

BOOSTING SUSTAINABLE BUILDINGS THROUGH FIRE SAFETY

KEY MESSAGES

- Fire Safe Europe (FSEU) calls on legislators to acknowledge that fire safety and sustainability reinforce one another and to ensure that fire safety is considered in the relevant policies and regulations.
- Fire Safe Europe (FSEU) believes that fire safety regulations should address sustainability concerns while fire safety should become an integral part of the sustainability discussion and be included in the sustainability rating schemes of buildings.



We are changing the way we build. Modern sustainable buildings cater to different end-user needs, bringing new technologies and construction materials. Still, current regulations have not always adapted to reflect these new ways, and fire safety has sometimes been omitted in this journey towards a more sustainable future.

With the introduction of new sustainable materials and technologies in the construction process, it is essential to evaluate the fire risks associated with these new elements, especially concerning flammability and toxicity.

People increasingly equate a building's sustainability with its ability to be energy efficient. Yet, efforts to render buildings sustainable should not solely focus on maximising energy efficiency. Together with energy efficiency and environmental protection, fire safety and fire resilience are valuable assets to meet the challenges that our societies are facing in an era of scarce resources, urbanization and climate change.

A sustainable building should not only provide for environmental sustainability. It should ensure an economically and socially sustainable future. To ensure buildings can truly address all aspects of sustainability, we have to include an element of paramount importance: fire resilience.

Based on the UNISDR definition¹ of resilience, Fire Safe Europe defines fire resilience as the capacity of a building to resist to, adapt to and recover from a fire and resume to its essential functions in a timely and efficient fashion.

Fire resilient buildings will foster green, sustainable, resilient, safe and innovative cities. Fire safety and sustainability do not have to conflict; both share common goals. Fire resilience is an intricate part of sustainability and must be considered when developing policies, regulations and sustainable building rating schemes. Only then will future buildings be genuinely sustainable.



INCLUDING FIRE RESILIENCE IN BUILDING REGULATIONS: AN OPPORTUNITY TO BOLSTER SUSTAINABILITY

Regulations related to sustainability, together with several sustainable building rating schemes and reporting frameworks, such as LEED, Level(s), BREEAM, HQE, DGNB, WELL or RELI, which are spearheading the movement towards increasingly sustainable buildings, generally do not touch upon fire resilience. The common perception is that fire safety is a matter for building regulations.

However, building regulations do not cover aspects related to sustainability; they solely focus on safe escape. To successfully green our buildings, we must build a bridge between sustainability and fire resilience and go beyond the minimum legal requirements.

Research shows that failing to factor risks, such as fire risks, in buildings' design and construction can nullify the benefits of green construction². Ignoring these risks and improving sustainability solely by bettering energy efficiency can increase the magnitude of risk factors by three³.

Hence, it is essential for regulations, sustainable rating schemes and reporting frameworks to take into account fire resilience.

FIRE RESILIENCE PARTICIPATES IN ENVIRONMENTAL, ECONOMIC AND SOCIAL SUSTAINABILITY

When a building lacks fire resilience, fire can have a dramatic impact on the three components of sustainability.

In terms of environment, the release of smoke, toxic gases and particles as well as toxins-charged firefighting water run-off contaminate our surroundings and have adverse effects on health. Building fires can create substantial pollution; their unburned particles equalling the total emissions from commercial transport⁴. In the UK, an independent study led by Dr Anna Stec revealed the existence of significant amounts of toxins in soils and pointed out the high concentrations of potential carcinogens in residue around the Grenfell tower and in burned debris⁵. Hence, ignoring building fire resilience not only negatively impacts our efforts to tackle climate change but also endangers the health of people.

Socially, fire has a damaging effect on the community, the destruction of public buildings for instance, often results in the disruption of public services or social activities. In November 2014, the fire that destroyed the whole of Campofrio's food-processing factory in Burgos (Spain), left a thousand families depending on their work in the installations⁶ in a critical situation. To address this economic and social crisis, the company's direction reallocated 774 of them to 2-year-long temporary positions⁷. It took two years to rebuild the new facility⁸.

Economically, fire damages resources and infrastructures, causing financial loss both for businesses and citizens who find themselves out of a job. Following the Pedrógão Grande wildfire that occurred in Portugal in June 2017, the activity of 49 companies was affected, amounting to a cost of €31m, while the cost for the farming sector equalled €21m⁹. The increasing number of wildfires in Europe have important social and economic consequences. Even more so in touristic regions where the distance between anthropologic urban land use and forest fuel mass, namely the Wildland Urban Interface (WUI) areas, has grown smaller¹⁰.

Fire resilient buildings not only have lower environmental impacts but also reduce the economic and social consequences of fires, thereby limiting the disruptions fires cause to societies.



ENVIRONNEMENT

- Fires adversely affect air quality, in fact a Swedish study shows that unburned particles from building fires = total emissions from commercial transport.
- A recent UK study, led by Anna Stec, also showed that following the Grenfell fire, elevated concentrations of benzene, a proven carcinogen, were discovered up to 140m away from the Grenfell Tower in quantities 25-40 times higher than those typically found in urban soils.



ECONOMY

- Total economic costs of fires amount to 1% of GDP in most advanced countries
- Between 2009-2014 in the UK, 5,000 full-time jobs were lost due to warehouse fires = annual productivity of UK soft drinks industry



SOCIETY

- In the UK 90,000 children's education is disrupted by fires each year

Inforgraphic sources ^{14 15 16 17}

CONCLUSION

To truly achieve sustainable communities and “ensure prosperity, environmental protection and social cohesion” as stated in the EU Sustainable Development Strategy, it is crucial that the EU and national authorities recognise the interactions between fire resilience and sustainability. European and national legislators should include fire safety and fire resilience in the relevant policies and regulations. Let's ensure that the complementarity between fire resilience and sustainability is recognized to foster a sustainable future.

FIRE RESILIENCE AS AN ENABLER OF THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Resilience is one of the cornerstones on which lies the potential achievement of the SDGs.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



For instance, **SDG 9**¹⁸ states that to achieve the SDGs and empower communities, investment in quality, reliable, sustainable and resilient infrastructures is crucial.

Green buildings are sometimes presented as a way to foster this objective¹⁹. According to the World Green Buildings Council²⁰, their essence is to cater for present and future human needs and to persist and adapt to future challenges. A building unable to withstand fire damages lacks resilience and may not last to fulfil its mission for future generations.

Green buildings are meant to contribute to responsible consumption and production by reducing waste and favouring recycling and reuse which concurs with **SDG 12**²¹. If a building is not fire resilient, the aftermaths of a fire will create considerable waste of materials which implies the use of important additional resources. This has substantial environmental, economic and social impacts.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Finally, **SDG 11**²² puts critical emphasis on efficient urban planning and underlines the need for sustainable human settlements and resilient buildings. Within the EU, making building resilient seems crucial, particularly when the continent has been under stress from more frequent and more violent forest fires.

11 SUSTAINABLE CITIES AND COMMUNITIES



With changing landscapes structures, the Wildland-Urban interfaces (WUI), namely where unoccupied land and human settlement meet, have increasingly been subjected to fires, putting people and their properties at significant risk²³. Truly greening our buildings and guaranteeing the emergence of sustainable cities and communities in this context demands efficient urban planning and to do so fire resilient buildings are essential²⁴.



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