2.21.3. Notable fires
 - 3.2.21.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.21.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.22. City of Rio de Janeiro (Brazil) written by XXX **NEW**
 - 3.2.22.1. History of the city
 - 3.2.22.2. History of firefighting
 - 3.2.22.3. Notable fires
 - 3.2.22.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.22.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.23. City of Sacramento (United States) written by YYY
 - 3.2.23.1. History of the city
 - 3.2.23.2. History of firefighting
 - 3.2.23.3. Notable fires
 - 3.2.23.4. Fire risks [Y=AAAA-AAAA, under construction]
 - 3.2.23.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.24. City of San Antonio (United States) written by YYY
 - 3.2.24.1. History of the city
 - 3.2.24.2. History of firefighting
 - 3.2.24.3. Notable fires
 - 3.2.24.4. Fire risks [Y=AAAA-BBBB, under construction]

- 3.2.24.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.2.25. City of San Francisco (United States) written by Brice Peoples
 - 3.2.25.1. History of the city
 - 3.2.25.2. History of firefighting
 - 3.2.25.3. Notable fires
 - 3.2.25.4. Fire risks [Y=1850-2016, under construction]
 - 3.2.25.5. Status of chapter [50%-Data_00%-Text_00% Fire Risks]
- 3.2.26. City of Santiago de Chile (Chile) written by Víctor Arias, Luis Carrasco, Gonzalo Rudolph, Juan Carlos **NEW**
 - 3.2.26.1. History of the city
 - 3.2.26.2. History of firefighting
 - 3.2.26.3. Notable fires
 - 3.2.26.4. Fire risks [Y=1990-2018, under construction]
 - 3.2.26.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.2.27. City of Toronto (Canada) written by Michelle Stronach
 - 3.2.27.1. History of the city
 - 3.2.27.2. History of firefighting
 - 3.2.27.3. Notable fires
 - 3.2.27.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.27.5. Status of chapter [10%-Data_00%-Text_00% Fire Risks]
- 3.2.28. City of Valparaiso (Chile) written by XXXX
 - 3.2.28.1. History of the city
 - 3.2.28.2. History of firefighting
 - 3.2.28.3. Notable fires
 - 3.2.28.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.28.5. Status of chapter [10%-Data_00%-Text_00% Fire Risks]
- 3.2.29. City of Winnipeg (Canada) written by John A. Lane
 - 3.2.29.1. History of the city
 - 3.2.29.2. History of firefighting
 - 3.2.29.3. Notable fires
 - 3.2.29.4. Fire risks [Y=AAAA-BBBB]
 - 3.2.29.5. Status of chapter [05%-Data_00%-Text_00% Fire Risks]
- 3.3. Asia
 - 3.3.1. City of Amman (Jordan) by O. Latifeh, S. Werekat and A. Khraisat
 - 3.3.1.1. History of the city
 - 3.3.1.2. History of firefighting
 - 3.3.1.3. Notable fires
 - 3.3.1.4. Fire risks [Y=1900-2018]
 - 3.3.1.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
 - 3.3.2. City of Beijing (China) written by Peter Wagner
 - 3.3.2.1. History of the city
 - 3.3.2.2. History of firefighting
 - 3.3.2.3. Notable fires

- 3.3.2.4. Fire risks [Y=2000-2018]
- 3.3.2.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.3.City of Chennai / Madras (India) written by Peter Wagner **NEW!**
 - 3.3.3.1. History of the city
 - 3.3.3.2. History of firefighting
 - 3.3.3.3. Notable fires
 - 3.3.3.4. Fire risks [Y=2000-2018]
 - 3.3.3.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.4.City of Busan (Korea) written by YYY
 - 3.3.4.1. History of the city
 - 3.3.4.2. History of firefighting
 - 3.3.4.3. Notable fires
 - 3.3.4.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.4.5. Status of chapter [10%-Data_25%-Text_10% Fire Risks]
- 3.3.5.City of Dhaka (Bangladesh) written by YYY
 - 3.3.5.1. History of the city
 - 3.3.5.2. History of firefighting
 - 3.3.5.3. Notable fires
 - 3.3.5.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.5.5. Status of chapter [10%-Data_10%-Text_10% Fire Risks]
- 3.3.6.City of Dubai (United Arab Emirates) written by Peter Wagner
 - 3.3.6.1. History of the city
 - 3.3.6.2. History of firefighting
 - 3.3.6.3. Notable fires
 - 3.3.6.4. Fire risks [Y=1997-2017]
 - 3.3.6.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.7.City of Hong Kong (China) written by Peter Wagner
 - 3.3.7.1. History of the city
 - 3.3.7.2. History of firefighting
 - 3.3.7.3. Notable fires
 - 3.3.7.4. Fire risks [Y=1947-2018]
 - 3.3.7.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.8.City of Jakarta (Indonesia) written by Peter Wagner
 - 3.3.8.1. History of the city
 - 3.3.8.2. History of firefighting
 - 3.3.8.3. Notable fires
 - 3.3.8.4. Fire risks [Y=1947-2018]
 - 3.3.8.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.9.City of Kawasaki (Japan) written by Kyoichi Kobayashi **NEW**
 - 3.3.9.1. History of the city
 - 3.3.9.2. History of firefighting
 - 3.3.9.3. Notable fires
 - 3.3.9.4. Fire risks [Y=AAAA-BBBB]

- 3.3.9.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.3.10. City of Kobe (Japan) written by Kyoichi Kobayashi NEW
 - 3.3.10.1. History of the city
 - 3.3.10.2. History of firefighting
 - 3.3.10.3. Notable fires
 - 3.3.10.4. Fire risks [Y=1948-2018]
 - 3.3.10.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.11. City of Kuala Lumpur (Malaysia) written by YYY
 - 3.3.11.1. History of the city
 - 3.3.11.2. History of firefighting
 - 3.3.11.3. Notable fires
 - 3.3.11.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.11.5. Status of chapter [10%-Data_00%-Text_00% Fire Risks]
- 3.3.12. City of Kuwait (Kuwait) written by YYY
 - 3.3.12.1. History of the city
 - 3.3.12.2. History of firefighting
 - 3.3.12.3. Notable fires
 - 3.3.12.4. Fire risks [Y=2000-2018]
 - 3.3.12.5. Status of chapter [30%-Data_00%-Text_00% Fire Risks]
- 3.3.13. City of Kyoto (Japan) written by Kyoichi Kobayashi NEW
 - 3.3.13.1. History of the city
 - 3.3.13.2. History of firefighting
 - 3.3.13.3. Notable fires
 - 3.3.13.4. Fire risks [Y=1899-2018]
 - 3.3.13.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.14. City of Macau (China) written by Peter Wagner
 - 3.3.14.1. History of the city
 - 3.3.14.2. History of firefighting
 - 3.3.14.3. Notable fires
 - 3.3.14.4. Fire risks [Y=1953-2017]
 - 3.3.14.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.15. City of Mumbai / Bombay (India) written by XXX
 - 3.3.15.1. History of the city
 - 3.3.15.2. History of firefighting
 - 3.3.15.3. Notable fires
 - 3.3.15.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.15.5. Status of chapter [25%-Data_05%-Text_10% Fire Risks]
- 3.3.16. City of Nagoya (Japan) written by NEW
 - 3.3.16.1. History of the city
 - 3.3.16.2. History of firefighting
 - 3.3.16.3. Notable fires
 - 3.3.16.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.16.5. Status of chapter [25%-Data_05%-Text_10% Fire Risks]

- 3.3.17. City of New Delhi (India) written by Peter Wagner
 - 3.3.17.1. History of the city
 - 3.3.17.2. History of firefighting
 - 3.3.17.3. Notable fires
 - 3.3.17.4. Fire risks [Y=1980-2017]
 - 3.3.17.5. Status of chapter [85%-Data_85%-Text_85% Fire Risks]
- 3.3.18. City of Osaka (Japan) written by Kyoichi Kobayashi **NEW**
 - 3.3.18.1. History of the city
 - 3.3.18.2. History of firefighting
 - 3.3.18.3. Notable fires
 - 3.3.18.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.18.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.19. City of Pune (India) written by Peter Wagner **NEW!**
 - 3.3.19.1. History of the city
 - 3.3.19.2. History of firefighting
 - 3.3.19.3. Notable fires
 - 3.3.19.4. Fire risks [Y=2000-2018]
 - 3.3.19.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.20. City of Sapporo (Japan) written by Kyoichi Kobayashi
 - 3.3.20.1. History of the city
 - 3.3.20.2. History of firefighting
 - 3.3.20.3. Notable fires
 - 3.3.20.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.20.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.21. City of Seoul (Korea) written by YYY
 - 3.3.21.1. History of the city
 - 3.3.21.2. History of firefighting
 - 3.3.21.3. Notable fires
 - 3.3.21.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.21.5. Status of chapter [75%-Data_05%-Text_05% Fire Risks]
- 3.3.22. City of Shanghai (China) written by YYY
 - 3.3.22.1. History of the city
 - 3.3.22.2. History of firefighting
 - 3.3.22.3. Notable fires
 - 3.3.22.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.22.5. Status of chapter [45%-Data_95%-Text_05% Fire Risks]
- 3.3.23. City of Singapore (Singapore) written by Peter Wagner
 - 3.3.23.1. History of the city
 - 3.3.23.2. History of firefighting
 - 3.3.23.3. Notable fires
 - 3.3.23.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.23.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.24. City of Taipei (Taiwan, Province of China) written by Peter Wagner

- 3.3.24.1. History of the city
- 3.3.24.2. History of firefighting
- 3.3.24.3. Notable fires
- 3.3.24.4. Fire risks [Y=1981-2017]
- 3.3.24.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.25. City of Tokyo (Japan) written by Kyoichi Kobayashi
 - 3.3.25.1. History of the city
 - 3.3.25.2. History of firefighting
 - 3.3.25.3. Notable fires
 - 3.3.25.4. Fire risks [Y=1957-2016]
 - 3.3.25.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.3.26. City of Yokohama (Japan) written by Kyoichi Kobayashi **NEW**
 - 3.3.26.1. History of the city
 - 3.3.26.2. History of firefighting
 - 3.3.26.3. Notable fires
 - 3.3.26.4. Fire risks [Y=AAAA-BBBB]
 - 3.3.26.5. Status of chapter [85%-Data_95%-Text_85% Fire Risks]
- 3.4. Europe
 - 3.4.1. City of Amsterdam (Netherlands) written by Peter Wagner
 - 3.4.1.1. History of the city
 - 3.4.1.2. History of firefighting
 - 3.4.1.3. Notable fires
 - 3.4.1.4. Fire risks [Y=1880-2018]
 - 3.4.1.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
 - 3.4.2. City of Athens (Greece) written by Michail Chalaris
 - 3.4.2.1. History of the city
 - 3.4.2.2. History of firefighting
 - 3.4.2.3. Notable fires
 - 3.4.2.4. Fire risks [Y=1880-2018]
 - 3.4.2.5. Status of chapter [15%-Data_95%-Text_15% Fire Risks]
 - 3.4.3. City of Barcelona (Spain) written by Ana Miguel Quesada
 - 3.4.3.1. History of the city
 - 3.4.3.2. History of firefighting
 - 3.4.3.3. Notable fires
 - 3.4.3.4. Fire risks [Y=1880-2018]
 - 3.4.3.5. Status of chapter [85%-Data_95%-Text_85% Fire Risks]
 - 3.4.4. City of Bari (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.4.1. History of the city
 - 3.4.4.2. History of firefighting
 - 3.4.4.3. Notable fires
 - 3.4.4.4. Fire risks [Y=1953-2017]
 - 3.4.4.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
 - 3.4.5. City of Belgrade (Serbia) written by Dragan Mladjan, Dane Subošić

- 3.4.5.1. History of the city
- 3.4.5.2. History of firefighting
- 3.4.5.3. Notable fires
- 3.4.5.4. Fire risks [Y=1881-2018]
- 3.4.5.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.6. City of Berlin (Germany) written by Peter Wagner
 - 3.4.6.1. History of the city
 - 3.4.6.2. History of firefighting
 - 3.4.6.3. Notable fires
 - 3.4.6.4. Fire risks [Y=1851-2018]
 - 3.4.6.5. Status of chapter [99%-Data_99%-Text_99% Fire Risks]
- 3.4.7. City of Bern (Switzerland) written by YYY
 - 3.4.7.1. History of the city
 - 3.4.7.2. History of firefighting
 - 3.4.7.3. Notable fires
 - 3.4.7.4. Fire risks [Y=1953-2017]
 - 3.4.7.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.4.8. City of Bologna (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.8.1. History of the city
 - 3.4.8.2. History of firefighting
 - 3.4.8.3. Notable fires
 - 3.4.8.4. Fire risks [Y=1953-2017]
 - 3.4.8.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.9. City of Bratislava (Slovakia) written by YYY
 - 3.4.9.1. History of the city
 - 3.4.9.2. History of firefighting
 - 3.4.9.3. Notable fires
 - 3.4.9.4. Fire risks [Y=1980-2018]
 - 3.4.9.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.4.10. City of Budapest (Hungary) written by Laszlo Z. Nagy
 - 3.4.10.1. History of the city
 - 3.4.10.2. History of firefighting
 - 3.4.10.3. Notable fires
 - 3.4.10.4. Fire risks [Y=1880-2018]
 - 3.4.10.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.11. City of Cologne (Germany) written by Peter Wagner
 - 3.4.11.1. History of the city
 - 3.4.11.2. History of firefighting
 - 3.4.11.3. Notable fires
 - 3.4.11.4. Fire risks [Y=1900-2018]
 - 3.4.11.5. Status of chapter [95%-Data_50%-Text_95% Fire Risks]
- 3.4.12. City of Copenhagen (Denmark) written by YYY
 - 3.4.12.1. History of the city

- 3.4.12.2. History of firefighting
- 3.4.12.3. Notable fires
- 3.4.12.4. Fire risks [Y=1916-1990; under construction]
- 3.4.12.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.4.13. City of Dublin (Ireland) written by Las Fallon
 - 3.4.13.1. History of the city
 - 3.4.13.2. History of firefighting
 - 3.4.13.3. Notable fires
 - 3.4.13.4. Fire risks [Y=AAAA-BBBB]
 - 3.4.13.5. Status of chapter [05%-Data_15%-Text_05% Fire Risks]
- 3.4.14. City of Florence (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.14.1. History of the city
 - 3.4.14.2. History of firefighting
 - 3.4.14.3. Notable fires
 - 3.4.14.4. Fire risks [Y=1953-2017]
 - 3.4.14.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.15. City of Frankfurt (Germany) written by Peter Wagner
 - 3.4.15.1. History of the city
 - 3.4.15.2. History of firefighting
 - 3.4.15.3. Notable fires
 - 3.4.15.4. Fire risks [Y=1900-2018]
 - 3.4.15.5. Status of chapter [95%-Data_50%-Text_95% Fire Risks]
- 3.4.16. City of Genoa (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.16.1. History of the city
 - 3.4.16.2. History of firefighting
 - 3.4.16.3. Notable fires
 - 3.4.16.4. Fire risks [Y=1953-2017]
 - 3.4.16.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.17. City of Gibraltar (Gibraltar) written by Peter Wagner
 - 3.4.17.1. History of the city
 - 3.4.17.2. History of firefighting
 - 3.4.17.3. Notable fires
 - 3.4.17.4. Fire risks [Y=AAAA-BBBB]
 - 3.4.17.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.18. City of Graz (Austria) written by YYY
 - 3.4.18.1. History of the city
 - 3.4.18.2. History of firefighting
 - 3.4.18.3. Notable fires
 - 3.4.18.4. Fire risks [Y=AAAA-BBBB]
 - 3.4.18.5. Status of chapter [05%-Data_85%-Text_05% Fire Risks]
- 3.4.19. City of Hamburg (Germany) written by Peter Wagner
 - 3.4.19.1. History of the city

- 3.4.19.2. History of firefighting
- 3.4.19.3. Notable fires
- 3.4.19.4. Fire risks [Y=1900-2018]
- 3.4.19.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.20. City of Helsinki (Finland) written by Hanna Rekola
 - 3.4.20.1. History of the city
 - 3.4.20.2. History of firefighting
 - 3.4.20.3. Notable fires
 - 3.4.20.4. Fire risks [Y=1900-2018]
 - 3.4.20.5. Status of chapter [99%-Data_99%-Text_99% Fire Risks]
- 3.4.21. City of Istanbul / Constantinople (Turkey) written by YYY
 - 3.4.21.1. History of the city
 - 3.4.21.2. History of firefighting
 - 3.4.21.3. Notable fires
 - 3.4.21.4. Fire risks [Y=AAAA-BBBB]
 - 3.4.21.5. Status of chapter [10%-Data_10%-Text_00% Fire Risks]
- 3.4.22. City of Kaliningrad / Konigsberg (Russia) written by S. Sokolov, P. Wagner
 - 3.4.22.1. History of the city
 - 3.4.22.2. History of firefighting
 - 3.4.22.3. Notable fires
 - 3.4.22.4. Fire risks [Y=1900-2015]
 - 3.4.22.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.23. City of Klagenfurt (Austria) written by XXXX **NEW!**
 - 3.4.23.1. History of the city
 - 3.4.23.2. History of firefighting
 - 3.4.23.3. Notable fires
 - 3.4.23.4. Fire risks [Y=1900-2018]
 - 3.4.23.5. Status of chapter [15%-Data_25%-Text_15% Fire Risks]
- 3.4.24. City of Linz (Austria) written by XXXX **NEW!**
 - 3.4.24.1. History of the city
 - 3.4.24.2. History of firefighting
 - 3.4.24.3. Notable fires
 - 3.4.24.4. Fire risks [Y=1900-2018]
 - 3.4.24.5. Status of chapter [25%-Data_6%-Text_25% Fire Risks]
- 3.4.25. City of Ljubljana (Slovenia) written by Janez Hocevar
 - 3.4.25.1. History of the city
 - 3.4.25.2. History of firefighting
 - 3.4.25.3. Notable fires
 - 3.4.25.4. Fire risks [Y=1900-2018]
 - 3.4.25.5. Status of chapter [30%-Data_85%-Text_50% Fire Risks]
- 3.4.26. City of London (United Kingdom) written by David Wyatt
 - 3.4.26.1. History of the city
 - 3.4.26.2. History of firefighting

- 3.4.26.3. Notable fires
- 3.4.26.4. Fire risks [Y=1966-2014]
- 3.4.26.5. Status of chapter [50%-Data_00%-Text_00% Fire Risks]
- 3.4.27. City of Madrid (Spain) written by YYY
 - 3.4.27.1. History of the city
 - 3.4.27.2. History of firefighting
 - 3.4.27.3. Notable fires
 - 3.4.27.4. Fire risks [Y=1944-2016]
 - 3.4.27.5. Status of chapter [50%-Data_50%-Text_50% Fire Risks]
- 3.4.28. City of Milan (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.28.1. History of the city
 - 3.4.28.2. History of firefighting
 - 3.4.28.3. Notable fires
 - 3.4.28.4. Fire risks [Y=1953-2017]
 - 3.4.28.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.29. City of Moscow (Russia) written by Sergei Sokolov
 - 3.4.29.1. History of the city
 - 3.4.29.2. History of firefighting
 - 3.4.29.3. Notable fires
 - 3.4.29.4. Fire risks
 - 3.4.29.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.30. City of Munich (Germany) written by Peter Wagner
 - 3.4.30.1. History of the city
 - 3.4.30.2. History of firefighting
 - 3.4.30.3. Notable fires
 - 3.4.30.4. Fire risks [Y=1900-2018]
 - 3.4.30.5. Status of chapter [95%-Data_85%-Text_95% Fire Risks]
- 3.4.31. City of Naples (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.31.1. History of the city
 - 3.4.31.2. History of firefighting
 - 3.4.31.3. Notable fires
 - 3.4.31.4. Fire risks [Y=1953-2017]
 - 3.4.31.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.32. City of Oslo (Norway) written by Guttorm Liebe
 - 3.4.32.1. History of the city
 - 3.4.32.2. History of firefighting
 - 3.4.32.3. Notable fires
 - 3.4.32.4. Fire risks [Y=1900-2018]
 - 3.4.32.5. Status of chapter [99%-Data_99%-Text_99% Fire Risks]
- 3.4.33. City of Palermo (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.33.1. History of the city
 - 3.4.33.2. History of firefighting

- 3.4.33.3. Notable fires
- 3.4.33.4. Fire risks [Y=1953-2017]
- 3.4.33.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.34. City of Paris (France) written by YYY
 - 3.4.34.1. History of the city
 - 3.4.34.2. History of firefighting
 - 3.4.34.3. Notable fires
 - 3.4.34.4. Fire risks [Y=1800-1852]
 - 3.4.34.5. Status of chapter [25%-Data_95%-Text_25% Fire Risks]
- 3.4.35. City of Porto (Portugal) written by YYY
 - 3.4.35.1. History of the city
 - 3.4.35.2. History of firefighting
 - 3.4.35.3. Notable fires
 - 3.4.35.4. Fire risks [Y= AAAA-BBBB]
 - 3.4.35.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.4.36. City of Prague (Czech Republic) written by YYY
 - 3.4.36.1. History of the city
 - 3.4.36.2. History of firefighting
 - 3.4.36.3. Notable fires
 - 3.4.36.4. Fire risks [Y= AAAA-BBBB]
 - 3.4.36.5. Status of chapter [10%-Data_05%-Text_05% Fire Risks]
- 3.4.37. City of Rome (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.37.1. History of the city
 - 3.4.37.2. History of firefighting
 - 3.4.37.3. Notable fires
 - 3.4.37.4. Fire risks [Y=1953-2017]
 - 3.4.37.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.38. City of San Marino (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.38.1. History of the city
 - 3.4.38.2. History of firefighting
 - 3.4.38.3. Notable fires
 - 3.4.38.4. Fire risks [Y=1953-2017]
 - 3.4.38.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.39. City of Sankt Petersburg (Russia) written by Sergei Sokolov
 - 3.4.39.1. History of the city
 - 3.4.39.2. History of firefighting
 - 3.4.39.3. Notable fires
 - 3.4.39.4. Fire risks [Y=1900-2018]
 - 3.4.39.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.40. City of Tallinn (Estonia) written by Ivo Paulus
 - 3.4.40.1. History of the city
 - 3.4.40.2. History of firefighting

- 3.4.40.3. Notable fires
- 3.4.40.4. Fire risks [Y=1880-1939; Y=1990-2018]
- 3.4.40.5. Status of chapter [40%-Data_10%-Text_25% Fire Risks]
- 3.4.41. City of Turin (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.41.1. History of the city
 - 3.4.41.2. History of firefighting
 - 3.4.41.3. Notable fires
 - 3.4.41.4. Fire risks [Y=1953-2017]
 - 3.4.41.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.42. City of Vatican City (Holy See) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.42.1. History of the city
 - 3.4.42.2. History of firefighting
 - 3.4.42.3. Notable fires
 - 3.4.42.4. Fire risks [Y=1953-2017]
 - 3.4.42.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.43. City of Venece (Italy) written by Antonio Pacini, Marcello Serpieri, Maurizio Alivernini **NEW**
 - 3.4.43.1. History of the city
 - 3.4.43.2. History of firefighting
 - 3.4.43.3. Notable fires
 - 3.4.43.4. Fire risks [Y=1953-2017]
 - 3.4.43.5. Status of chapter [10%-Data_50%-Text_00% Fire Risks]
- 3.4.44. City of Vienna (Austria) written by YYY
 - 3.4.44.1. History of the city
 - 3.4.44.2. History of firefighting
 - 3.4.44.3. Notable fires
 - 3.4.44.4. Fire risks [Y=1900; Y=2018]
 - 3.4.44.5. Status of chapter [95%-Data_90%-Text_95% Fire Risks]
- 3.4.45. City of Warsaw (Poland) written by Krzysztof Biskup
 - 3.4.45.1. History of the city
 - 3.4.45.2. History of firefighting
 - 3.4.45.3. Notable fires
 - 3.4.45.4. Fire risks [Y=AAAA; Y=BBBB]
 - 3.4.45.5. Status of chapter [30%-Data_10%-Text_10% Fire Risks]
- 3.4.46. City of Yerevan (Armenia) written by Khachik Shahbazyan
 - 3.4.46.1. History of the city
 - 3.4.46.2. History of firefighting
 - 3.4.46.3. Notable fires
 - 3.4.46.4. Fire risks [Y=AAAA-BBBB]
 - 3.4.46.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 3.4.47. City of Zagreb (Croatia) written by Milan Komorcec
 - 3.4.47.1. History of the city
 - 3.4.47.2. History of firefighting

- 3.4.47.3. Notable fires
- 3.4.47.4. Fire risks [Y=AAAA-BBBB]
- 3.4.47.5. Status of chapter [95%-Data_95%-Text_95% Fire Risks]
- 3.4.48. City of Zurich (Zwitzerland) written by YYY
 - 3.4.48.1. History of the city
 - 3.4.48.2. History of firefighting
 - 3.4.48.3. Notable fires
 - 3.4.48.4. Fire risks [Y=1934-2017]
 - 3.4.48.5. Status of chapter [50%-Data_50%-Text_50% Fire Risks]
- 3.5. Oceania
 - 3.5.1. City of Perth (Australia) written by YYY
 - 3.5.1.1. History of the city
 - 3.5.1.2. History of firefighting
 - 3.5.1.3. Notable fires
 - 3.5.1.4. Fire risks [Y=AAAA-BBBB]
 - 3.5.1.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
 - 3.5.2. City of Sydney (Australia) written by YYY
 - 3.5.2.1. History of the city
 - 3.5.2.2. History of firefighting
 - 3.5.2.3. Notable fires
 - 3.5.2.4. Fire risks [Y=AAAA-BBBB]
 - 3.5.2.5. Status of chapter [00%-Data_00%-Text_00% Fire Risks]
- 4. Analysis of fire risks (by Sergei Sokolov, Peter Wagner)
 - 4.1. Risk R1 "Risk for a person to be directly exposed to the dangerous factors of a fire within a certain time interval."
 - 4.2. Risk R2 "Risk of a person losing his life as a victim in a fire"
 - 4.3. Risk R3 "Risk of a person losing his life through a fire within a certain time interval."
 - 4.4. Risk R4 "Risk of fire material damage."
- 5. Strategy for controlling fire risks (by YYY)
 - 5.1. Fire prevention (Survey in all participating cities)
 - 5.2. Fire education (Survey in all participating cities)
 - 5.3. Fire suppression (Survey in all participating cities)
 - 5.4. Fire models (scientific models)
 - 5.5. Fire Department modeling (master planning using computer technology)
- 6. Visions for further fire safety (by YYY)
 - 6.1. Fire vehicles for tomorrow – Vision of a car manufacturer
 - 6.2. Personal Protective Equipment - Vision of a respirator manufacturer
 - 6.3. Personal Protective Equipment - Vision of a protective suit manufacturer
 - 6.4. Fire detection and extinguishing systems of tomorrow
 - 6.5. Virtual reality - Training systems for firefighters in the future
 - 6.6. Building fire prevention – Vision of Architects

General Description of the Project

The CFS CTIF (Center of Fire Statistics of CTIF) works since 1995 on the creation of the World Fire Statistics. In the first year, report number 1 appeared with the statistical data from 17 countries of the Earth. Today in 2018, we have released the report number 23. Statistical information on activity in almost 40 countries presented. The reports also contain information on the fire situation in major cities around the World. In summary, the CFS CTIF has collected data from more than 70 countries or large cities.

Now it is time to recompile all collected information and to pass it on to the world public for the sake of complaisant knowledge. From our point of view, the best way is an international book publication. The topic is the development of fire risks in the cities in the period 1900-2018. We do not want to accomplish this work alone as a statistics team of the CTIF. We think it is better to carry out this work together with experts from local fire departments in the large cities of the World. The draft concept for the English-language publication is to read below this letter.

We believe that besides the fire departments in the major cities of the World, the national and international associations, universities, and research institutes are also interested in this publication. Indeed, the common Fire and Safety Industry will be interested too.

We at this moment suggest the cooperation for this project. We kindly ask you to nominate an expert employee from your department or city who will be available to us as a contact person. The forms of cooperation can be as follows:

- a) The City Fire Department appoints an expert co-author.
- b) The City Fire Department appoints an expert to provide us with the necessary statistical data (CFS CTIF, then writes the book chapter).
- c) The fire brigade recommends us other contacts and sources (persons, links to website, libraries, historical archive, etc.) and does not participate in the project.

Of course, we wish each city to agree to variant a).

We intend to publish the book as an e-book as well as a hardcopy. Currently, we expect it to be published by major international publishers such as Springer Nature Switzerland AG or Nova Science Publishers, Inc. (USA). Any other recommendation is welcome.

Now something to the term "Fire Department in a large city." With this letter, we wrote to the Fire Departments on every continent in the World. Theoretically, we expect to achieve cooperation with not less than ten fire departments per continent.

We are a bit skeptical about Africa. We hope that the fire brigades Cape Town and Tshwane (Pretoria) cooperate with us.

As for Canada, we hope for a response from Toronto, Ottawa, Montreal, Winnipeg, Vancouver, and Québec. We have high hopes for the participation of the prominent Fire Departments in the USA, whose immense wealth of experience should take into account: New York City, Los Angeles, Chicago, Dallas,

Houston, Washington, Philadelphia, Miami, Atlanta, Boston, San Francisco, Phoenix, Detroit, Seattle and Baltimore.

We hope that at least some South American cities are represented: Sao Paulo, Bogota, Lima, Rio de Janeiro, Santiago de Chile, Buenos Aires, Salvador da Bahia, Brasilia, Belo Horizonte, Fortaleza, Medellin Guayaquil, Caracas, Curitiba, Manaus, Montevideo and Quito. It are exactly these fire brigades that have undergone a very own historical development.

From Central America, we hope to receive feedback from the following cities: San José, San Salvador, Guatemala City, Tegucigalpa, Managua, Panama City. Somewhat more problematic are the contacts with fire departments in the Caribbean: who can help?

If we now look at Asia, then we have another big problem. The number of the World's largest cities is particularly high in Asia. For purely legal reasons, we can only select the huge cities, which also know that there is a well-organized fire brigade there as a point of contact: Tokyo-Yokohama, Delhi, Mumbai, Osaka-Kobe, Dhaka, Calcutta, Manila, Jakarta, Chennai, Seoul, Nagoya, Bangkok, Hong Kong, Ho Chi Minh City, Kuala Lumpur, Singapore, Fukuoka, Ankara, Hanoi, Busan, Kuwait City, Taipei, Dubai, Baku, Tashkent, Beirut, Almaty, Tbilisi, Abu Dhabi, Yerevan. Other cities are welcome too.

For Europe, we have compiled the following alphabetical list of cities: Amsterdam, Athens, Belgrade, Berlin, Budapest, Bucharest, Helsinki, Istanbul, Kiev, Copenhagen, Lisbon, London, Madrid, Minsk, Moscow, Oslo, Paris, Prague, Riga, Rome, Saint Petersburg, Skopje, Sofia, Stockholm, Tirana, Vilnius, Warsaw, Vienna, Zagreb.

For Australia and Oceania, these cities focus on our interest: Sydney, Melbourne, Brisbane, Perth, Adelaide, Port Moresby, Wellington.

We are sure: every city has an exciting story to tell, and the fire brigades were always up to date!

What do we expect from every city (local fire department):

- Every fire brigade describes the history of its city on a maximum of two DIN A4 pages. The city should provide concise facts.
- Furthermore, every fire brigade represents the history of organized firefighting: the fire department's founding, motorization, remarkable technical developments, etc. The scope should not exceed two pages.
- Then a table is to be created: Notable fires (maximum one page).
- Then we will send a template: year, the number of fires, specific details of victims, etc. In a template, we carry a table to fill in: Fire data. Of course, older data is also welcome. For example, the Berlin Fire Brigade (Germany) provides us with complete data from 1851 (the founding year) until today.
- All of this local city information transferred to chapter 3.
- We do not want to include photos, maps, or other illustrations in the book at any price. There may be copyright issues. However, if suggestions for pictures come from the cities, we are open to discussion.

We prepare all the other chapters. We send the draft version to each participating city with the request to comment. In section 4, an analysis of fire risks describes the fire situation's development in the different parts of the World's leading cities. There will be a unique feature in chapter 5. Here we organize for the listed questions a survey of all cities. The results are summarized and reproduced in each case under the name of the respective continent. The names of the individual towns are not displayed. Also, this draft we send to comment to all cities.

Ultimately, the question of financing the project has to ask. We suggest inserting chapter 6, "Visions for further fire safety." In this chapter, leading manufacturers of firefighting technology will have the opportunity to present their visions on the future of fire safety in cities. These companies will provide a financial contribution to the book. We would like to hear the opinion of the fire brigades from all towns.

1. Amount of data

Necessary part: *Number of the population by year, number of fires per year, number of fire deaths per year.* Without this data, fire risks cannot be calculated. In case a single city cannot provide the data for the proposed time interval (1900-2018): please send at least the data for 2000-2018.

Mandatory part: all other data as described in the subchapter "Description of "Data-Sheet-File" (please see below). In case a single city cannot provide the data for the proposed time interval (1900-2018): please send at least the data for 2000-2018.

2. Purposed name of the book

Currently, we use the working title: "**Development of fire risks in the cities in the period 1900-2018**". Several fire departments support the following right alternative name: "**100 Years – 100 Cities – Evaluation of City Fire Risks in period 1900-2018**".

3. Purpose of the book

The purpose of the book based on the following considerations. Over the centuries, cities became economic, scientific, administrative, and cultural centers of the countries. This process accelerated notably in the 20th century. Life in cities has become very pleasant for their inhabitants. Modern apartments offer sufficient comfort. The food supply is diverse and safe. Energy (water, electricity gas, etc.) is available to an adequate extent. Modern hospitals ensure medical care and care for all age groups. The children go to kindergartens and schools. At the universities, young people study in a carefree environment. Cities have good transport systems in many places.

Notwithstanding these manifold benefits of city life, the administrations of urban centers increasingly confronted with problems: The streets of the cities are suffering from the ever-increasing mass of vehicles. Noise and air pollution are the results. Housing is scarce in the centers. The cities grow in height and on

the outskirts. The supply of drinking water is a problem in many places. Waste management is a major organizational and technical challenge for the city administration.

One of the most critical issues within the increasingly complex infrastructure of large cities is the safety and security factor. It is no coincidence that the municipalities have set up special services that deal with these problems: police, fire brigade, emergency services, disaster services for the gas, electricity, gas supply, and communication networks (telephone, Internet, etc.). The purpose of the book is to take a closer look at the subject of fire safety. In the last century, cities have experienced various revelations with the introduction of new building materials, new types of buildings, and new ways of using the premises. Many advances in fire prevention have been made. Nevertheless, the fire danger in the cities is not banished.

If we look back a little more than 100 years, we recognize that just in the 20th century, professional fire brigades founded in most major cities due to the increasing fire risks. Many cities cover fire safety with volunteer fire brigades. Some cities develop a hybrid system – volunteers and professional fire brigades. There are so many practical solutions to tame the problem of fire hazards. Historical experiences, cultural backgrounds, and other circumstances have led to a diverse landscape of extinguishing institutions today. There are so many practical solutions to tame the problem of fire hazards. Historical experiences, cultural backgrounds, and other circumstances have led to today's very diverse landscape of firefighting institutions. No matter how big or small the organizational differences are, all these systems have one thing in common: saving lives, protecting assets, and protecting the environment from the consequences of fires. To put it bluntly, the growing complexity of urban infrastructure is never why firefighters lose their lives during firefighting! It is essential to sensitize the attention to the dangers of cancer risk of firefighters through fire.

The book shows how the fire risks developed in the period from 1900 to the present. For this purpose, the data from 100 large cities compiled and analyzed. The first time in history that 100 cities, represented by their professional fire brigades, are jointly considering the problem of fire risks. Methodologically, the book project relies on the definitions developed by the Center of Fire Statistics of CTIF. This method has been used since 1995 and has proven itself many times over because of its simplicity and universality.

Since each city brings its data on the fire risks for comparison in the project and presents the history of the town and its fire department, the book moreover fulfills other functions. The aim is to support and promote friendly relations between the cities and their brave firefighters because we all live in a shared world.

4. How statistics in the book will be verified or checked for accuracy

The comparison of the statistical data for the determination of the fire risks follows a uniform methodology. It has been a tried and tested method for over 25 years. The starting data comes from the respective participating cities. The statistics should be provided primarily by the fire brigades and not by

non-experts. For the compilation of the statistical data, a uniform instruction was sent to all cities. The definitions for each parameter also follow the experience of the CTIF.

5. Timeline for the book project: The year 2011 is the target

One hundred cities from the whole World invited. Each city gets the opportunity to process the data within the next 2-3 months and then send us. The Center for Fire Statistics of CTIF processes the data and compiles the results into uniformly structured tables. We send these tables to all participating fire brigades. These asked to check and correct if necessary. Questions are always welcome, and will answer. This process will last about 3-4 months.

Then the text about the history of the city or the fire department incorporated into the project. Then the proofreading and the linguistic adaptation of the book chapters take place. Then we send the jointly developed questionnaires to all cities. The results incorporated into the project in 1-2 months. Finally, we ask some cities or organizations to write forewords. All in all, all work should completed after two years.

Purely computationally results in a processing time of 1 week per city: $104 \text{ weeks} / 100 \text{ cities} = \text{one week}$. Some cities will be able to provide the data very quickly. Other cities certainly need more time. Since many processes run parallel, the total duration of the project of 2 years seems realistic to us.

The whole project is new; there are no comparable experiences. But we believe that the amount of work for each city is manageable. We are happy to learn something about your position on this. We always remain optimistic!

6. Editorial team of the project

Mr. Sergei Sokolov, Professor PhD., Engineer of Fire Safety and Fire Protection, Head of Department of Fire Science, a leading lecturer at the Moscow Fire Safety Academy, beginning of his career as a fire brigade Officer of a fire station, the father also a firefighter and fire officer, today expert of the German Fire Protection Association. Since 1995 working in the Center of Fire Brigade Statistics of the CTIF. Mr. Sokolov is a World-leading expert in the field of computer simulation systems for mid-term and long-term master planning in fire and rescue services.

Mr. Nikolay Bruschlinsky, Professor, Ph.D. at the Moscow Fire Safety Academy, is a professional mathematician, a primary developer of fire department statistics and applied math's fire safety. He is considered the founder of modern fire brigades and fire statistics in strong cooperation with CTIF. He is an outstanding Fire Scientist in the field of scientific organization of the international fire services. The worldwide well-known expert is an exclusive advisor of the German Fire Protection Association.

Mr. Peter Wagner, PhD. in Fire Engineering, Engineer of Fire Safety and Fire Protection, started his career as a firefighter in 1982 and worked after higher education study as a shift officer and station officer in the Berlin Fire Brigade. For several years, he worked in the Operations Department, the Operations Control Center, to develop master plans for the Fire Department. Now Peter is the specialist for the teaching of leadership at the Berlin Fire and Rescue Academy. He is an international expert in CTIF (International Fire and Rescue Association), FEU (Federation of European Fire Officers Union), EFSCA (European Fire School Colleges Association), and GFPA (German Fire Protection Association).

Please do not hesitate to ask us questions.

We apologize for not very good English.

Yours sincerely

Ltn. Col. Dr. Peter Wagner

Center of Fire Statistics of CTIF

Berlin Fire Brigade

Home:

Tolkmittstrasse 49A, D-12621 Berlin, Germany

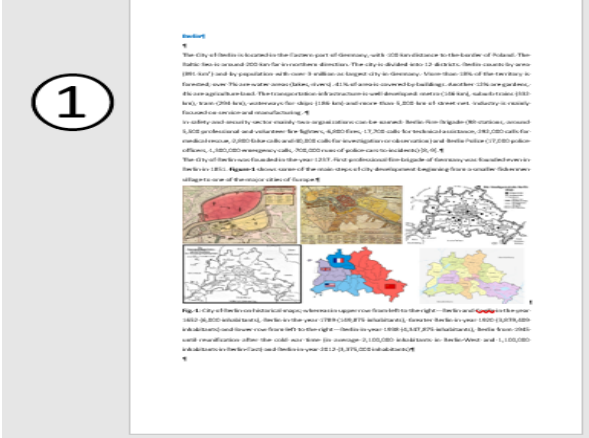
drpeterwagner@freenet.de

+49 175 5935258

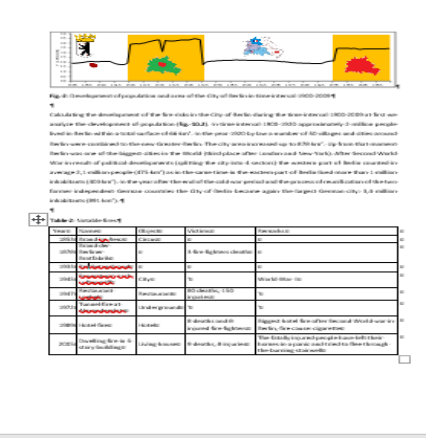
7. Scope of work

The scope of work for each city is described in the section below.

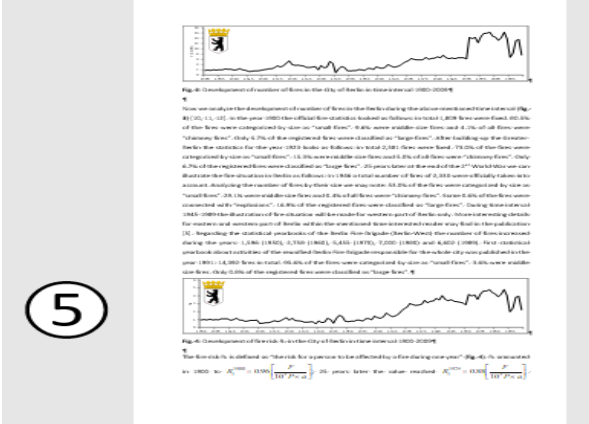
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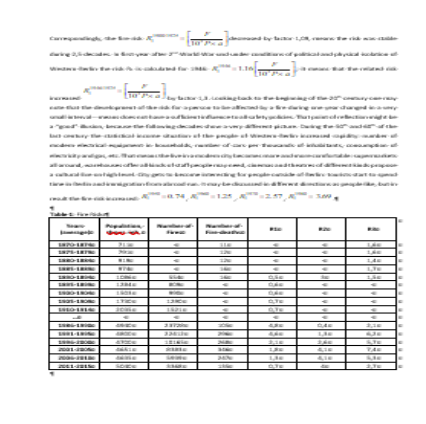
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5



The chapter for each city should have a similar structure:

1. Text block about the history of the City and History of the Fire Department (text may be separated or merge as on text block, for illustration the following figures may be added: "Historical Map", "Historical Fire Station", "Historical Fire Vehicle" and "Historical Fire")
2. Table "Notable Fires" (please see below)
3. Basic data as an illustration: Graphic" Population in 1000000", Graphic" Fires in 1000", Graphic" Fires deaths", Graphic" City surface in sq.km", Graphic" Population density", Graphic" Fire Damage in 1000000" with short comments
4. Table "Fire Risks" with short comments
5. Fire Risks as Graphic" R1", Graphic" R2", Graphic" R3", Graphic" R4" with short comments

8. Description of data/information used in the chapter

No.	Item	Medium	Pages (A4)	Remarks
1	Data-Sheet-File	Excel	Non	For the project, all statistical data will be collected with MS Excel. Please indicate that your FD is able to provide data using MS Excel; if not, please indicate the possibility to send data as an ASCCI file.
2	Data-Sheet-Description	Word	Non	Description of "Data-Sheet-File" added below.
3	Text-Block "City History"	Word	1	The text was written by FD. Used sources must indicate, example: [01_FD-Boston]; this acronym should be shown in the related text passages and the end of the related FD-Chapter; an example [01_FD-Boston] Statistical Yearbook City of Boston, 1860-1862 / ... / 2015 [02_FD-Boston] Report of the Fire Marshal of the City of Boston, 1860-1862 / ... / 2015 [03_FD-Boston] Annual Report of the Fire Department of the City of Boston, 1860-1862 / ... / 2015 [04_FD-Boston] Paul Newmann, History of the Boston Fire Department Boston 1917, ISBN, pp.340
4	Text-Block "FD History"	Word	1	Text was written by FD. Used sources must be indicated, example: [01_FD-Boston]; this acronym should be shown in the related text passages and the end of the related FD-Chapter; an example [01_FD-Boston] Statistical Yearbook City of Boston, 1860-1862 / ... / 2015 [02_FD-Boston] Report of the Fire Marshal of the City of Boston, 1860-1862 / ... / 2015 [03_FD-Boston] Annual Report of the Fire Department of the City of Boston, 1860-1862 / ... / 2015 [04_FD-Boston] Paul Newmann, History of the Boston Fire Department Boston 1917, ISBN, pp.340 [05_FD-Boston] Internal Statistical Data of the Boston Fire Department
5	Table "Notable Fires"	Word	½	Table results by provided information from the FD; table for filling is shown at the end of this document.

No.	Item	Medium	Pages (A4)	Remarks
6	Table "Fire Risks"	Word	½	Table results by data form "Data-Sheet-File" provided by the FD. The table will be filled by CFS-team. An example of a table is shown below.
7	Graphic "Population in 1000000"	Excel	¼	Graphic based on data provided by the FD, see "Data-Sheet-File" above. FD may send data from the early beginning of city history. For calculation of fire Risks, the CFS uses the time interval 1900-2018.
8	Graphic" Fires in 1000"	Excel	¼	Graphic based on data provided by the FD, see "Data-Sheet-File" above. FD may send data from the early beginning of city history. For calculation of fire Risks, the CFS uses the time interval 1900-2018.
9	Graphic "Fires deaths."	Excel	¼	Graphic based on data provided by the FD, see "Data-Sheet-File" above. FD may send data from the early beginning of city history. For calculation of fire Risks, the CFS uses the time interval 1900-2018.
10	Graphic "City surface in sq.km"	Excel	¼	Graphic based on data provided by the FD, see "Data-Sheet-File" above. FD may send data from the early beginning of city history. For calculation of fire Risks, the CFS uses the time interval 1900-2018.
11	Graphic "Population density"	Excel	¼	Graphic based on data provided by the FD, see "Data-Sheet-File" above. FD may send data from the early beginning of city history. For calculation of fire Risks, the CFS uses the time interval 1900-2018.
12	Graphic "Fire Damage in 1000000"	Excel	¼	Graphic based on data provided by the FD, see "Data-Sheet-File" above. FD may send data from the early beginning of city history. For calculation of fire Risks, the CFS uses the time interval 1900-2018.
13	Graphic "R1"	Excel	¼	Graphic results on a calculation made by data source" Data-Sheet-File". For calculation of fire Risks, the CFS uses the time interval 1900-2018.
14	Graphic "R2"	Excel	¼	Graphic results on a calculation made by data source" Data-Sheet-File". For calculation of fire Risks, the CFS uses the time interval 1900-2018.
15	Graphic "R3"	Excel	¼	Graphic results on a calculation made by data source" Data-Sheet-File". For calculation of fire Risks, the CFS uses the time interval 1900-2018.

No.	Item	Medium	Pages (A4)	Remarks
16	Graphic" R4"	Excel	¼	Graphic results on a calculation made by data source" Data-Sheet-File". For calculation of fire Risks, the CFS uses the time interval 1900-2018.
17	Figure "Historical Map"	BMP	½	Figure results by BMP-file with the high resolution provided by FD (FD indicates the source and transfer the rights for publishing the figure).
18	Figure "Historical Fire Station"	BMP	½	Figure results by BMP-file with the high resolution provided by FD (FD indicates the source and transfer the rights for publishing the figure).
19	Figure "Historical Fire Vehicle"	BMP	½	Figure results by BMP-file with the high resolution provided by FD (FD indicates the source and transfer the rights for publishing the figure).
20	Figure "Historical Fire"	BMP	½	Figure results by BMP-file with the high resolution provided by FD (FD indicates the source and transfer the rights for publishing the figure).
21	Co-Author	Word		CFS kindly asks all FD nominate a staff-member as co-author. The FD is not nameless. The co-author is named as the official representative of the related FD. The co-author is requested to fill some data in the data-sheet below.

9. Description of "Data-Sheet-File"

The following **minimum data** required for the idea of describing the development of fire risks:

- Column B: **Number of inhabitants** (*) relative to the respective urban area.
- Column L "**Sum of fires**" (*): The sum of all fires from columns G-K. The value is calculated automatically with a stored formula. If the numbers for the columns G-K are not available, the total number of fires must entered manually (*).
- Column S "**Fire Deaths, total**" (*): Number of dead to be complained of in fires. It is known that in some states, different definitions exist (dead at the scene of the fire, deaths including those who later died in hospitals, etc.). Therefore, if necessary, the description used in the FD must be reported.

These three parameters are needed to calculate the fire risks:

- Risk R1 "Risk for a person to directly exposed to the dangerous factors of a fire within a certain time interval."

- Risk R2 "Risk of a person losing his life as a victim in a fire"
- Risk R3 "Risk of a person losing his life through a fire within a certain time interval."

All other parameters are explanatory: how big are the fires? In which objects does it burn frequently? What are the causes of the fire? What infrastructure does the city administration provide for successful firefighting (number of fire stations, vehicles, and personnel as well as budget)?

It is not our intention that the FD will now be in a shock situation - so much data - so much work with this data to procure it. All FD have plenty of time to find the data without time pressure, prepare it, and insert it into the table we have suggested.

Let's give an example: For 100 cities in Germany, we have carried out precisely this procedure. For this, we have written letters to the FD of the towns for help. The FD has often answered they are overwhelmed, there is no data available, or they do not understand the meaning of this work. We have shown that there are reliable historical sources: annual reports of the professional fire brigades (thesis exist in Germany for more than 100 years), statistical yearbooks of the cities, and administrative reports of the towns for the last century. Another example: from a distance, I can see the City Library Toronto's catalogs: all just above annual reports of the fire department and the city reports are available there. However, I cannot see any data because the books are only locally known. So I would have to travel to this city. Although this is a beautiful idea, I have incidentally in my hometown every day to serve in the Berlin Fire Department. Ultimately, the concept of the project is to bring together 100 votes from 100 cities worldwide!

General

The file "City_data" consists of 3 tabs:

- New_1840-2018
- New_FireRisks_1900-2018
- G_New_PFDS_R123

The string "New" is replaced by the name of the concrete city.

In the table "New_1840-2018" each participating in the project fire department (FD for short) enters the existing data.

The New_FireRisks_1900-2018 table is linked to the New_1840-2018 table. For the columns Inhabitants, Fires, Fire Calls, Fire Deaths, Fire Injuries, Fire Damage the information from the "New_1840-2018" will be transferred automatically.

Graphics are automatically generated in the "G_New_PFDS_R123" tab.

The FD are requested in "New_FireRisks_1900-2018" and "G_New_PFDS_R123" no arbitrary changes!

Instructions for filling the table "New_1840-2018"

The statistical parameters are entered in the two upper lines. Some parameters are grouped together. This can be recognized by the background color of the table cells. Entries are only integer values. Decimal places are not allowed. 1000 separators are not to be used. Example: 1000000 - correct, 1.000.000 or 1,000,000 - not correct.

Year	City				Year	Fires						False Fire Calls				Year	Fire Victims			
	Inhabitants	Area qkm	Lenght E-W in km	Lenght N-S in km		Small size Fires	Middle size fires	Large size fires	Other	Chimney	Sum of fires	Total Fire Calls	False Calls	False alarm	False call by fire alarm		Malicious alarm	Fire Deaths, total	Fire Deaths, Dwelling	Fire Injuries

City

Column A: years in the period from 1840 to 2018. For each year, only one number is to be entered. If there are no data for different years, the table cells remain empty. Please do not insert any entries.

Column B: Number of inhabitants (*) relative to the respective urban area.

Column C: area of the city in square kilometers.

Columns D and E: Extension of the city in kilometers from east to west (E-W) and from north to south (N-S). Here we usually understand the land area. Should there be peculiarities due to many islands, e.g. in Hong Kong, this feature is to be communicated in the form of a commentary.

Fires

Column G "Small size Fires": intuitively, the FD should understand that this is the number of small fires. Since there is no uniform definition worldwide, we can only refer to the definition used by the CTIF: fires that could be extinguished with a small extinguisher or a maximum of 1 jet.

Column H "Middle size fires": intuitively, the FD should understand that this is the number of medium fires. Since there is no uniform definition worldwide, we can only refer to the description used by the CTIF: fires that could be extinguished with 2-3 nozzles.

Column I "Large size fires": intuitively, the FD should understand that this is the number of medium fires. Since there is no uniform definition worldwide, we can only refer to the description used by the CTIF: fires that could be extinguished with more than 3 radiant tubes.

Column J "Other": number of all other fire events, or explosions, etc.

Column K "Chimney": Number of chimney fires.

Column L "Sum of fires" (*): The sum of all fires from columns G-K. The value is calculated automatically with a stored formula. If the numbers for the columns G-K are not available, the total number of fires must be entered manually (*).

Column M "Total Fire Calls": Enter the number of real fires (column L) and the false alarms (N) as the total.

False Fire Calls

Column N "False Calls: This is the sum of the columns O-Q, ie all types of false alarms in fires.

Column O "False alarm": Alerting to a fire, presumably in good intent, but no real fire.

Column P "False call by fire alarm system": False alarm for fire caused by automatic fire alarm systems etc.

Column Q "Malicious alarm": Number of malicious fire alarms.

Fire Victims

Column S "Fire Deaths, total" (*): Number of dead to be complained of in fires. It is known that in some states different definitions exist (dead at the scene of the fire, deaths including those who later died in hospitals, etc.). Therefore, if necessary, the definition used in the FD must be reported.

Column T "Fire Deaths, Dwelling": Number of fire deaths exclusively in the living area.

Column U "Fire Injuries": Number of persons injured in fires.

Column V "Fire Fighter death": Number of firefighters killed in a fire.

Column W "Fire Fighter injured": Number of firefighters injured in fires.

Technical Aid					FireDamage		FireObjects							FireCauses										
Number of TA-calls	Number of TA-deaths	Number of TA-injuries	Fire Fighter death	Fire Fighter injured	Year	XXX	FireDamage, in mln.	XXX	Year	FireObjects_1	FireObjects_2	FireObjects_3	FireObjects_4	FireObjects_5	FireObjects_6	FireObjects_7	Year	FireCause_1	FireCause_2	FireCause_3	FireCause_4	FireCause_5	FireCause_6	FireCause_7

Technical Aid

The history of the fire brigades shows that over time the number of technical assistance services has steadily increased. Many fire brigades today serve significantly more technical assistance than fires. These technical assistance services (TA) are typically operated by the same types of vehicles that are actually used for firefighting.

Column Y "Number of TA-calls": Number of all technical assistance (ie no fires and medical emergency rescue)

Column Z "Number of TA-deaths": Number of accident fatalities for technical assistance

Column AA "Number of TA-injuries": Number of accidental injuries in technical assistance

Column AB "Fire Fighter death": Number of firefighters killed in a technical aid call.

Column AC "Fire Fighter injured": Number of firefighters injured in technical aid call.

Fire Damage

The fire damage is another essential characteristic for the determination of the fire risks. Unfortunately, in our experience, only data from a few countries on Earth are available. With regard to the cities, we believe that especially the US cities have such information. For Germany, for example, we could only find such data for one city. If such data exists and it is not too difficult to provide, then this information is very welcome.

Column AE "XXX":

Column AF "FireDamage, in mln.": Fire damage in millions of national currency (excluding inflation)

Column AG "XXX":

Fire Objects

The presentation of the fire objects shows the distribution of the fires on different areas of the urban infrastructure. We suspect that over the last one hundred years the names of the objects of fire have changed several times. However, we hope to distinguish between building fires, fires in industry and commerce, fires in transportation, fires in the open air and other fireside objects (free land).

Thus, each FD itself should specify which fire objects are present in the local data. The information should then be entered in the columns AI "FireObjects_1", ..., column AO "FireObjects_7".

Fire Causes

The causes of fire should be treated analogously to the fire objects. The columns AQ "FireCause_1", ..., column AW "FireCause_7" are available for this purpose.

Number of Stations

If possible, please differentiate according to column AY "Professionals", column AZ "Part-Timer", column BA "Volunteers" and column BB "Total". Stations, which are intended exclusively for the ambulances, should not be mentioned here.

Number of Staff

If possible, please differentiate according to column BD "Professionals", column BE "Part-Timer", column BF "Volunteers" and column BG "Total". Staff, which is intended exclusively for the ambulance stations, should not be mentioned here.

Budget

Please indicate:

Column BI "Budget of City in mln."

Column BJ "Share of City Budget,%"

Column BK "Budget of FD in mln." and

Column BL "Budget of FD-Staff in mln."

Vehicles

Please indicate number of vehicles by type in FD:

Column BI "Fire Engines, tankers"

Column BJ "Ladders": means ladders and hydraulic platforms

Column BK "Ambulances" and

Column BL "Other vehicles"

Column BL "Total": sum of all vehicles

10. Table "Notable Fires"

Notable fires are often listed in text form. However, this requires a considerable number of pages for our book. That is problematic. We suggest listing a TOP 10 list. The critical statements are to entered in the format below (example from different cities ..., but you note your city only).

Date	Place of Fire Fire Object	N_D	N_I	N_R	Description
1996-04-11	Düsseldorf (Germany), Airport	17	60	-	A fire broke out inside the passenger terminal of the International Airport. It was the worst structural fire to have occurred in any commercial airport building.
1997-06-08	Thanjavur (India), Temple fire	60	200	-	Brihadiswara temple fire caused by visitor using firecracker.
1998-10-30	Göteborg (Sweden) Night Club	63	-	-	A nightclub fire is killing 63 young people.
1999-09-24	Yogyakarta (Indonesia), cinema fire	75	-	-	Two-story buildings with cinema complex fire killing 75.
2000-11-11	Kaprun (Austria), Transportation means fire	156	-	-	A cable car transporting skiers to the Kitzsteinhorn glacier broke into flames in a mountain tunnel. It was Austria's worst Alpine disaster.
2011-12-09	India	89	-	?	AMRI hospital fire
2012-11-24	Dhaka, (Bangladesh) Factory fire	124	-	-	Tazreen Fashion factory fire
2013-01-27	Santa Maria, (Brazil), Night Club Fire	233	-	-	A fire breaks out in a nightclub. The cause of the fire is a flare from pyrotechnics used by a band

					performing on stage at the club. At the time of the fire, the club is packed with hundreds of students.
2014-01-14	Lardalsoyri, (Norway), Town Fire	52	-	-	Historical city center burnt down. Twenty-three buildings were destroyed.
2010-12-08	Santiago de Chile (Chile) Prison fire	81	19	?	A fire kills inmates in the country's deadliest ever prison incident.

Note: N_D – number of fire deaths, N_I – number of fire injured, N_R – number of rescued people, (-) – not applicable, (?) - unclear

This table will be created on your own based on your data.

11. Table "Fire Risks"

For each city, the essential data summarized in a uniformly structured table, from which the fire risks are determined. For this, the information cumulated in 5-year intervals. This excludes that random extreme values have a strong influence on overall development. Also, the formation of intervals is a means to avoid the presentation of large tables, either 100 rows or 100 columns, since these representations are not reader-friendly. **The example** is shown below.

Years	Average meaning			Fire Risks		
	N_P	N_F	N_D	R_1	R_2	R_3
1895-1899*	485,929	1,500	13*	3.086	0.867	2.675
1900-1904	534,072	1,543	7	2.890	0.454	1.311
1905-1909	561,310	1,383	11	2.463	0.810	1.995
1910-1914	584,058	1,241	4	2.124	0.322	0.685
1915-1919	631,628	1,163	4	1.842	0.344	0.633
1920-1924	686,796	1,425	6	2.075	0.393	0.815
1925-1929	730,740	1,581	4	2.164	0.253	0.547
1930-1934	768,003	1,787	3	2.327	0.157	0.365
1935-1939	787,604	1,605	6	2.037	0.361	0.736
1940-1944	790,669	1,333	3	1.685	0.210	0.354
1945-1949	794,956	1,240	3*	1.560	0.258	0.403
1950-1954	854,683	1,126	4*	1.317	0.355	0.468
1955-1959*	870,675	1,142	4*	1.312	0.385	0.505

Years	Average meaning			Fire Risks		
	N_P	N_F	N_D	R_1	R_2	R_3
1960-1964	866,722	1,125	4	1.298	0.373	0.485
1965-1969	852,766	1,430	9	1.677	0.629	1.055
1970-1974	791,659	2,048	9	2.587	0.430	1.112
1975-1979	730,770	2,685	13	3.674	0.477	1.752
1980-1984*	676,370	3,251	6	4.806	0.178	0.858
1985-1989*	669,035	2,837	6	4.240	0.204	0.867
1990-1994	711,113	2,973	6*	4.180	0.195	0.816
1995-1999	720,155	3,249	5*	4.511	0.154	0.694
2000-2004	735,193	3,411	6	4.640	0.182	0.843
2005-2009	746,577	4,044	4	5.416	0.089	0.482
2010-2014	789,974	4,127	4	5.224	0.107	0.557
2015-2018	839,716	4,815	5	5.734	0.104	0.595

*estimation

This table will be created by the CTIF-team based on your data.

12. Co-author data-sheet

We assume that each participating city names a contact person. We use this person as co-author for the project. The co-author is responsible for each chapter describing the city (history, data) and is responsible for it. Since each chapter has a specific name, the author should also be mentioned in our opinion. We suggest to briefly introduce the author. This is so common internationally.

Below is an example of what that might look like.

Mr. Peter Wagner, PhD. in Fire Engineering, Engineer of Fire Safety and Fire Protection, started his career as a firefighter in 1982 and worked after higher education study as a shift officer and station officer in the Berlin Fire Brigade. For several years, he worked in the Operations Department, the Operations Control Center, to develop master plans for the Fire Department. Now he is the specialist for leadership teaching at the Berlin Fire and Rescue Academy (City of Berlin, Germany). He is an international expert in CTIF (International Fire and Rescue Association), FEU (Federation of European Fire Officers Union), EFSCA (European Fire School Colleges Association), and GFPA (German Fire Protection Association).

Please send your text.

13. How to read the publication?

This part is under construction!

Abbreviation, formula symbol	Description, explanation	Re
N_D^{1900}	Number of fire deaths related to the year 1900	
N_D^{2000}	Number of fire deaths related to the year 2000	
N_F^{1900}	Number of fires in the reference year 1900	
N_F^{2000}	Number of fires in the reference year 2000	
N_I^{1900}	Number of fire injuries related to the year 1900	
N_I^{2000}	Number of fire injuries related to the year 2000	
N_P^{1900}	Number of population in the reference year 1900	
N_P^{2000}	Number of population in the reference year 2000	
R_1	Fires on 1.000 inhabitants in the time interval	
R_1^{1900}	Fires on 1.000 inhabitants in the reference year 1900	
R_1^{2000}	Fires on 1.000 inhabitants in the reference year 2000	
R_2	Fire deaths on 100 fires in the time interval	
R_2^{1900}	Fire deaths on 100 fires in the reference year 1900	
R_2^{2000}	Fire deaths on 100 fires in the reference year 2000	
R_3	Fire deaths on 100.000 inhabitants in the time interval	

R_3^{1900}	Fire deaths on 100.000 inhabitants in the reference year 1900	
R_3^{2000}	Fire deaths on 100.000 inhabitants in the reference year 2000	
$n_1^{2000/1900}$	Indicator of R_1 comparison of the two reference years 2000 and 1900	
$n_D^{2000/1900}$	Indicator of fire deaths comparison of the two years	
$n_I^{2000/1900}$	Indicator of fire injuries comparison of the two reference years 2000 and 1900	
$n_{R3}^{2000/1900}$	Indicator of Fire deaths on 100.000 inhabitants of the two reference years 2000 and 1900	
N_D	Number of fire deaths	
N_F	Number of fires	
N_I	Number of fire injuries	
N_P	Number of inhabitants	
+	Added for firefighters, example	
A [sq.km]	Area of the city in square kilometers	
D [1,000]	Number of fire deaths in a thousand	
DEN [inh./sq.km]	Population density [inhabitants per square kilometer]	
F [1,000]	Number of fires in a thousand	
I [1,000]	Number of fire injuries in a thousand	
P [1,000,000]	Number of inhabitants in millions	
YYYY-MM-DD	Year-Month-Day	