



World Fire Congress

2024 | UNITED STATES

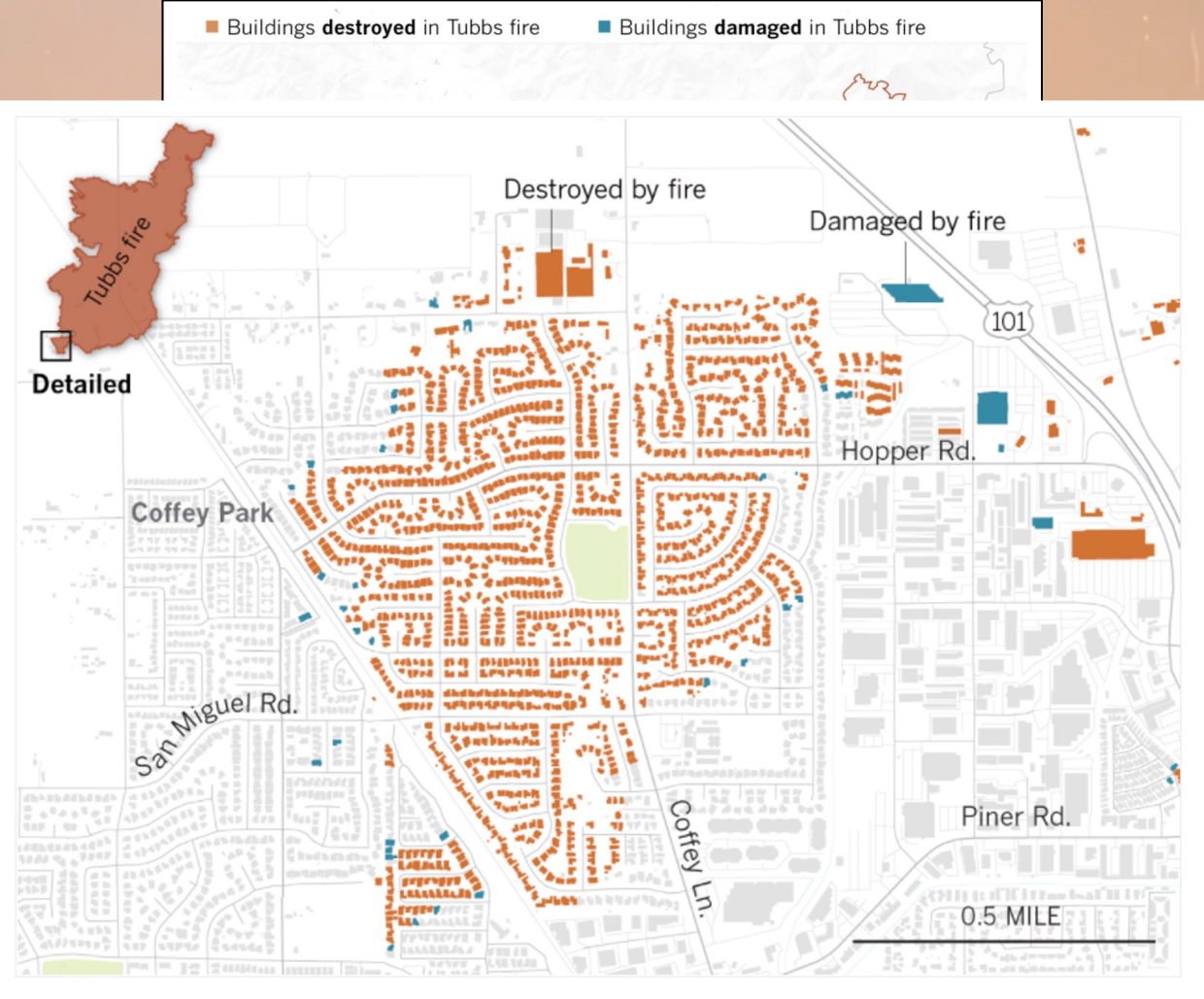
Wildfires / Community Conflagrations

Gavin Horn
UL Fire Safety Research Institute

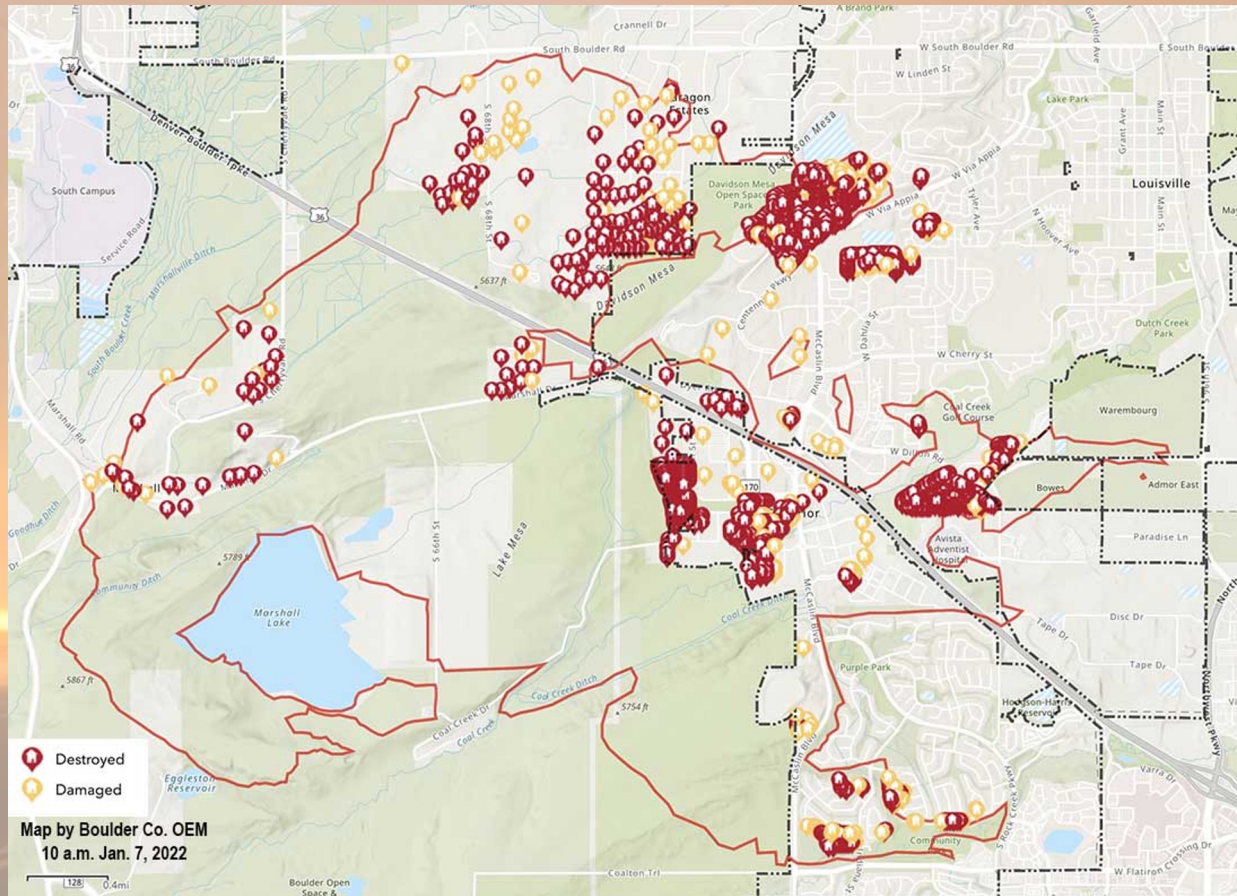




Tubbs Fire (2017) – Sonoma & Napa (CA)



Marshall Fire (2021) – Boulder (CO)



<https://wildfiretoday.com/2022/01/07/marshall-fire-updated-damage-assessment-1084-residences-destroyed/>

<https://wildfiretoday.com/2022/01/05/photos-before-and-after-the-marshall-fire-in-boulder-county-colorado/>

Wildland Urban Interface (WUI) Firefighting PPE



Structure-to-Structure Heat Transfer



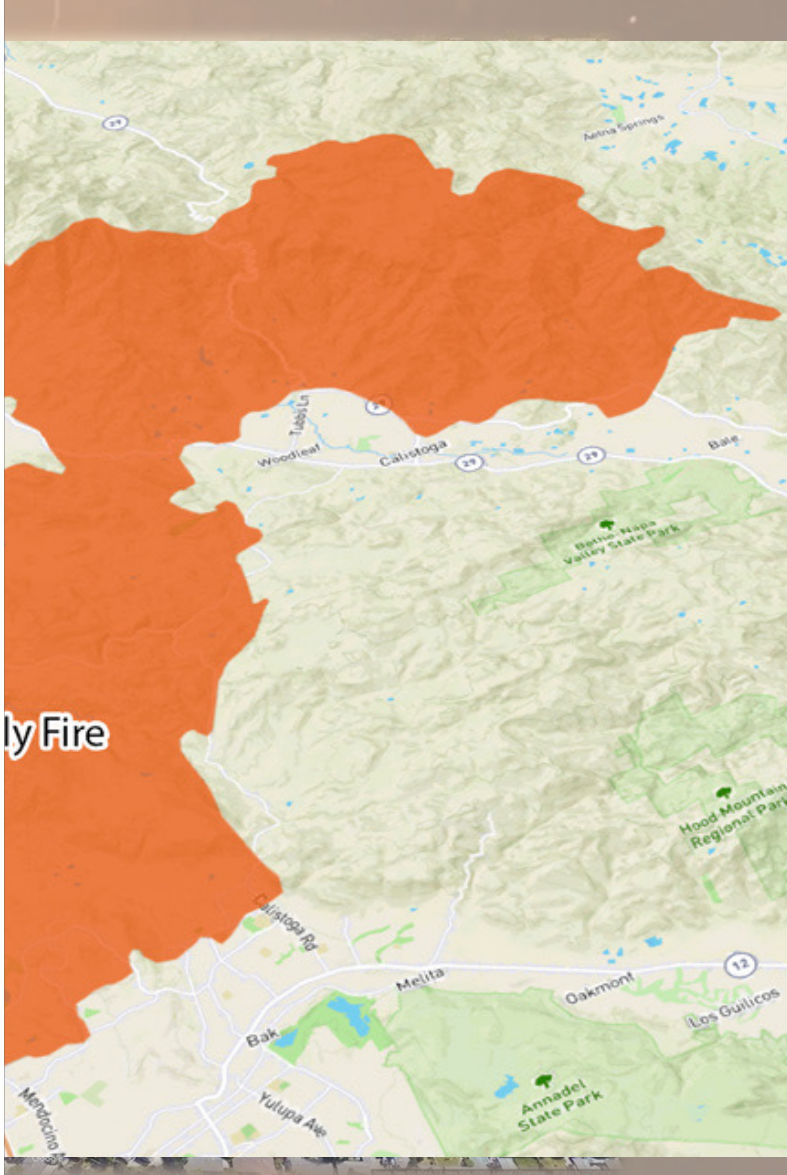
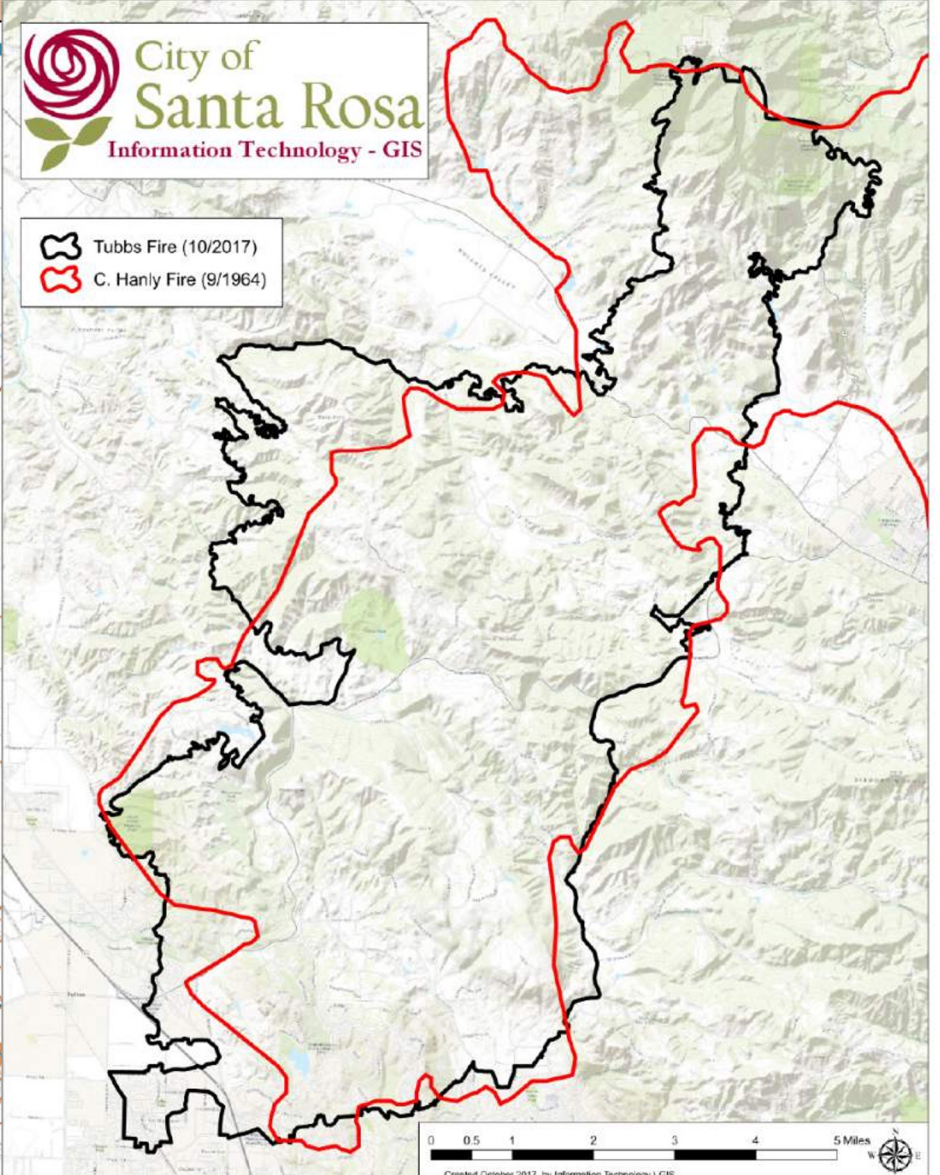
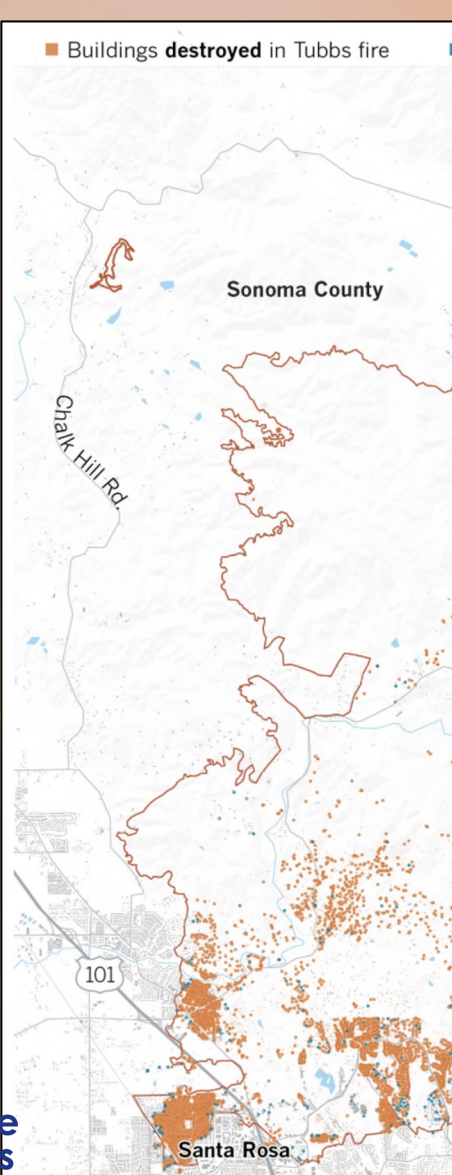
Firebrand Heat Transfer



Resilience and Recovery After the Fires



Lessons





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Wildfires / Community Conflagrations

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Lahaina Fire Comprehensive Report & Timeline

Dr. Steve Kerber
Derek Alkonis

UL Fire Safety Research Institute

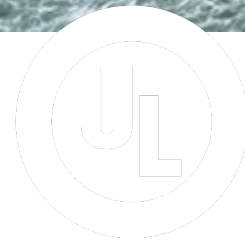




Photo Credit: Dahlquist Photography



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Research
Institutes

Lahaina Fire Reports

Phase 1 Report

Comprehensive Report & Timeline to describe the progression of the fire that destroyed much of Lahaina Town on August 8, 2023, and August 9, 2023, starting where the origin and cause investigation concludes.

Phase 1 Output

Fact-based report and minute-by-minute timeline of how the fire unfolded from August 8, 14:55 to August 9, 08:30.

Phase 2 Report

Incident Analysis Report to provide detail on conditions influencing the original fire situation, attempts to stop its rapid progression through Lahaina Town, and evacuation efforts.

Phase 2 Output

Analysis of the data, determining how various fire protection systems functioned in this fire incident.

Phase 3 Report

Forward-Looking Report to answer the critical question, “How do we prevent this from happening again?”

Phase 3 Output

Best practices that incorporate additional data and recommendations for Hawai‘i to act toward prevention.

Data Collection

FSRI captured all available recorded facts relating to preparedness and response of the Lahaina fire incident August 8, 2023 through August 9, 2023.

Written Requests for Information

Collected radio communication logs, transcripts, recordings, and other preparedness and response time-stamped data. (Information request process was agreed upon by Maui County Department of Corporation Counsel and FSRI.)

Listened to and transcribed radio transmissions on multiple channels from Maui County 911 calls, Maui Fire Department, and Maui Police Department (MPD), and MPD Dispatch.

Listened to Hawaiian Electric dispatch communications.

Site Visits

- Toured the exclusion zone from late August 2023 through January 2024.
- Captured high-definition imagery (stills and video) of un-damaged, damaged, and destroyed structures and remaining vegetative fuel components.
- Surveyed the area via helicopter, capturing aerial imagery of all burned and adjacent unburned areas.

Technical Discussions (TDs)

- Engaged in TDs to capture experiences and imagery (stills and video) from individuals present August 8, 2023 through August 9, 2023, including:
 - Local and State Leaders;
 - County Employees (PD, FD, MEMA, Department of Water Supply);
 - Residents; and
 - Hawaiian Electric

Pre-Fire Conditions: Lahaina PM Fire



Looking west down Lahainaluna Road from Luakini Street. Source: Google Earth (2019).

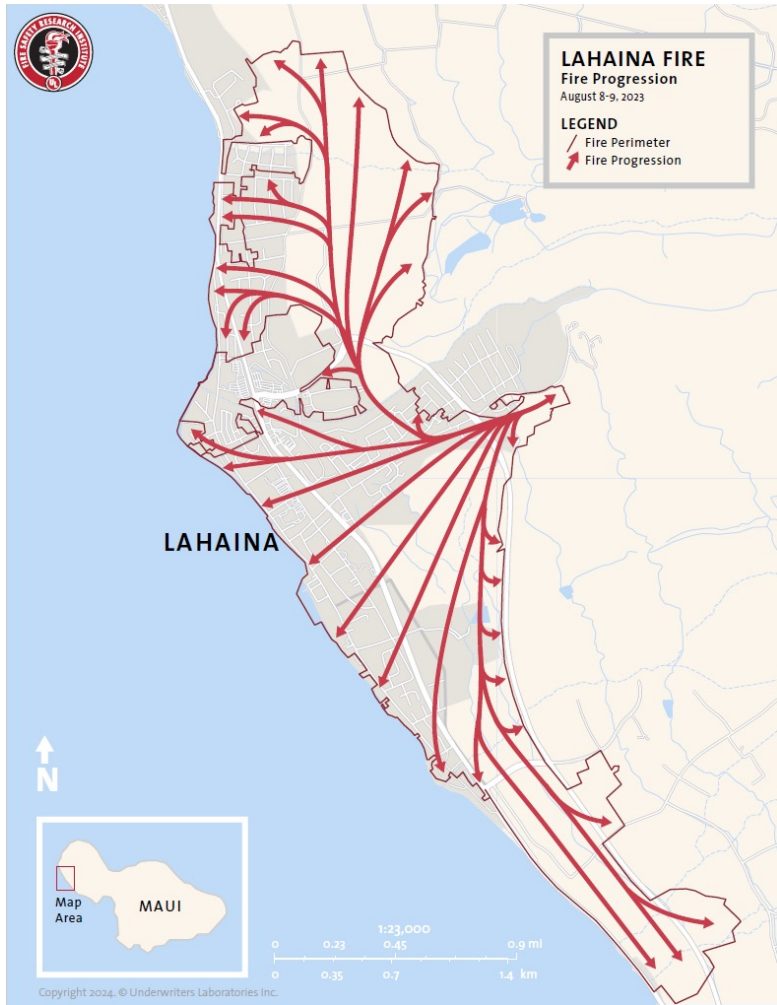


Image captured at 13:46

Report Figure 4.2.3.4 August 8, 2023, civilian photo taken at 13:46 showing roof damage, looking west down Lahainaluna Road from Luakini Street. (Inset at right: represents camera operator's approximate visual scope.)

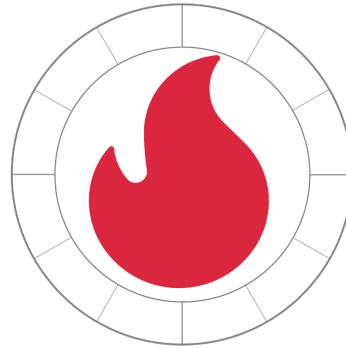


Lahaina PM Fire Progression



Report Figure 4.3.1.1

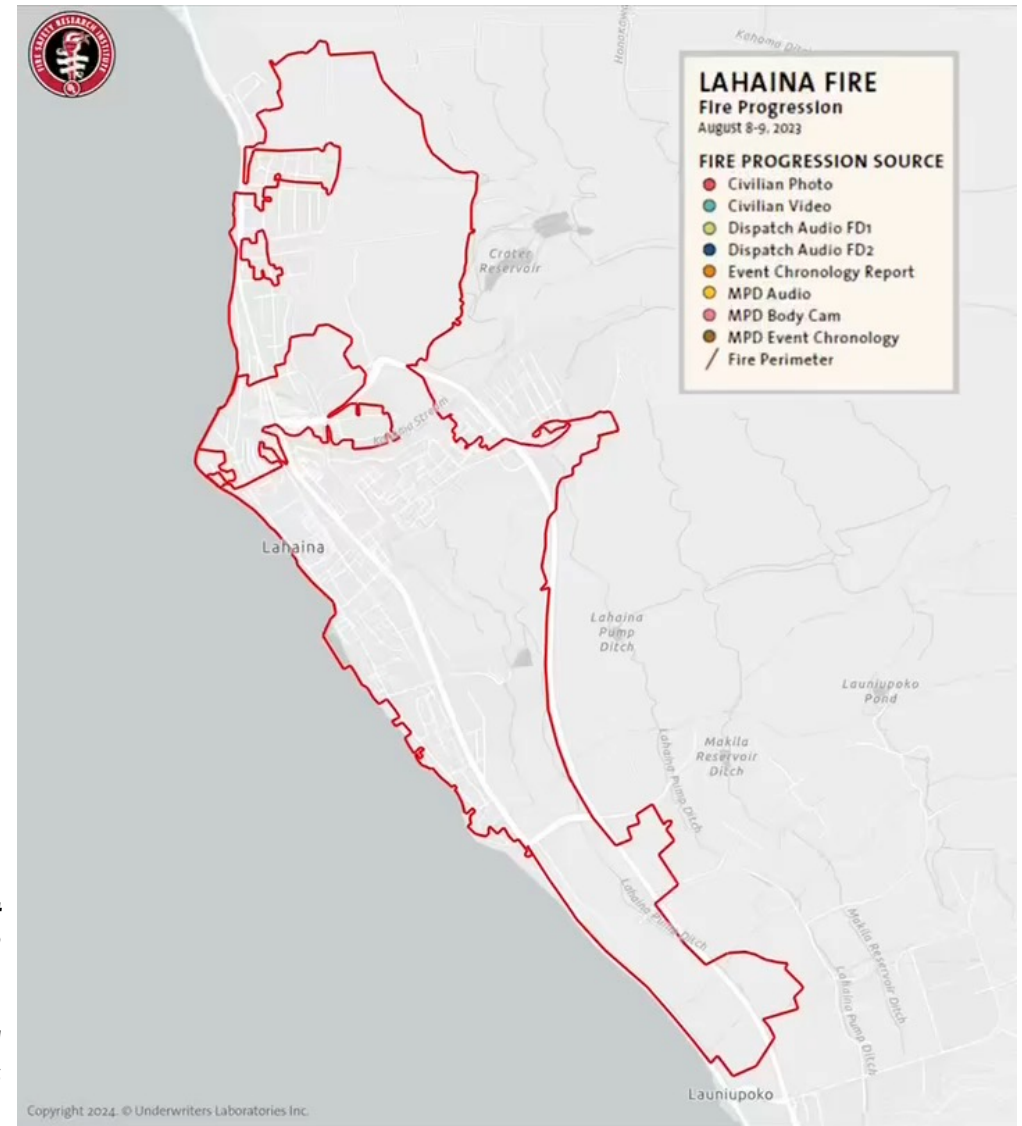
Comprehensive fire progression map of the greater Lahaina and western Maui areas. Arrows indicate the general direction of fire spread based on the data collected.



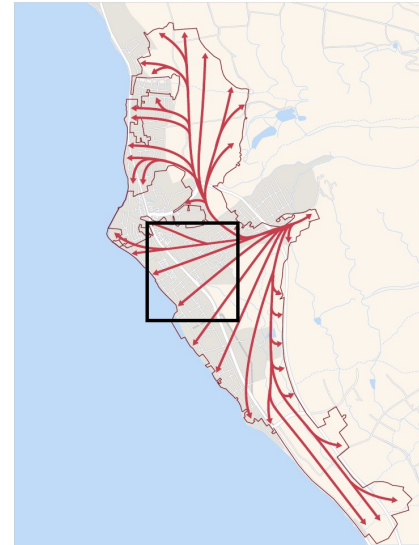
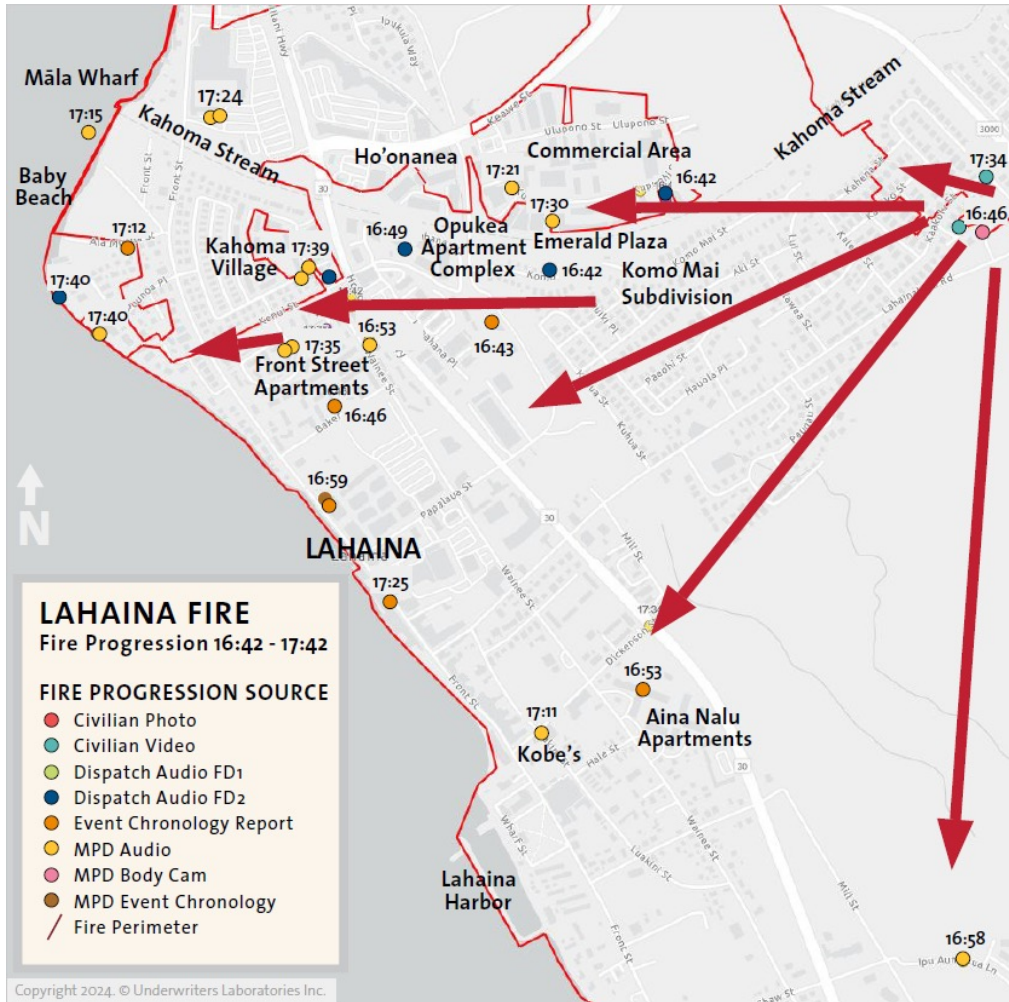
Lahaina PM fire
August 8, 2023 14:55 to
August 9, 2023 08:30

Animation of Report Figure 4.3.1.2

Fire progression map of western Maui with detailed data from various sources.



Fire Progression



16:42 to 17:42

Report Figure 4.3.1.9 Fire progression map showing particularly fierce fire spread in the Wainē'e Street area from 16:42 through 17:42. (Inset above: represents the approximate map area within Lahaina.)



After
Lahaina PM
Fire Starts

Download the Lahaina Fire Comprehensive Report & Timeline



Lahaina Fire Report

375-page narrative about pre-fire conditions, fire progression and emergency response



Date	Time	Address	Units/ People Involved	Notes	Source	Event Type / Call N
8/8/2023	04:11:00	Honoapi'ilani Highway	4A20	Event Closed	MPD Event Chronology	SFTY (Safety Condition)
8/8/2023	04:11:24		Central 406	406: (?couldn't understand)	MPD Dispatch	
8/8/2023	04:11:40	7XX Ku'ialua St		IN a vehicle trying to get out // but not able to	MPD Event Chronology	FIRE (Fire Report/Brush/VEH/Rubbin)
8/8/2023	04:11:44	XX Ipu Wai Ln, Ka Hale	4A10, 416	Second Unit Assigned 416	MPD Event Chronology	FIRE (Fire Report/Brush/Veh/Rubbin)
8/8/2023	04:12:56		4A20	4A20: How big is the fire off (Haleakala?) Responder: Pretty big. All the way from Olinda	MPD Dispatch	
8/8/2023	04:13:17			103: Is there a report number for the Olinda br Dispatch: No one has pulled a number yet LT. I	MPD Dispatch	
8/8/2023	04:13:41		4A50	Everything appears secure and in tact. Control	MPD Dispatch	
8/8/2023	04:14:47		E3	E3: Met with caller, no signs of smoke or fire. L	MPD Dispatch	
8/8/2023	04:15:10	XX Ipu Wai Ln, Ka Hale	4A10, 416	E3- Met with C1.. No signs of smoke or fire	MPD Event Chronology	FIRE (Fire Report/Brush/Veh/Rubbin)
8/8/2023	04:15:11			Calling out about Highway & Dickinson signal	MPD Dispatch	
8/8/2023	04:15:23	Honoapi'ilani Highway	4A20	Flashing yellow on Highway. Red on Dickinson.	MPD Event Chronology	SFTY (Safety Condition)
8/8/2023	04:16:39		4A10	10-8 UTO for any fires	MPD Dispatch	
8/8/2023	04:16:47	XX Ipu Wai Ln, Ka Hale	4A10, 416	Event Closed	MPD Event Chronology	FIRE (Fire Report/Brush/Veh/Rubbin)
8/8/2023	04:17:06		4A30	Off at the 33	MPD Dispatch	
8/8/2023	04:19:00		Paul Coe Cell Log	808-758-XXXX	MEMA	1 min
8/8/2023	04:19:00		From Alert to HA	MEMA Alert: EVACUATION ORDER on Maui for	Herman Andaya Texts	
8/8/2023	04:19:00			(per Document ID 00015065) Andaya received	MEMA EOC Operations and Staffing Report	
8/8/2023	04:20:00			Flash Report (From Hilo)	HIEMA	COL James Barros & Staff

Lahaina Fire Minute-by-Minute Timeline

12,000+ records from every organization represented in the report.





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Derek Alkonis

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UL Fire Safety Research Institute



LAHAINA FIRE REPORT





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International Fusion Center

Major Essa Almutawa
Head of Monitoring and Inspection
Department
Dubai Civil Defense



The Problems

1 2 3

Emissions from fire incidents have peaked drastically in 2021 to a record high of 1.76 billion tons.

Climate Change is the defining issue of our time, and we are at a defining moment.

Each decade is becoming hotter than the past.

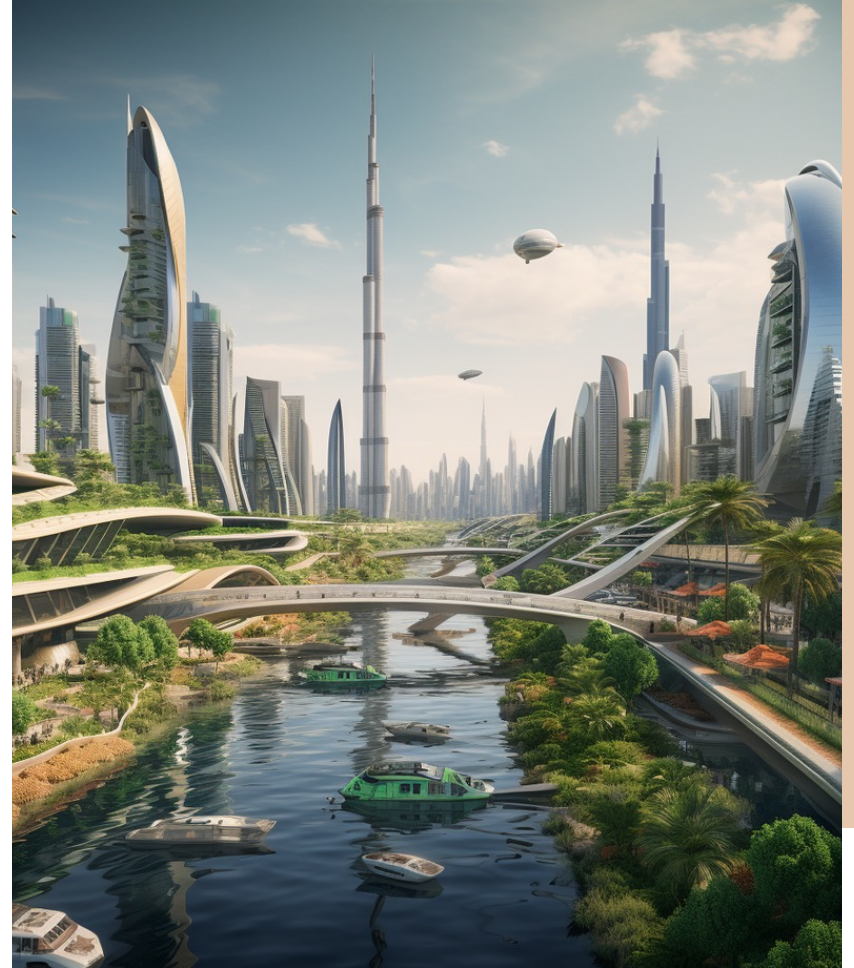


A brief about:



COP²⁸
UAE

A project of Civil Defense under the title of the Global Alliance to Reduce Fire Emissions to participate in the Conference of the Parties “COP 28” held in the United Arab Emirates, Dubai, Expo, with the participation of 198 countries and more than 140 heads of state and state.

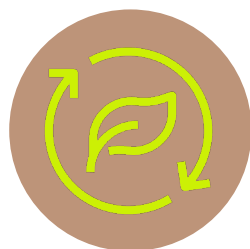


COP 28 presented climate initiatives to the world

To get back on track to achieve the goals of the Paris Agreement

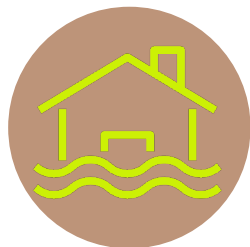
The main goal of the Paris Agreement: Keep the global average temperature well below 2 °C, with a preferred limit of 1.5 °C

Adapting to the repercussions of climate change.

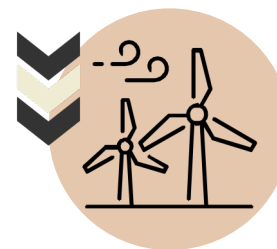


Adaptation

Addressing the issues from climate change that occurred or soon to occur.

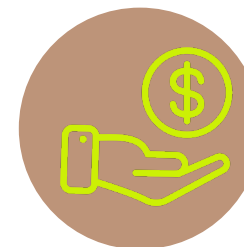


Recognition



Reduction

Reducing greenhouse gas emissions, reaching climate neutrality by 2050 to prevent the rise in global temperature from exceeding 1.5 degrees Celsius.



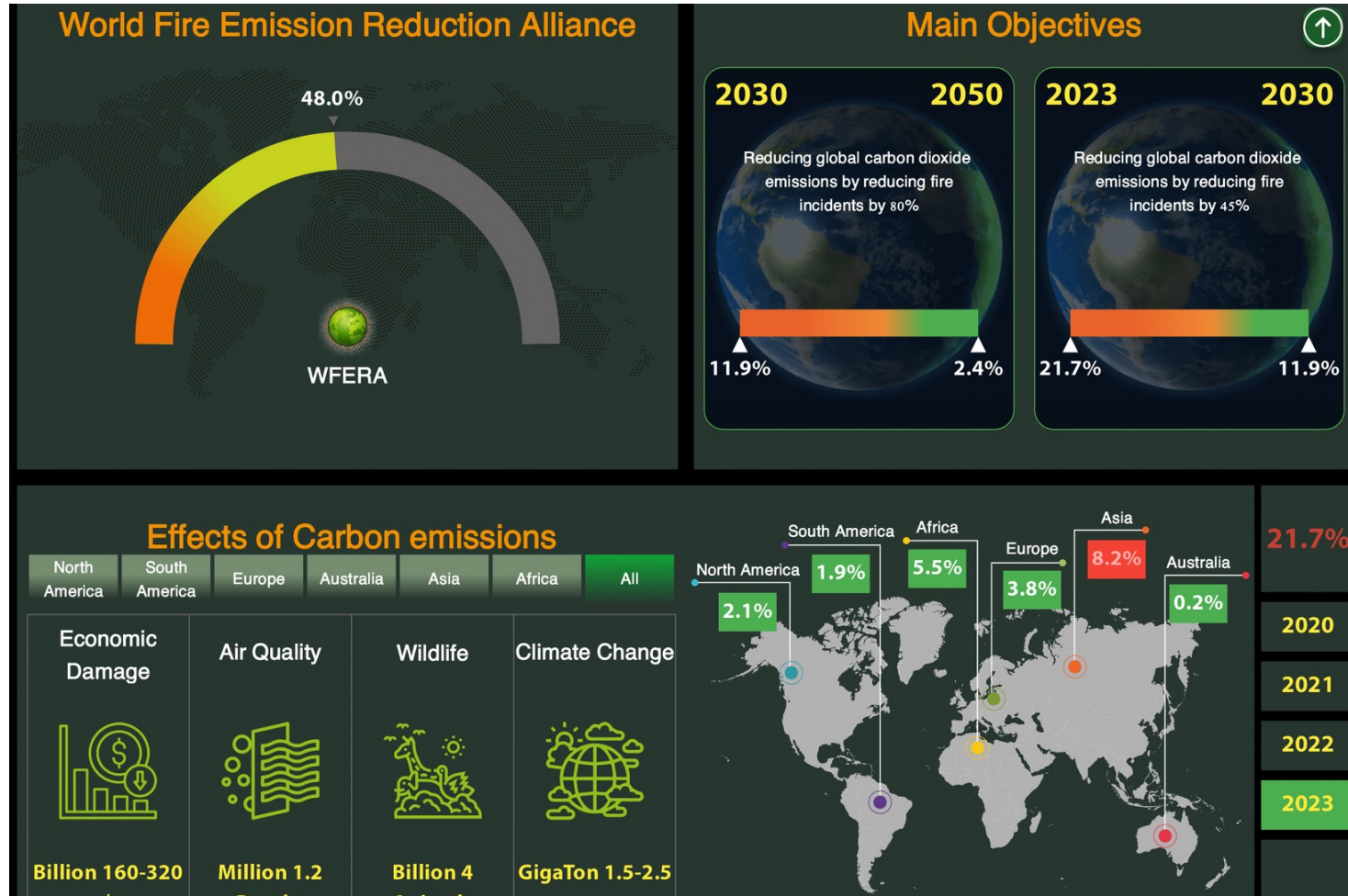
Financing

Raising sufficient financial resources, including support to less developed countries.

Introducing Eco Readiness

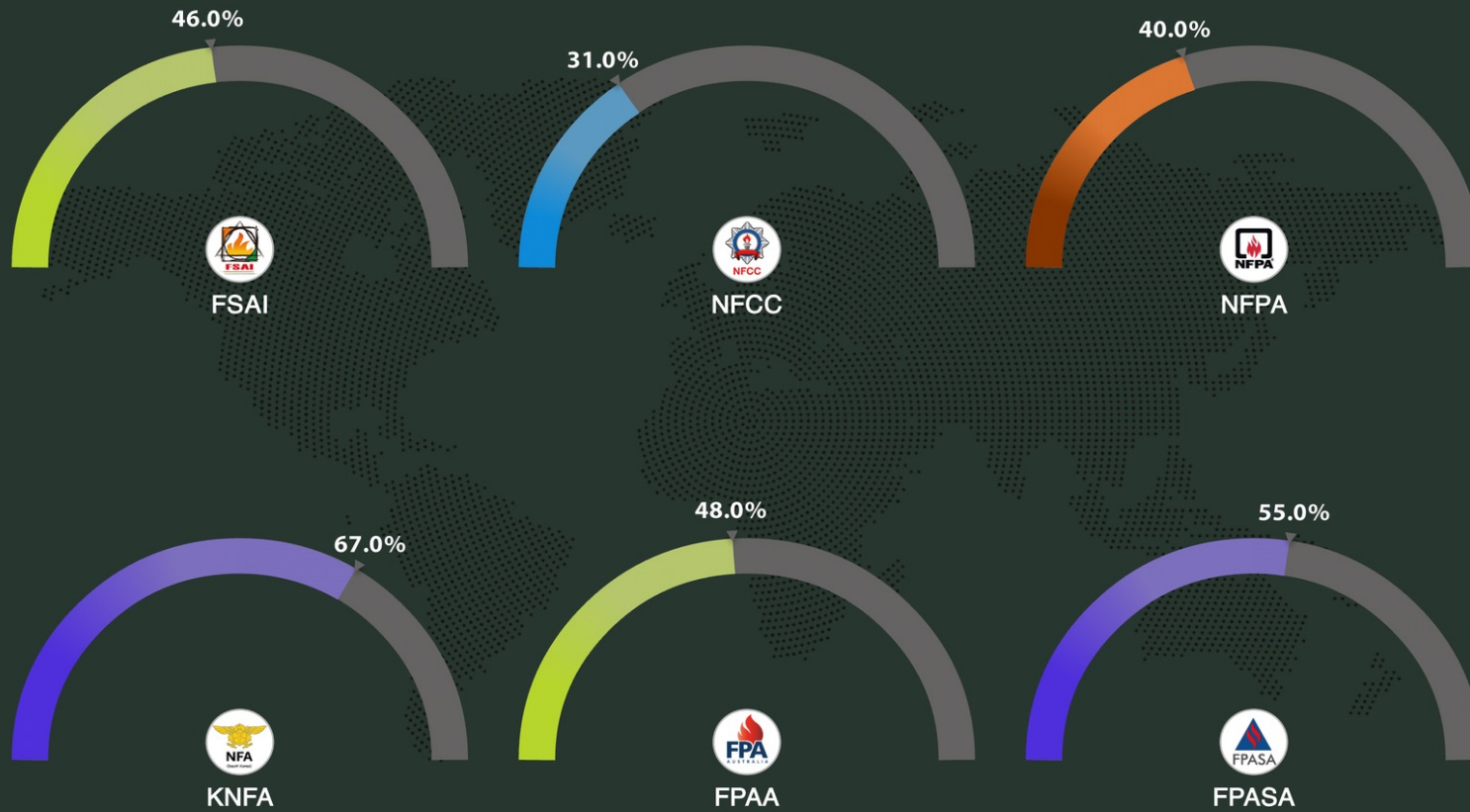
The main dashboard displays the total carbon emissions emitted by countries worldwide from fire incidents.

It also includes the impacts of carbon emissions on agriculture, air quality, and the economy.



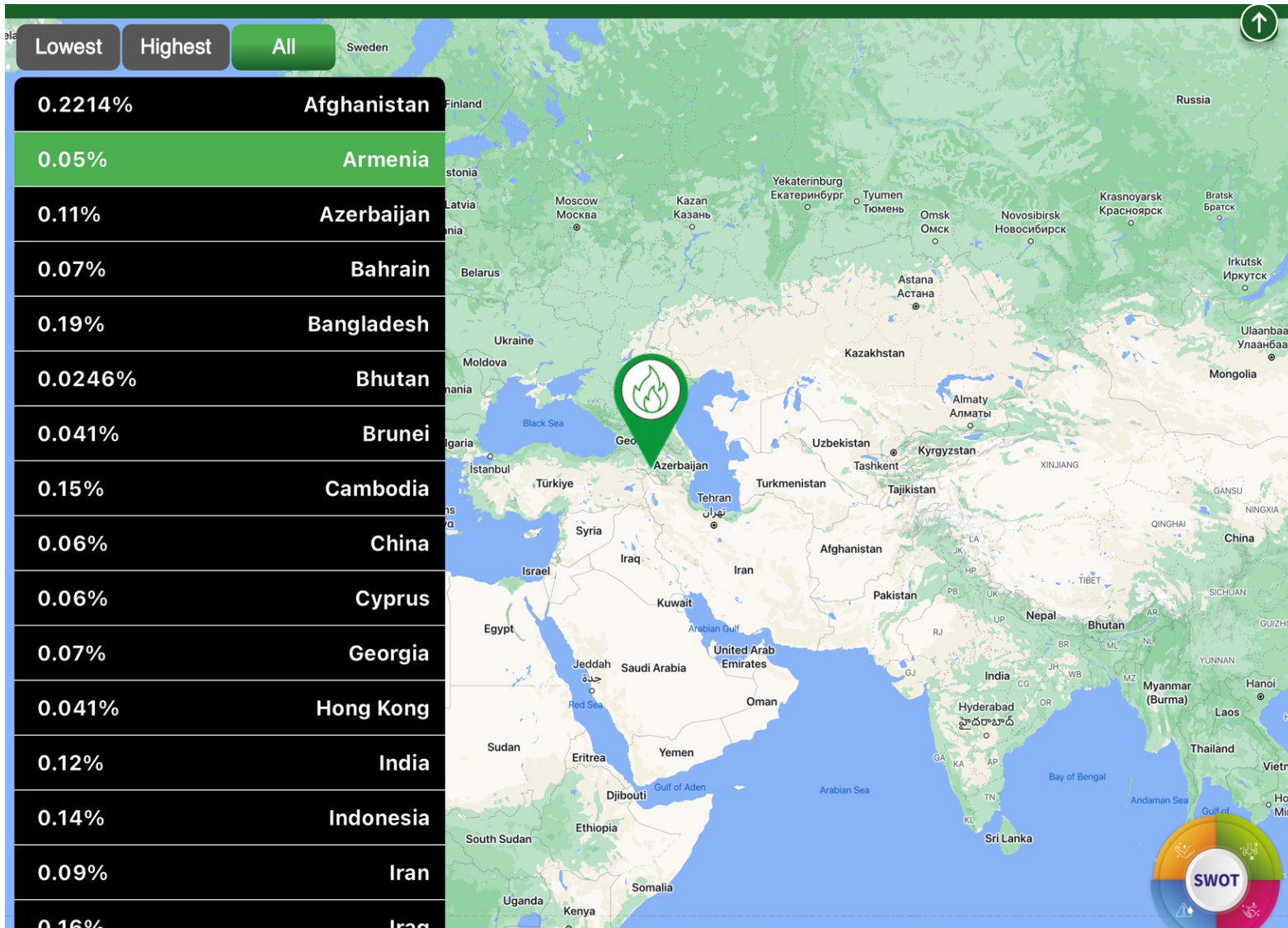
الاستعداد البيئي
ECO READINESS

World Fire Emission Reduction Alliance



KPIs of fire associations and their compliance with the goals of COP28 to reduce carbon emissions from fire incidents.





World map based on continents and decided by countries and their percentage of carbon emissions from fire incidents.

World Fire Emission Reduction Alliance Building



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Major Essa Almutawa

Head of Monitoring and
Inspection Department
Dubai Civil Defense





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The Flood Emergency in Germany 2021 Retrospective, Lessons Identified and the Way Ahead

Karl-Heinz Banse

President, German Fire Services Association – DFV

Dr. Christoph Weltecke

Vice President, German Fire Services Association – DFV

Dr. Benni Thiebes

Director, German Committee for Disaster Reduction – DKKV

Prof. Dr. Johann Georg Goldammer

Director, Global Fire Monitoring Center – GFMC

Natural Hazards and Disasters in Germany

Hazards

Germany is increasingly prone to hazards related to extreme weather and climate change

Major disasters

1962 storm surge – 315 fatalities

2003 heatwave – approx. 9000 fatalities

2003 and 2012 – major floods

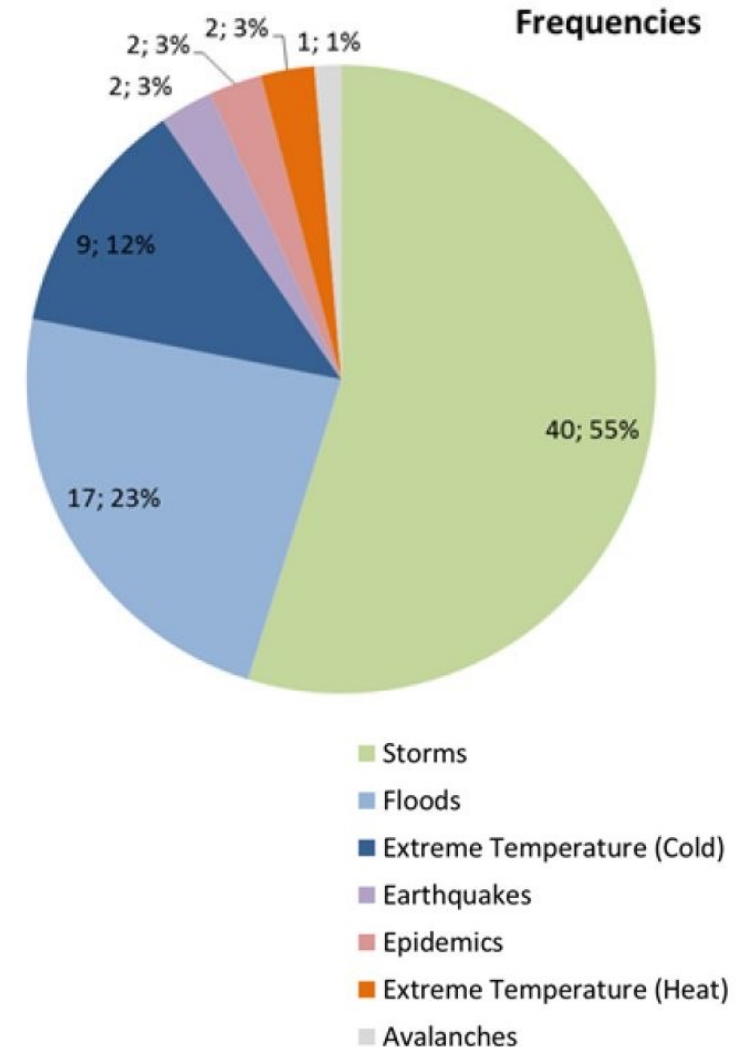
Civil protection and disaster control

Federal system

Disaster control → responsibility of States

Civil protection and defense → Federal government

Backbone: > 2 Mill. volunteers in Germany



2021 Flood Disaster

Slow moving and quasi-stationary low pressure
“Bernd”

Rainfall locally reaching 250 mm/day (9.8 in / day)

Massive rainfall between July 12/19, 2021

Mostly affected: Germany, Belgium, Netherlands,
Luxemburg

Deadliest water-related disaster in Germany since 60
years

➤ 196 fatalities

Massive infrastructure damage; costliest disaster in
Germany – € 33 billion

Hotspot: Ahr Valley



Effects of the flood



Crisis Management

- Emergency task force was not complete (volunteers were affected as well)
- District manager did not issue disaster alarm (currently court case)
- Communication was interrupted, digital radio failed
- Better management and exchange of information necessary

After the floods: Drought and wildfires

Increasing occurrence and duration of droughts and wildfires

Need for improving multi-hazard preparedness and response at landscape-level



International Engagement of Germany

Germany actively participates in regional European and international arrangements, e.g.:

- EU Civil Protection Mechanism
- INSARAG
- CTIF

Germany is host of the Global Fire Monitoring Center (GFMC) (since 1998), a contribution of Germany to the UNDRR and the Implementation of the Sendai Framework

Since 2023, GFMC is transitioning to the “Global Fire Management Hub” – hosted by the UN Food and Agriculture Organization (FAO), with support of UN Environment (UNEP) and UNDRR

Fire Services around the globe will become important partners!





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Thanks for your attention



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Climate Change: Impact on the Fire Service in the Philippines

FIRE DIRECTOR LOUIE S PURACAN,
CEO VI

Chief, Bureau of Fire Protection



PH AT THE RING OF FIRE

DAILY AVERAGE 20 Earthquakes

7.2^{Mag} Feared "BIG ONE"
based on MMEIRS JPN-PH Joint Study in 2014

ANNUAL AVERAGE 18-20 Typhoons

179 Forest Fires

16,433 Fire Incidents

5.8B Php
87M Estimated Fire Damages (USD)

20B Php
345M Estimated Damages from Natural Disasters (USD)

TOTAL 2023



PH AT THE RING OF FIRE

PACIFIC RING OF FIRE

Two ASEAN countries lie directly on the path of the ring of fire:
Indonesia and the Philippines



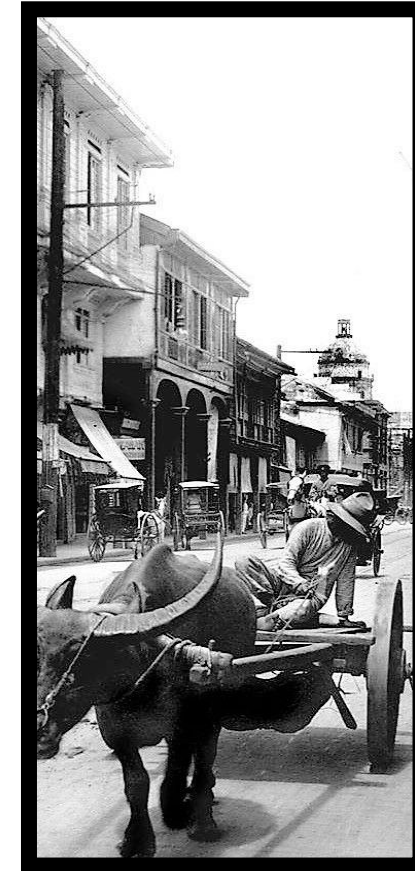
SOURCE: USGS.GOV



ONE ASEAN
ONE RESPONSE

Times have changed

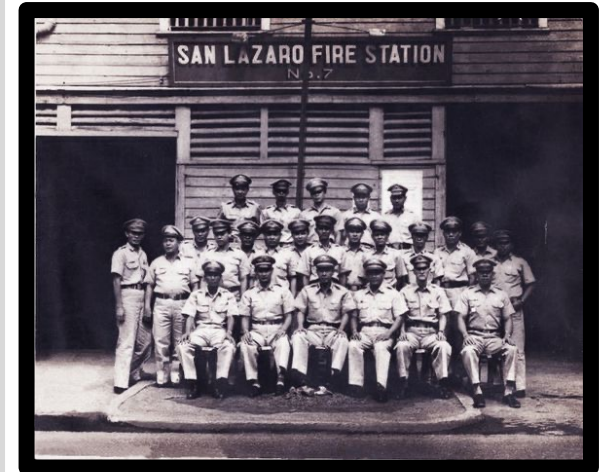
	YEAR	TYPHOONS	YEAR	TYPHOONS	YEAR	TYPHOONS	YEAR	TYPHOONS
1	1960	5	1980	0	2000	10	2020	11
2	1961	2	1981	0	2001	9	2021	10
3	1962	2	1982	0	2002	6	2022	18
4	1963	8	1983	0	2003	13	2023	11
5	1964	14	1984	4	2004	10		50
6	1965	2	1985	7	2005	7	2000- Present	265
7	1966	3	1986	7	2006	11		
8	1967	3	1987	8	2007	8		
9	1968	3	1988	10	2008	16		
10	1969	1	1989	10	2009	16		
11	1970	8	1990	8	2010	4		
12	1971	9	1991	10	2011	10		
13	1972	6	1992	4	2012	11		
14	1973	3	1993	15	2013	16		
15	1974	7	1994	19	2014	10		
16	1975	1	1995	11	2015	19		
17	1976	2	1996	9	2016	7		
18	1977	2	1997	5	2017	10		
19	1978	6	1998	7	2018	10		
20	1979	3	1999	8	2019	12		
	20 YEAR TOTAL	90	20 YEAR TOTAL	142	20 YEAR TOTAL	215		
	20 YEAR AVERAGE	5	20 YEAR AVERAGE	7	20 YEAR AVERAGE	11		



- Temperature - 1 degree higher from the 60s to 2000s
- **5 Average** Typhoons between 1960-1979
- 7 Average Typhoons between 1980-1999
- To **11 Average** Typhoons between 2000-2019.
- 4 destructive earthquakes recorded from the 60s - 70s to **22** from 2000 to present

THE SHIFT:

Government
Firefighters'
Expanded Roles in
the Philippines



Roles of Government Fire Fighters in the Philippines



Fire Suppression

BFP is the primary response agency for fire suppression, operating side by side with a fleet of auxiliary groups and volunteer brigades in the country

Fire Investigation

BFP with other law enforcement agencies like the national police & bureau of investigation work on fire case & arson

EMERGENCY MEDICAL SERVICE & BFP FAST

BFP together with the health units of local government units (LGUs) provide immediate medical response & ambulance service & motorcycle unit

HAZMAT & CBRNE RESPONSE

BFP with law enforcement agencies like the national police & armed forces collaborate on HAZMAT & CBRNE response

Fire Administration

BFP is governed by the National Headquarters with 17 administrative regions led by its respective Regional Directors & a National Fire Training Institute

Fire Safety & Enforcement

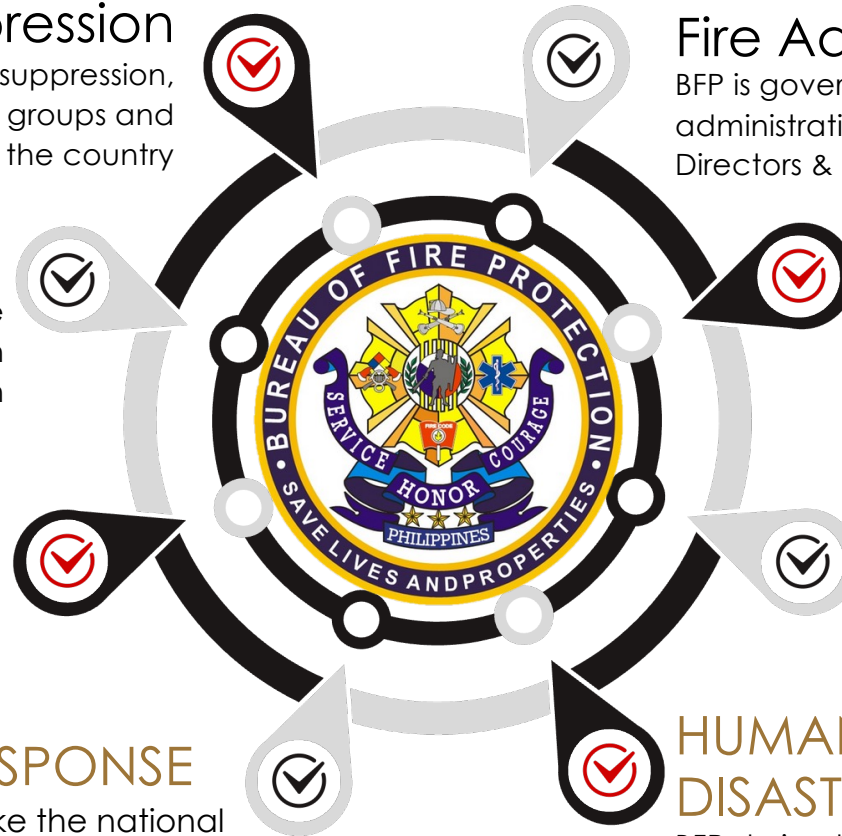
BFP is a regulatory agency in the issuance of Fire Safety Evaluation Certificate & Fire Safety Inspection Certificate on all buildings & facilities

TECHNICAL RESCUE

BFP provide immediate response for technical rescue such as vehicular accidents, collapsed structure & high angle rescue

HUMANITARIAN ASSISTANCE & DISASTER RESPONSE

BFP during times of disasters work with the LGUs and the Department of Social Welfare & Development for services such as packing of relief goods, water rationing, mobile kitchen & evacuation center management



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Challenges

GEOGRAPHY



Philippines is an Archipelago

Access to some areas are limited to available means of transportation

EQUIPMENT



Foreign Fire Equipment Market

Access to manufacturing, purchase, repair and highly technical maintenance rely on foreign market support



WAYS FORWARD

BFP's Capacity Building Efforts



Training & Equipment



International Cooperation



Policy Development

BFP to 2034



Highly Trained, Well Equipped

Thank you for listening! Maraming Salamat Po!



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