

FIRE SAFETY IN INDIA

— A BEYOND CARLTON PERSPECTIVE —



ACT BEFORE THE FIRE

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Preface

Fire safety in India is a critical yet often neglected issue. Each year, thousands of lives are lost, and communities suffer devastating losses due to preventable fire incidents. Despite advancements in technology and urban planning, fire safety does not receive the sustained attention it deserves. Beyond Carlton, an organisation dedicated to fire safety advocacy, has worked tirelessly for over a decade to raise awareness, influence policy, and push for systemic improvements in fire safety regulations. Over the years, we have engaged with policymakers, fire departments, and communities to address fire safety gaps, advocate for more vigorous enforcement of rules, and promote a culture of preparedness.

In the 15th year of Beyond Carlton's formation, we offer our "Perspective on the State of Fire Safety in India". The report written by our Trustees, Mr R.A.Venkitachalam & Gopal Devanahalli and our CEO, Cheryl Rebello, presents an assessment of the current fire safety landscape. It highlights key challenges, from regulatory shortcomings to infrastructural deficiencies, and proposes actionable solutions. A significant issue in India is the weak enforcement of fire safety laws and building codes. Fires often occur due to unauthorised construction, inadequate fire exits, poorly maintained fire-fighting equipment, and non-compliance with mandatory safety inspections. Since fire safety regulations vary across states, enforcement is inconsistent. Strengthening compliance measures, imposing stricter penalties, and ensuring transparent monitoring are crucial for lasting improvements.

Community involvement is vital. Our experience shows that while state and institutional mechanisms are necessary, fire safety must start at the grassroots level. This report underscores the importance of community-based fire safety programs, mandatory fire drills, and greater public engagement. Cities must integrate fire safety into urban planning, ensuring adequate fire stations, accessible water sources, and rapid response systems to minimise casualties.

With this report, Beyond Carlton aims to drive meaningful discussions and actions on fire safety in India. We urge policymakers, industry leaders, and citizens to take proactive fire prevention and preparedness steps. We hope that this report raises awareness and serves as a catalyst for long-term change, making fire safety a national priority.

Uday Vijayan
Managing Trustee & President
Beyond Carlton
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Introduction

Fire safety is a critical yet often overlooked aspect of public safety in India. The increasing frequency of fire-related incidents, resulting in significant loss of life and property, underscores the urgent need for comprehensive fire safety measures. This Beyond Carlton Perspective aims to shed light on the current state of Fire Safety in India, highlighting the challenges and proposing actionable solutions to enhance fire prevention and response mechanisms.



Background of Beyond Carlton and Its Mission

Beyond Carlton is India's first citizen-led initiative focused on fire safety. Established in the aftermath of the tragic Carlton Towers fire in Bengaluru on 23rd February 2010, which claimed nine lives and injured many others, Beyond Carlton was born out of the collective resolve of survivors and the families affected by the tragedy. The organisation aims to raise awareness about fire safety, advocate for stringent fire safety regulations, and hold authorities accountable for lapses in fire safety measures. Over the years, Beyond Carlton has been instrumental in driving policy changes, conducting public awareness campaigns, and collaborating with various stakeholders to promote a culture of fire safety in India.





Beyond Carlton's Perspective on Fire Safety in India

Over the last 15 years, Beyond Carlton has closely observed fire safety and preparedness in India, gaining a unique perspective as an organisation dedicated to improving the fire safety environment. Using experiential insights and available data, the Beyond Carlton Perspective on Fire Safety in India examines the country's multiple dimensions of fire safety.



India's rapid urbanisation and industrialisation have led to the proliferation of high-rise buildings, commercial complexes, and industrial establishments. While these developments signify economic progress, they also pose significant fire hazards if not managed with adequate safety measures. According to the National Crime Records Bureau (NCRB), fire accidents have been a persistent cause of accidental deaths in the country. Between 2010 and 2019, approximately 1,85,383 people lost their lives due to fire accidents, averaging 65 deaths per day.¹ These statistics highlight the critical importance of implementing robust fire safety protocols to safeguard lives and property.

While rapid urbanisation remains a key factor, it is critical to go beyond this and consider the evolving patterns of urban growth and the supply-side challenges that accompany them. Structural changes in buildings, the utilisation of diverse materials, development in healthcare infrastructure, electric vehicles and charging stations, waste disposal centres, and the increased footfall in public spaces—such as gaming zones, tuition centres, restaurants, and transit hubs—are all contributing to an increase in fire risk.



The Need for a Holistic Approach

Despite efforts to improve fire safety infrastructure at the state level, significant gaps persist in governance, coordination, fire stations, personnel, and equipment. Given these challenges, the role of communities in fire preparedness and resilience has become vital. However, Beyond Carlton has observed that community awareness and preparedness remain inadequate. While high-profile fire incidents briefly garner media attention, systemic improvements are often lacking in the aftermath.

This report reviews available data, the regulatory ecosystem, infrastructure investments, and public education efforts to present recommendations on fire safety in India.

Recommendations

-  **Decentralizing Fire Safety:** It is critical to empower communities with preparedness tools, including fire safety assessments, online checklists, and scheduled safety drills for residential areas, hospitals, and schools. Organisational structures in community organisations like Apartment Owners Associations should include a formal role in Disaster Management and Fire Safety.
-  **Integrated City Planning:** Every city should have a rolling 5-year Blueprint for Fire Safety (like the Bengaluru Blueprint²). These blueprints should consider the city's stakeholders and include fire safety master plans to ensure adequate fire stations, water sources, and infrastructure are embedded in urban planning frameworks.

-  **Multi-Stakeholder Engagement & Accountability:** It is important to strengthen the accountability of state bodies, private institutions, hospitals, schools, and hazardous industries while involving residential bodies in mandatory safety training and drills.
-  **Strengthening Compliance and Enforcement:** One of the critical issues in fire safety in India is the poor enforcement of laws and regulations. Many fires result from violations such as lack of proper fire exits, inadequate fire-fighting equipment, unauthorised construction, and failure to renew mandatory safety clearances. Fire safety regulations vary by state, leading to inconsistent compliance. To address this, states must implement stricter enforcement measures, conduct regular inspections, and hold violators accountable with significant penalties. Transparent reporting, digitised compliance tracking, and public disclosure of violations are necessary to ensure accountability and prioritise fire safety.
-  **Digitization of Data:** Tackling the lack of comprehensive fire safety data by developing dashboards for public engagement, rapid response, and forensic fire investigations.
-  **Allied Care:** While the public's attention is often focused on the fatalities after a fire accident, another challenge is the treatment and rehabilitation of survivors. In India, there is a shortage of burn care infrastructure. Every state must make a concerted effort to enhance burn care infrastructure and rehabilitation services to support victims of fire accidents.

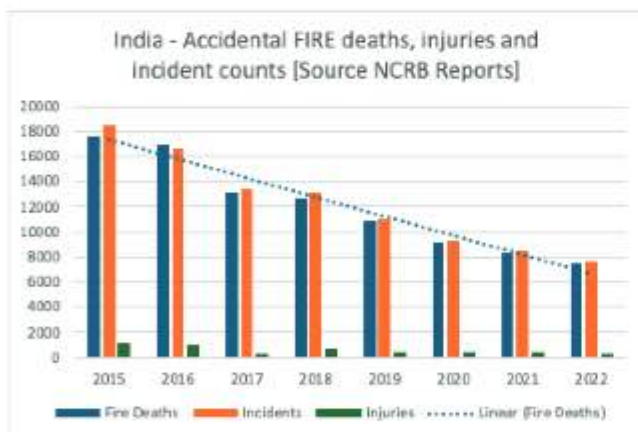
This report aims to address these critical areas and drive actionable improvements in fire safety across India, fostering a culture of preparedness, accountability, and resilience.

Fire Safety Statistics

This section delves into statistical data on fire incidents, explores regional and sectoral variations, and examines the key causes contributing to fire-related accidents in the country. The data used here is sourced primarily from the National Crime Records Bureau (NCRB) Reports that are published each year. The reports are available up to 2022.³



A. Trendline for 'Deaths caused by Fires' in India, since Year 2015



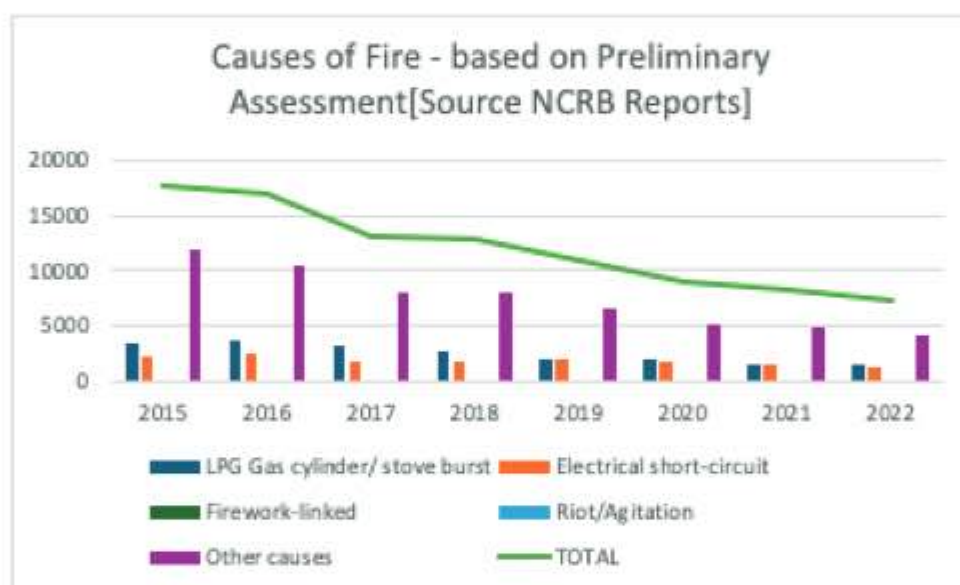
Comments

-  Fire accidents have been a cause of concern in India, leading to substantial loss of life and property. According to the National Crime Records Bureau (NCRB), the number of fire accidents has shown a sharp decline over the past few decades. In 1996, there were 22,788 reported fire accidents, which peaked at 27,976 in 1999. Between 1999 and 2014, the annual average remained around 23,000. However, since 2014, a significant decline has been observed, with only 7,566 fire accidents recorded in 2022.
-  Despite the decrease in incidents, fire-related fatalities remain at high levels though less compared to previous years- In 2022 there were 7,435 fatalities due to fire accidents, compared to 27,561 in 1996. On average, women comprised 60% of all fire-related fatalities, significantly higher than their share in other types of accidental deaths.
-  While the trend of Total Deaths and Deaths due to Road Accidents has been on the increase between 2015 and 2022, in the case of Fire Accidents, the death numbers show a very significant decline. While this is good news on the face of it, there is a clear need to double-check on the data collection process as well as assumptions made. Triangulation using other data sources like – ‘burn registry’ / ‘hospital data’ / ‘Fire Department Call Center Data’ – will help us confirm the progress that the numbers indicate.
-  The number of Incidents seems to have come down in a similar way – needs to be correlated with ‘Call Center Data’.
-  The number of Injuries reported seems to be ‘extremely low’ compared to the number of deaths, again pointing to the need to verify the reporting methodology.



These statistics highlight a downward trend in fire incidents and deaths, but the steep decline raises questions about data accuracy and reporting methodologies. Experts suggest cross-verifying with alternative sources such as hospital records, fire department call logs and burn registries to ensure the reliability of the reported data.

B. The indications from preliminary assessment of the 'causes of fire.'



Comments



Understanding the primary causes of fire accidents is essential for developing targeted prevention strategies. According to NCRB data, the top two causes of fire-related deaths in India are

- (a) Cooking Gas-related
- (b) Electrical Short circuits.

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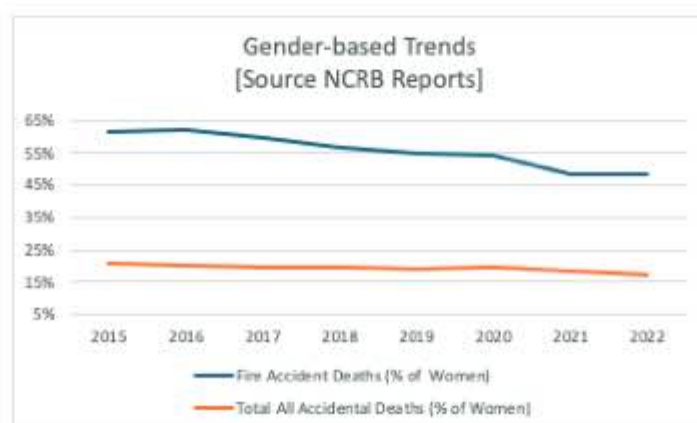
While the number of LPG connections has doubled from 14.52 crores in 2014 to 32.83 crores in 2024, fire deaths from LPG-related incidents have decreased by over 50%. While there have been serious efforts by the Distribution Cos to create awareness of Fire Safety [The 1906 number initiative], this reduction deserves closer scrutiny.
- 

Significantly, electrical short circuits remain a major cause, highlighting the need for national-level safety practices and collaboration between fire safety departments and electricity providers. There are no widely adopted 'safety practices' that are implemented nationally – that can be attributed to the reduction in numbers here. This area again needs intense study. Also required is close collaboration between the Fire Safety Departments and the Electrical Discoms to make real progress here.
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More than 50 % of the causes are categorised as 'Other Causes', which suggests a need for better forensic capabilities in investigating them.
- 

Also to be studied are why 'fire-related numbers' have dropped by more than 60% over an 8-year period, while all other accidental death numbers have gone up. A 'non-uniform reclassification' of the raw data may have caused this.

C. Gender-influenced patterns



Comments

-  When we examine the Cooking Gas-related death count, we see that the overall numbers have declined drastically over the past eight years despite a massive surge in connections over the same period. This is excellent news, but we need to check if the data capture process has been robust enough.
-  When we look at the 'gender split' of Fire-related deaths, this has tended downwards from 61.2% in 2015 to 48.5% in 2022.
-  However, Fire-related deaths disproportionately affect women. In 2022, women accounted for 48.5% of fire-related deaths, compared to 17.4% of all accidental deaths. This may be due to household fire incidents linked to cooking gas explosions, indicating the need for enhanced fire safety measures in kitchens and home environments.

D. Location of Incident – what does the available data say?

Location of Incident – Trends observed [Source NCRB Reports]							
Place where Fire started	2016	2017	2018	2019	2020	2021	2022
Residential/ dwelling buildings	8478	7614	7208	6329	5248	4240	3979
Commercial buildings	459	382	284	330	163	233	219
Factories - Others	168	216	177	177	107	67	88
Automobiles	369	277	438	152	326	194	86
Govt buildings	41	10	18	54	57	29	38
Factory/manufacturing incl combustible materials, crackers etc.	306	72	71	33	13	96	66
School buildings	19	3	7	28	5	3	1
Trains	6	8	9	7	5	1	1
Mines	28	26	14	2	0	7	2
Others	7026	4551	4522	3803	3186	3478	2955



Comments

 A very significant % of fire incidents resulting in loss of life occur in residential buildings. The residential buildings account for nearly half of all fire accidents. In 2022, out of 7,566 fire accidents, 3,979 occurred in residential dwellings, followed by 219 in commercial buildings.

 The fire risk can only increase with increased urbanisation, high-rise building construction, energy use, and population densities. Therefore, our preventive and response measures need to be suitably designed. Residential fire safety measures must be strengthened, including fire alarms, electrical maintenance, and public awareness campaigns.

 A similar focus needs to be placed on commercial buildings and factories.

 Though the number of Automobile-related fires may be trending down, they need special attention given the increased use of Electric Vehicles. The charging and servicing infrastructure needs compliance with codes and standards and oversight.

 India has been witnessing an increased number of Hospital incidents. Safety-critical environments like Hospitals, Schools, and public places need separate tracking of incident numbers and causes.

E. These are the states that contribute majorly to fire-related deaths.

States with high incidence of Fire Incidents / Deaths [Source NCRB Reports]							
2019		2018		2017		2016	
MP	1467	MP	1986	Maharashtra	2230	Maharashtra	3069
Maharashtra	1456	Maharashtra	1896	MP	1812	MP	2368
Odisha	971	Gujarat	1194	Gujarat	1314	Gujarat	1833
Karnataka	854	Chhattisgarh	976	Karnataka	1007	UP	1356
Gujarat	763	Odisha	897	Tamil Nadu	936	Karnataka	1271

Comments

-  The incidence of fire accidents in India exhibits significant regional and sectoral variations. Between 2014 and 2022, five states—Madhya Pradesh, Maharashtra, Gujarat, Karnataka, and Tamil Nadu—accounted for over 75% of all fire accidents. Madhya Pradesh led with an average of 23%, followed by Maharashtra (19%), Gujarat (13%), Karnataka (12%), and Tamil Nadu (10%).⁴
-  Over the past four years, the large states of Maharashtra, Gujarat, and MP have all landed in the Top 5 list.
-  Several factors contribute to this concentration, including industrialisation, urbanisation, and population density in these states. Maharashtra and Gujarat, being highly industrialised, have a higher risk of industrial and commercial fire incidents.
-  Fire and emergency Services are a state subject in India, and the states and corporations are responsible for ensuring citizens' safety. Thus, the Director General's coordinating role is extremely important in ensuring that good practices and lessons are shared.

F. Total FIRE-related Accidental Deaths – Age Distribution [Table 1.8]

Age Distribution – Fire related deaths												
[Source NCRB Reports]												
	Below 14		14 – 18		18 – 30		30 – 45		45 – 60		Abv 60	
	M	F	M	F	M	F	M	F	M	F	M	F
2022	172	159	197	161	1226	950	1257	990	605	602	373	743
2021	223	200	464	266	1295	1113	1247	1088	678	655	408	711

Comments

 The age bracket of 18 – 45 sees a very significant burden of ‘lives lost’, given their increased participation in economic activities.

Conclusion

While fire-related deaths and incidents have declined, questions remain about data accuracy, classification practices, and underlying safety improvements. Key areas requiring urgent attention include:

-  Digitization of Data Collection can help improve the accuracy and comparability of captured data.
-  Strengthening fire forensics to improve cause identification and data accuracy.
-  Enhancing residential fire safety with strict building codes and public awareness programs.
-  Addressing electrical fire hazards through better collaboration with electricity providers.
-  Developing gender-sensitive fire safety strategies targeting household fire prevention.

 Ensuring safety in emerging areas, such as EV charging stations and high-rise buildings.

A robust fire safety framework, backed by accurate data and proactive policies, is essential to safeguarding lives and property in India's rapidly urbanising landscape. To address the lack of comprehensive fire safety data, dashboards for public engagement, rapid response, and forensic fire investigations should be developed.



Key Causes of Fires

in India

Understanding the primary causes of fire accidents is essential for developing targeted prevention strategies. Fires in India result from a combination of human negligence, infrastructural deficiencies, poor enforcement of safety norms, and climatic factors. The major causes of fire incidents in the country can be categorised as follows:



1. Electrical Short Circuits

Overview:

Electrical fires are among the most common causes of fires in India, particularly in residential, commercial, and industrial buildings. Overloaded circuits, faulty wiring, and poor-quality electrical installations contribute significantly to fire outbreaks.



Common Causes of Electrical Fires

-  **Overloading of circuits:** The use of multiple high-powered appliances on a single circuit can cause overheating and sparks, which can lead to fire.
-  **Poor-quality wiring:** Many buildings in India, especially older ones, have outdated or substandard wiring that cannot handle increased electrical loads.
-  **Improper earthing:** Inadequate grounding can lead to electrical faults, causing sparks and fire.
-  **Defective appliances:** Cheap, low-quality electrical appliances and counterfeit wiring products contribute to short circuits.
-  **Lack of regular maintenance:** Many buildings do not undergo routine electrical inspections, leading to unnoticed wear and tear.

High-Risk Areas for Electrical Fires

-  **High-rise residential apartments:** Overloaded power strips, illegal wiring modifications, and lack of proper circuit breakers lead to frequent fires.
-  **Commercial buildings and offices:** Poor maintenance of air-conditioning systems, UPS systems, and electrical panels increases fire risk.
-  **Industrial units:** Factories with heavy machinery often experience electrical fires due to overheating, dust accumulation, and improper maintenance.
-  **Hospitals and healthcare facilities:** Medical equipment, oxygen cylinders, and electrical failures have caused deadly fires in Indian hospitals.

New Life Hospital Fire, Madhya Pradesh (2022) – Fire caused by an unsupervised, overheating electric generator led to eight fatalities

2. Gas Cylinder and LPG Leaks



Overview:

Liquefied Petroleum Gas (LPG) is the primary cooking fuel in Indian households, and leaks often cause devastating fires and explosions.

Causes of Gas-Related Fires

-  **Faulty gas cylinders and regulators:** Poor-quality gas regulators and leaking cylinder valves can lead to gas leaks.
-  **Improper gas pipeline installations:** Many old buildings have corroded or poorly maintained gas pipelines, increasing fire risk.
-  **Lack of awareness about handling gas leaks:** Many individuals are unaware of safety procedures when detecting gas leaks, such as avoiding electrical switches or flames.
-  **Unsafe storage of LPG cylinders:** Cylinders stored in confined, poorly ventilated spaces increase the risk of explosion.

High-Risk Areas for Gas-Related Fires

-  Households in urban slums: Poor ventilation and makeshift kitchens increase fire hazards.
-  Hotels and restaurants: Bulk LPG storage without proper leak detection systems is a major risk factor.
-  Factories and chemical plants: Industrial gas storage facilities are vulnerable to fire accidents due to leaks.

Case Study: Faridabad Cylinder Blast (2024)⁵

An explosion was caused by an LPG cylinder in a village leading to 4 deaths, underscoring the need for stricter safety regulations and awareness campaigns.

3. Industrial and Chemical Fires

Overview:

Industrial fires in India are common due to the presence of flammable chemicals, improper storage, and lack of safety training among workers.



Causes of Industrial Fires

-  **Combustible materials:** Factories handling textiles, plastics, and chemicals are prone to fire outbreaks.
-  **Unsafe storage of chemicals:** Inadequate separation of flammable materials can lead to large-scale explosions.
-  **Lack of fire suppression systems:** Many factories do not have automated fire suppression systems like sprinklers or gas-based suppression systems.
-  **Poor housekeeping and maintenance:** Can easily ignite accumulated dust, grease, and debris, causing a rapid fire spread.

High-Risk Industries

-  Chemical and pharmaceutical factories
-  Oil refineries and petroleum storage units
-  Textile and garment industries
-  Paper and wood processing units

Case Study: Anaj Mandi Delhi Factory Fire (2019)⁶

An “illegal” factory fire claimed 45 lives in Anaj Mandi, Delhi. Overcrowded premises, use of highly combustible material and lack of industrial power connection were the causes of the fire and the fatalities.

4. Residential and Slum Fires



Overview:

India has many informal settlements with virtually non-existent fire safety measures. Slum fires spread rapidly due to densely packed homes made of combustible materials.

Causes of Residential Fires

-  **Use of kerosene stoves and open flames:** Many low-income households rely on open flames for cooking, which increases the fire risk.
-  **Flammable building materials:** Thatched roofs, wooden structures, and plastic sheets used in informal housing are highly combustible.
-  **Narrow lanes and lack of access for firefighters:** Congested slum areas make it difficult for fire engines to reach fire-affected locations.

High-Risk Locations

 Dharavi, Mumbai (Asia's largest slum)

 Anand Parbat, Delhi

 Kolkata's slum clusters

 Bangalore's informal settlements

Case Study: Delhi Slum Fire (2022)⁷

Seven lives were lost and multiple shanties destroyed, highlighting the vulnerability of informal settlements and the urgent need for fire-resistant housing materials.

5. Fireworks and Festive Fires

Overview:

Due to the extensive use of fireworks and decorative lighting, India witnesses an increase in fire incidents during festivals such as Diwali and wedding celebrations.



Causes of Fireworks-Related Fires

-  **Unregulated firecracker factories:** Illegal firework manufacturing units often lack proper safety measures, leading to deadly explosions.
-  **Improper storage of fireworks:** Storing copious quantities of fireworks in residential areas poses a significant fire hazard.
-  **Negligence in handling firecrackers:** Many fires occur due to careless handling of firecrackers, often involving children.

Case Study: Harda, Madhya Pradesh Firecracker Factory Explosion (2024)⁸

A fire in a firecracker factory in Madhya Pradesh Nadu resulted in 11 deaths and multiple injuries. India has seen several such accidents over the years necessitating awareness programs and stronger compliance.

6. Hospital and Healthcare Facility Fires



Overview:

Hospital fires are hazardous because patients often cannot evacuate quickly. Electrical faults, oxygen cylinder explosions, and overloaded ICU equipment usually cause these fires. In 2025, Beyond Carlton organised a Panel Discussion on Safety in Indian Healthcare.⁹ Incidents in the last four years have led to over 125 fatalities.

Incident	State	Date	Fatalities	Cause
City Hospital, Dindigul	Tamil Nadu	12-Dec-24	6	Electrical Short Circuit
Maharani Laxmi Bai Medical College, NICU, Jhansi	Uttar Pradesh	15-Nov-24	12	Electric short-circuit inside the oxygen concentrator
Baby Care Newborn Hospital, Vivek Vihar	Delhi	25-May-24	7	Electrical Fault
RC Hazra Memorial, Dhanbad	Jharkhand	28-Jan-23	5	Short Circuit
New Life Hospital, Jabalpur	Madhya Pradesh	01-Aug-22	8	Short Circuit
Civil Hospital, Ahmednagar	Maharashtra	06-Nov-21	11	ICU - Short Circuit
Patel Welfare Hospital, Bharuch	Gujarat	01-May-21	18	Spark in the electric socket of a ventilator in ICU-1 ward
Vijay Vallabh Hospital, Virar	Maharashtra	23-Apr-21	15	Blast in the air-conditioner
Well Treat Multispeciality Hospital, Wadi	Maharashtra	01-Apr-21	8	Short circuit in the AC in ICU ward
Sunrise Hospital, Dreams Mall, Bhandup	Maharashtra	16-Mar-21	11	
District General Hospital, NICU, Bhandara	Maharashtra	09-Jan-21	10	Short circuit in radiant warmer's control panel in SNCU unit (sick newborn care unit)
Uday Shivanand hospital, Rajkot	Gujarat	26-Nov-20	5	Short circuit in ventilator in ICU ward
Ramesh Hospital, Covid Care Center, Vijayawada	Andhra Pradesh	09-Aug-20	10	Electrical Short Circuit
Shrey Hospital, Ahmedabad	Gujarat	06-Aug-20	8	Short circuit in the ICU unit

Causes of Hospital Fires

-  **Electrical short circuits:** Intensive care units (ICUs) have high-power medical equipment, increasing the likelihood of electrical failures.
-  **Improper storage of oxygen cylinders:** Oxygen-enriched environments increase the risk of rapid fire spread.
-  **Lack of fire exits and evacuation plans:** Many hospitals do not comply with fire safety norms, making evacuation difficult.

Case Study: Vijay Vallabh Hospital Fire, Maharashtra (2021)¹⁰

A fire in the ICU of a hospital in Maharashtra led to 13 tragic deaths. The cause was a spark from an overworked AC.

7. Market and Commercial Establishment Fires

Overview:

Many markets and shopping complexes in India operate with inadequate fire safety measures. Due to space constraints and a lack of enforcement, they often ignore fire norms.



Common Causes of Market Fires

-  **Illegal electrical connections:** Many market vendors tap electricity illegally, leading to overloaded circuits.
-  **Blocked emergency exits:** Narrow pathways filled with goods make evacuation difficult in case of fire.
-  **Lack of firefighting equipment:** Many commercial establishments do not have fire extinguishers or sprinkler systems.

Case Study: Kolkata's Bagree Market Fire (2018)¹¹

A fire in the wholesale market burned for over 60 hours due to a lack of access for firefighters and inadequate fire safety systems.

Conclusion

Fires in India are caused by a mix of human negligence, infrastructural shortcomings, and lack of awareness. Addressing these issues requires stringent enforcement of fire safety laws, widespread public education, and investment in fire-resistant infrastructure. By understanding these key causes, policymakers can implement targeted interventions to reduce India's fire-related casualties and economic losses.

Regulatory and

Policy Framework

A robust regulatory and policy framework is essential for ensuring fire safety across various sectors in India. This section provides an overview of existing fire safety laws, recent policy developments, and an analysis of gaps and inconsistencies within the current framework.

India's fire safety regulations are primarily governed by the National Building Code (NBC) and various State Fire Services Acts.



National Building Code (NBC) 2016

The NBC, published by the Bureau of Indian Standards (BIS), serves as a comprehensive guideline for building construction and fire safety. Part 4 of the NBC specifically deals with fire and life safety, covering aspects such as building classification, fire prevention, life safety, and fire protection. It outlines fire zone requirements, construction restrictions based on occupancy, and fire detection and suppression systems specifications. The NBC is recommendatory in nature, but states are encouraged to incorporate its provisions into their local building bylaws to make them mandatory.¹²

State Fire Services Acts

Fire services are a state subject under the Indian Constitution, leading to the enactment of individual State Fire Services Acts. These acts provide a legal framework for fire prevention, safety measures, and the establishment of fire brigades. They mandate obtaining clearances from the fire department for buildings or occupancies considered prone to fire risks. However, the stringency and enforcement of these acts vary across states, leading to inconsistencies in fire safety standards nationwide.¹³

Recent Policy Developments and Reforms

In recent years, there have been efforts to strengthen fire safety regulations and their enforcement:

-  **Model Building Bye-Laws 2016:** Issued by the Ministry of Housing and Urban Affairs, these bye-laws guide states and Union Territories in enacting building regulations, incorporating fire protection and safety norms. They emphasize integrating NBC guidelines into local laws to ensure uniformity in safety standards.¹⁴ However, very few States have incorporated fire safety standards into their Fire Safety Rules.
-  **Smart Cities Mission:** The Smart Cities initiative focuses on developing resilient infrastructure with integrated emergency response systems, including advanced fire safety measures. This includes adopting smart technologies for fire detection, monitoring, and response.

Analysis of Gaps and Inconsistencies

Despite the existing regulations, several challenges persist:

-  **Non-Uniform Adoption:** The recommendatory nature of the NBC leads to varied adoption across states, resulting in inconsistent fire safety standards. Some states have not fully integrated NBC guidelines into their local bylaws, leading to gaps in safety measures.
-  **Enforcement Challenges:** Even where regulations exist, enforcement is often lax due to inadequate resources, lack of trained personnel, and bureaucratic inefficiencies. This results in non-compliance with safety norms, especially in unauthorised constructions.
-  **Outdated Provisions:** Some State Fire Services Acts have not been updated to keep pace with rapid urbanisation and technological advancements, rendering them inadequate to address contemporary fire safety challenges.



Lack of Public Awareness: There is a general lack of awareness among the public and building occupants regarding fire safety regulations and the importance of compliance, leading to negligence and increased risk.

Addressing these gaps requires a concerted effort to standardise regulations, strengthen enforcement mechanisms, and enhance public awareness to create a safer built environment. States must implement stricter enforcement measures, conduct regular inspections, and penalise violators severely. Transparent reporting, digitised compliance tracking, and public disclosure of violations are necessary to ensure accountability and prioritise fire safety.



Fire Safety

Infrastructure and Preparedness

Effective fire safety management hinges on the availability and adequacy of infrastructure and trained personnel. This section assesses the current state of fire stations, firefighting equipment, training programs, and emergency response systems in India.



Availability of Fire Stations and Personnel

Sl.No	Name of the State/ UT	Fire Station (In Number)
1	Andaman & Nicobar Islands	24
2	Andhra Pradesh	251
3	Arunachal Pradesh	19
4	Assam	124
5	Bihar	107
6	Chandigarh	7
7	Chhattisgarh	33
8	Dadra & Nagar Haveli*	1
9	Daman & Diu*	3
10	Delhi	53
11	Goa	15
12	Gujarat	183
13	Haryana	82
14	Himachal Pradesh	25
15	Jammu & Kashmir#	175
16	Jharkhand	33
17	Karnataka	195
18	Kerala	100
19	Lakshadweep	4
20	Madhya Pradesh	292

Sl.No	Name of the State/ UT	Fire Station (In Number)
21	Maharashtra	157
22	Manipur	16
23	Meghalaya	36
24	Mizoram	12
25	Nagaland	13
26	Odisha	340
27	Puducherry	13
28	Punjab	48
29	Rajasthan	126
30	Sikkim	10
31	Tamil Nadu	315
32	Telangana	95
33	Tripura	40
34	Uttar Pradesh	253
35	Uttarakhand	35
36	West Bengal	142

Number of Available Fire Stations in States/UTs as on 31.12.2018

*Now, Dadra and Nagar Haveli & Daman and Diu is the Union Territory constituted through the merger of two former UTs of Dadra & Nagar Haveli and Daman & Diu.
Former State of Jammu & Kashmir is now constituted into two UTs, viz. Jammu & Kashmir and Ladakh.

The distribution of fire stations and personnel across India is uneven, often failing to meet the recommended norms. According to the Standing Fire Advisory Council (SFAC) norms, one fire station should be for every 10 square kilometres in urban areas and one for every 50 square kilometres in rural areas. However, many cities and towns fall short of these standards, leading to delayed response times during emergencies.

Moreover, the sanctioned strength of fire service personnel is often not met, resulting in understaffed stations. This shortage hampers the effectiveness of fire services, especially during large-scale incidents requiring a significant workforce. As can be seen from the data below, according to the report by RMSI, the number of Fire personnel in India is only 10% of what it should be.

Sl.No	Name of the State/ UT	Available Manpower	Number of staff required (as per RMSI Report 2012)	%age
1	Andaman & Nicobar Islands	522	1023	51%
2	Andhra Pradesh	2704	20063	13%
3	Arunachal Pradesh	344	2905	12%
4	Assam	2382	15969	15%
5	Bihar	1184	45712	3%
6	Chandigarh	238	672	35%
7	Chhattisgarh	148	3893	4%
8	Dadra & Nagar Haveli*	19	546	3%
9	Daman & Diu*	104	540	19%
10	Delhi	1632	6052	27%
11	Goa	776	896	87%
12	Gujarat	1447	34240	4%
13	Haryana	574	14388	4%
14	Himachal Pradesh	335	4942	7%
15	Jammu & Kashmir#	2348	7231	32%
16	Jharkhand	402	4645	9%
17	Karnataka	4329	28736	15%
18	Kerala	2427	15292	16%
19	Lakshadweep	82	422	19%
20	Madhya Pradesh	964	40327	2%

Total number of Fire services staff as on 31.12.2018 vis-à-vis the requirement of staff as per RMSI report, 2012

*Now, Dadra and Nagar Haveli & Daman and Diu is the Union Territory constituted through the merger of two former UTs of Dadra & Nagar Haveli and Daman & Diu.
Former State of Jammu & Kashmir is now constituted into two UTs, viz. Jammu & Kashmir and Ladakh.

Sl.No	Name of the State/ UT	Available Manpower	Number of staff required (as per RMSI Report 2012)	%age
21	Maharashtra	5240	48078	11%
22	Manipur	245	2357	10%
23	Meghalaya	875	2552	34%
24	Mizoram	209	1997	10%
25	Nagaland	570	2843	20%
26	Odisha	2606	21170	12%
27	Puducherry	236	876	27%
28	Punjab	579	15668	4%
29	Rajasthan	1158	29937	4%
30	Sikkim	154	1213	13%
31	Tamil Nadu	5408	31269	17%
32	Telangana	1572	17000	9%
33	Tripura	1500	1019	147%
34	Uttar Pradesh	4613	84479	5%
35	Uttarakhand	1112	5491	20%
36	West Bengal	5201	41680	12%

State of Firefighting Equipment and Technology

The condition of firefighting equipment varies widely across the country. While metropolitan cities like Mumbai and Delhi have relatively well-equipped fire services, many smaller cities and rural areas lack essential equipment. Issues such as outdated appliances, lack of maintenance, and insufficient funding contribute to this disparity.

Advancements in firefighting technology, such as fire robots and drones for surveillance, have been adopted in some urban centres. For instance, the Mumbai Fire Brigade has tested firefighting robots equipped with thermal imaging cameras to assist in operations.¹⁵ However, such technologies are not widely implemented across the country.

Training and Capacity-Building Efforts

Training programs for fire service personnel are crucial for effective emergency response. Currently, new recruits undergo initial training, followed by periodic refresher courses. For example, the Mumbai Fire Brigade provides six months of intensive training for new recruits, with additional courses upon promotion.

Despite these efforts, standardised training curricula across states are needed, incorporating modern firefighting techniques and advanced equipment. Capacity-building initiatives should also focus on specialised training for handling hazardous materials, high-rise building fires, and disaster management.



Emergency Response Systems and Timelines

Efficient emergency response systems are vital for minimising damage during fire incidents. The ideal response time in urban areas is 5–7 minutes, while in rural or semi-urban areas, it may extend slightly due to geographical and infrastructural constraints. However, in many Indian cities, the response time often exceeds this benchmark due to a shortage of fire stations and personnel. Traffic congestion, limited access to water sources, and communication gaps further affect the response time.

Every city should have a rolling 5-year Blueprint for Fire Safety (like the Bengaluru Blueprint).¹⁶ These blueprints should consider all stakeholders and include fire safety master plans to ensure adequate fire stations, water sources, and infrastructure are embedded in urban planning frameworks.



Public Awareness

and Community Involvement

Fire safety is not just a responsibility of authorities and emergency responders—it requires active public participation. Raising awareness, conducting regular fire drills, and mobilising community support are crucial components of an effective fire safety ecosystem. This section evaluates existing public awareness campaigns, fire safety training effectiveness, and NGOs' role in fostering community involvement.



Analysis of Public Awareness Campaigns

Public awareness campaigns play a crucial role in educating people about fire risks, prevention measures, and emergency response procedures. In India, awareness initiatives have been launched by government agencies, fire departments, and NGOs. Some notable campaigns include:

-  **Fire Safety Week (April 14–20):** This campaign, observed annually, aims to educate citizens about fire hazards, safety measures, and the importance of fire prevention. Fire brigades conduct demonstrations in schools, offices, and public spaces.
-  **Government-Led Campaigns:** Some state governments, such as Maharashtra and Tamil Nadu, have launched awareness drives on social media and television to educate people about the dangers of electrical fires, gas leaks, and high-rise building fires.

-  **Corporate Initiatives:** Large corporations often conduct workplace safety programs, particularly in industries prone to fire hazards, such as manufacturing, construction, and chemicals.
-  **NGO and Community-Led Programs:** Organizations like Beyond Carlton have been instrumental in spreading fire safety awareness through workshops, training programs, and digital outreach.

While these initiatives have made an impact, their reach remains limited, particularly in rural and low-income urban areas where fire safety education is often overlooked.

Effectiveness of Drills and Training in Schools, Offices, and Communities

Training and preparedness are critical in minimising casualties during a fire incident. Schools, offices, and residential societies must conduct regular fire drills to ensure individuals know how to react in an emergency.

Fire Drills in Schools:

-  Some schools conduct fire drills once or twice a year, ensuring that students and teachers understand evacuation procedures.
-  However, many educational institutions lack fire safety infrastructure, such as properly marked exits, fire extinguishers, and trained staff.
-  Integrating fire safety education into school curricula can ensure long-term awareness.

Workplace Safety Programs:

-  Large office complexes and industrial units are required by law to conduct fire safety drills.
-  However, small businesses and informal workplaces often neglect fire safety training due to cost and time constraints.
-  Due to the lack of enforcement mechanisms, many organisations treat fire drills as a formality rather than a life-saving measure.

Residential Fire Safety Awareness:

-  Many residential societies, especially in metro cities, conduct periodic fire drills and awareness sessions.
-  However, fire preparedness remains low in informal settlements and older apartment complexes due to a lack of awareness and resources.

Role of NGOs and Community Organizations in Fire Safety

Non-governmental organisations (NGOs) and community-based organisations have been crucial in advancing fire safety education and policy advocacy.

-  **National Safety Council (NSC):** Works on workplace safety and organises fire safety training programs for industries.



Local Fire Safety Committees: Some urban localities have established fire safety committees that work with fire departments to assess risks and improve preparedness.



NGOs: NGOs like Beyond Carlton have been at the forefront of promoting fire safety awareness in India. It engages with government agencies, conducts training programs, and advocates for policy reforms.

While NGOs have been effective in driving awareness, their efforts need to be scaled up with greater collaboration between government agencies, businesses, and community leaders. Empowering communities with preparedness tools, including fire safety assessments, online checklists, and scheduled safety drills for residential areas, hospitals, and schools, is critical. Organisational structures in community organisations like Apartment Owners Associations should include a formal role in Disaster Management and Fire Safety.

Expert Opinion

Fire Safety in High-Rise Buildings: Issues and Potential Solutions

By Anup Karanth, Executive Council Member, Beyond Carlton

Fire safety in high-rise buildings in India is a critical issue involving a wide range of concerns. Based on investigations and media reporting on fire accidents in high-rise buildings, one of the primary concerns is the lack of adequate fire safety planning and management. This includes inadequate fire risk assessment procedures to inform the planning and design of structures and fire prevention, suppression, and detection strategies.

Another significant concern is the compliance with building codes and standards. Many high-rise buildings do not meet the necessary fire safety standards, including installing automatic sprinkler systems, smoke detectors, and fire evacuation signals. Additionally, the structural integrity of buildings to withstand fire and other emergencies is often compromised due to deficient construction practices, poor choice of materials and lack of regular structural and building services maintenance.

A summary of issues and potential interventions is given below. Readers are requested to undertake a self-assessment and address the identified gaps in their respective buildings:

Specific Issues	Potential Interventions
Evacuation difficulties and panic behavior: High-rise buildings make evacuation challenging due to the vertical distance occupants of all age groups must travel. This is especially problematic during emergencies when panic can set in.	Stricter enforcement of national building code / local building byelaws (Part IV: Fire and Life Safety): Stringent implementation of fire safety regulations during building construction and regular inspections to ensure compliance.
Poor implementation of fire safety norms: While the National Building Code outlines comprehensive fire safety regulations for high-rise buildings, including sprinklers, smoke detectors, fire alarms, and proper escape routes, their implementation is often inconsistent due to poor enforcement.	Regular maintenance of fire safety systems: Mandatory periodic maintenance checks and repairs of all fire safety equipment in high-rise buildings.
Outdated electrical systems: Many older high-rise buildings have outdated electrical wiring, which can easily overheat and spark fires due to overloaded circuits or substandard components.	Improving firefighting capabilities: Investing in specialized equipment and training for firefighters to effectively handle high-rise building fires.
Lack of maintenance: Regular maintenance of fire safety equipment like sprinklers, fire alarms, and fire extinguishers is often neglected, rendering them ineffective in case of a fire.	Advanced fire suppression systems: Implementing advanced fire suppression technologies like sprinkler systems with early detection capabilities.
Compartmentation issues: Inadequate compartmentation within buildings can allow fire to spread quickly between floors, hindering evacuation efforts.	Improved building design: Incorporating features like fire-resistant materials, proper compartmentation, and well-designed evacuation routes during building design. Retrofitting existing buildings to meet fire and structural safety standards and the incorporation of performance-based design for new generation tall buildings.
Architectural deficiencies: Poor architectural design, such as inadequate exit paths, improper positioning of fire suppression systems, and lack of understanding of evacuation exacerbates the risk.	Raising awareness campaigns and addressing institutional capacity gaps: Educating residents about fire safety practices, including evacuation procedures, proper use of fire alarms, and fire extinguisher training; educating building officials, built environment professionals and the construction industry on importance of code implementation and develop institutional capacities.
Insufficient water supply: Inadequate water pressure or limited water storage can severely hamper firefighting operations in high-rise buildings.	
Limited awareness among residents: Many residents in high-rise buildings lack proper knowledge about fire safety procedures, including evacuation plans and the use of fire safety equipment.	
Firefighting access limitations: Reaching higher floors with fire trucks and equipment can be challenging due to limited access points and narrow width of roads, parked vehicles, façade projections etc.	
Firefighter Challenges: Firefighters face difficulties in accessing and navigating high-rise buildings during emergencies. Lack of information results in additional time taken to reach the source of the fire can be critical.	
Lack of trained fire personnel: Insufficient numbers of well-trained firefighters with expertise in high-rise building fires can hinder effective response.	

The growing trend of high-rise constructions and aspiration to build vertical development calls for a multi-pronged approach to dovetail fire and life safety through

- (i) training and awareness among building occupants and management, developers; training building officials as well as designated fire and life safety wardens on their roles and responsibilities, conducting regular fire drills, and ensuring that all occupants are familiar with emergency evacuation procedures;
- (ii) stricter enforcement of regulations;
- (iii) adoption of modern/ advanced fire detection and suppression systems;
- (iv) implementation of comprehensive fire safety plans across scales (city, ward, building) that are regularly reviewed, updated and disseminated.



Lessons from Global

Best Practices

Countries with strong fire safety records have developed comprehensive strategies combining policy, infrastructure, public engagement, and technology. This section highlights global best practices and assesses their applicability to the Indian context.



Successful Fire Safety Models from Other Countries

United States: National Fire Protection Association (NFPA) Model

-  The NFPA establishes clear fire safety codes and standards enforced at federal, state, and municipal levels.¹⁷
-  Public awareness campaigns, such as "Stop, Drop, and Roll" for fire safety education, are widely implemented in schools and workplaces.
-  The Fire Department of New York (FDNY) has rapid response teams with advanced technology, including thermal imaging cameras and drones.
-  In the US, the Firefighting Forces have a high status in society and are honoured and celebrated for their key role in keeping the community safe.

United Kingdom: The Grenfell Reforms

-  Following the 2017 Grenfell Tower fire, the UK implemented stricter fire safety regulations for high-rise buildings, including mandatory fire risk assessments and upgraded fire suppression systems.
-  The UK government launched a “Fire Kills” campaign to educate the public on fire hazards and prevention.¹⁸

Japan: Community-Based Fire Prevention

-  Japan has a highly organised community firefighting system where trained volunteers assist professional firefighters – Shobodan.¹⁹
-  Strict fire safety codes require all buildings to have earthquake and fire-resistant designs.

Singapore: High-Tech Fire Safety Systems

-  Singapore mandates that all high-rise buildings have automated fire detection and suppression systems.
-  The Civil Defence Force uses AI-driven fire detection systems that trigger early warnings.²⁰

Applicability to India

-  India can adopt Japan’s community-based approach by training and involving local residents in fire response.

-  The strict enforcement of fire codes in the United States can serve as a model for improving compliance with NBC norms in India.
-  Technology-driven solutions from Singapore can be implemented in smart cities in India.
-  Like in the United States, India must honour firefighters through awards and other mechanisms. For example, Beyond Carlton honours firefighters during its annual memorial in Bengaluru.



Recommendations

There have been many recommendations over the years on steps that are needed to improve fire safety in India like the report “Fires in India: Learning Lessons for Urban Safety” published by the National Institute of Disaster Management (NIDM).²¹

We would make the following recommendations to enhance fire safety in India:



De-centralizing Fire Safety & Strengthening Public Awareness

-  Distribute tools like fire safety assessments and online checklists.
-  Make fire safety education mandatory in schools and public spaces like hospitals and workplaces.
-  Develop localised fire safety training programs tailored to community needs.
-  Organisational structures in community organisations like Apartment Owners Associations should include a formal role in Disaster Management and Fire Safety.
-  Leverage social media and mobile apps to spread fire safety awareness.

Fire Safety 5-Year Blueprints for Cities should be mandatory

-  Every Tier 1 & Tier 2 city should have a published 5-year blueprint for Fire Safety
-  These plans should lay out fire-fighting infrastructure requirements, personnel requirements, and actions to address the gaps.
-  Engagement across multiple government departments, such as Fire Safety, Electricity, Municipal Corporation, Traffic, and citizen groups, is essential.

Policy Reforms

-  Make the National Building Code (NBC) 2016 legally binding in all states.
-  Introduce stricter penalties for non-compliance with fire safety norms.
-  Establish a National Fire Safety Authority to oversee uniform policy implementation.

Investment in Infrastructure and Training

-  Increase the number of fire stations, particularly in under-served rural and semi-urban areas.
-  Upgrade firefighting equipment and introduce advanced technologies like AI-driven fire detection.
-  Standardise training programs for firefighters across all states.

Strengthening Compliance

-  Mandatory display of Fire NOCs in the buildings as well as on the websites.
-  Authorities must conduct mandatory audits of public spaces like Malls, Hospitals, etc., and transparently display the audit findings and plans to address shortcomings.
-  Conduct independent third-party inspections of fire safety standards in buildings.
-  Impose stringent penalties for violations.

Strategies for Monitoring and Evaluation

-  Fire departments should publish digital dashboards on incidents, calls, and actions taken.
-  The Forensic analysis of fire incidents should be done within a mandated period, and the findings published digitally.

Care for Burn Victims

-  Increase the number of burn wards in every State.
-  Increase the number of Skin banks.
-  Invest in counselling and rehabilitation services so the burn victims can get integrated back into society.

Conclusion

Fire safety in India requires a multi-pronged approach that integrates policy reforms, infrastructure investments, public engagement, and global best practices. While India has made progress, significant gaps remain in enforcement, preparedness, and community involvement.



India can build a more fire-resilient future by learning from international models, strengthening regulatory frameworks, and fostering collaboration between government agencies, businesses, and NGOs. Organisations like Beyond Carlton play a crucial role in driving awareness and advocacy, ensuring that fire safety remains a national priority.

A comprehensive and sustained effort is required to make fire safety a fundamental aspect of urban and rural planning, thereby reducing fire-related casualties and economic losses in the years to come.

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