European Science Review 2025,
No 3–4
ISSN 2310-5577

PREMIER Publishing
ppublishing.org

Section 3. Legal stydies

DOI:10.29013/ESR-25-3.4-61-65

CHARACTERISTICS OF HIGHER EDUCATION INSTITUTIONS IN VIETNAM RELATED TO FIRE PREVENTION AND FIGHTING

Dang Tuan Tu [1]

[1] University of Fire Prevention and Fighting – Ministry of Public Security – Vietnam

Cite: *Dang Tuan Tu. (2025). Characteristics of Higher Education Institutions in Vietnam Related to Fire Prevention and Fighting. European Science Review 2025, No 3–4.* https://doi.org/10.29013/ESR-25-3.4-61-65

Abstract

The article presents the results of research on the characteristics of higher education institutions in Vietnam related to fire prevention and fighting; on that basis, it points out the development forecast as well as identifies some issues that need attention in fire prevention and fighting.

Keywords: *Fire prevention and fighting; higher education institutions; Vietnam*

1. Problem

According to the authors of IGI Global, a higher education institution includes universities, polytechnics, agricultural colleges, specializing in various fields such as engineering, agriculture, medicine, pedagogy, arts and economics and many other fields or a higher education institution includes traditional universities and professional-oriented schools, called universities of applied sciences or polytechnics (Tony Holloway, 2006). According to Article 4 of the Law on Higher Education (amended), a higher education institution is an educational institution belonging to the national education system, performing the function of training at higher education levels, scientific and technological activities, and serving the community. Also according to the provisions of Article 7 of the Law on Higher Education (amended), higher education institutions in the national education system of Vietnam include: Universities, Colleges and higher education institutions with other names in accordance with the provisions of law. The concept of higher education institutions stated in the Law on Higher Education (amended) is relatively similar to international concepts of higher education institutions. Higher education institutions are organizations established and carry out higher education activities in accordance with the provisions of law. The general goals of higher education in Vietnam are: (1) to train human resources, help improve people's knowledge and nurture talents for the country; to conduct scientific and technological research to create knowledge and new products, to serve the requirements of socio-economic development, ensure national defense, security and

international integration; (2) to train people with political and ethical qualities; to have knowledge, professional practice skills, research and development capacity for scientific and technological applications commensurate with the level of training; to have good health; to have creativity and professional responsibility, to adapt to the working environment; to have a sense of serving the people. Thus, higher education institutions have the task of providing high-quality and highly-qualified human resources for the economy, increasing the value of each individual by equipping them with knowledge, skills and a spirit of autonomy and responsibility, thereby helping each individual to do their job better, increase labor productivity and create more income for themselves, more material wealth for society. Thus, higher education institutions can be understood as: all educational institutions in the national education system, carrying out activities in training, scientific research and technology to meet the learning needs for higher education levels of domestic and foreign learners, meeting the scientific and technological needs of the community. Higher education institutions can be organized in the forms of universities, colleges, academies, etc. depending on the development strategy and practical conditions of the facility, however, with each form of organization, it is necessary to ensure compliance with the provisions of the law. Therefore, it is very necessary to study the characteristics of higher education institutions in Vietnam related to fire prevention and fighting, on that basis, identify the issues raised in state management.

2. Research results

2.1. Research results on characteristics related to fire prevention and fighting

(1) Characteristics of construction architecture, traffic, water sources, combustibles, heat sources, technical systems, fire prevention and fighting systems, on-site fire fighting forces and means

Regarding construction architecture, most higher education institutions are built on campuses with many buildings and areas with different functions: learning areas and scientific research facilities; sports areas; student dormitories including housing and living facilities; housing areas for lecturers and staff; technical works including pumping stations, transformer stations, repair shops, warehouses and car and bicycle parking lots. Most of the buildings on campuses were built long before the Fire and Rescue Law was enacted, so they are often not fully equipped with fire prevention and fighting systems. During the operation process, due to increased demand, the facilities built more buildings with different functions, which led to the failure to ensure fire prevention and fire protection distance between buildings, and the width of roads for fire trucks to access. During the operation, many schools arbitrarily partitioned and divided classrooms with structures that did not have fire prevention capabilities, leading to failure to ensure fire prevention regulations.

Many schools have buildings that do not have automatic fire alarm systems or have them but they are not connected between buildings. The indoor fire-fighting water supply system is available, but the water pressure is not guaranteed because the pump system has not been invested with enough capacity and flow.

The fire prevention and fighting force of higher education facilities is mainly security guards. However, many educational facilities are large-scale, with many subdivisions and areas, so the number of security guards is not guaranteed. Especially for educational institutions that are universities with many member schools, the decentralization of management and allocation of fire prevention and fighting forces at the facility are still overlapping and unreasonable.

On-site fire fighting systems are basically fully equipped by the facilities, of the right type, but training on their use for students, lecturers, etc. is still limited.

In addition, some small-scale higher education institutions often rent office buildings as headquarters, teaching and research places, so the nature of construction architecture, traffic, water sources, combustibles, heat sources, technical systems, fire prevention and fighting systems, on-site fire fighting forces and means are completely dependent on the building and the building management unit.

(2) Characteristics of the operation of higher education institutions

With higher education institutions, the main activities are teaching and research,

both of which have the potential to lead to high fire and explosion hazards. With teaching activities, classrooms are often crowded places, and with the development of information technology and the need to apply digital transformation in teaching, classrooms are equipped with many electrical devices such as computers, projectors, sound systems, lighting and many flammable materials: tables, chairs, books, etc. In addition, classes all start and end at the same time, so during the operation, there will be peak hours with large crowds. If an incident occurs, it will be difficult to escape.

With experimental activities, higher education institutions, especially technical higher education institutions, often have many specialized laboratories with many complex equipment and machinery. This laboratory also has many potential fire and explosion risks.

In addition to the two main activities above, there are also dormitories at universities. This is a crowded area with many potential fire and explosion risks. Most dormitories do not allow cooking in the rooms, but due to high demand, students often use electricity to cook and boil water in the room. This is very dangerous and can easily lead to fire and explosion due to electricity if not strictly managed.

In addition, on university campuses, there are many types of service businesses such as canteens, restaurants, eateries, and library archives. These are also places that contain a lot of flammable substances. If there are no effective management measures, this can lead to high fire risks.

In the process of organizing their activities, universities, especially those with undergraduate training, often organize events, conferences, and performances indoors and outdoors. These events often attract large crowds, have large, complex sound and lighting systems, and also pose a high risk of fire and explosion.

(3) Characteristics of fire prevention and fighting systems

In higher education institutions, depending on the function and nature of the buildings, fire prevention and fighting systems are installed according to the provisions of law. Buildings in higher education institutions are installed with automatic fire alarm systems that are responsible for proactively reporting fires when fires occur according to the provisions of section 6.1.3. TCVN 3890:2009 (now section 5.2 TCVN 3890:2023) and section 12.1. TCVN 6160:1996; automatic fire fighting systems according to the provisions of Appendix C TCVN 3890:2009 (now Appendix A TCVN 3890:2023).

Higher education institutions have a number of buildings in group 4 of table A.1 Appendix A TCVN 3890:2023 regulating the equipment of automatic fire alarm systems, local fire alarm equipment and automatic fire extinguishing systems. Accordingly, automatic fire extinguishing systems must be equipped for the entire building if the area of rooms subject to automatic fire extinguishing systems is equal to or greater than 40% of the total floor area. The automatic fire alarm system or equipment equipped for the building must be connected to the database management system on fire prevention and fighting and incident reporting of the Fire Police and Rescue Department according to regulations. When determining the requirements for automatic fire extinguishing systems, automatic fire alarm systems must first determine the requirements for the entire building, then for each item, area and room as well as equipment within the scope of the project; rooms with fire hazard class D; side corridors; stairs; pressurized fire buffer zones, areas without fire hazard. In addition, comply with other regulations in TCVN 5738 Automatic fire alarm system – Technical requirements; TCVN 5760 Fire extinguishing system – General requirements for design, installation and use; TCVN 7161 Automatic fire extinguishing system with water, foam – Design and installation requirements...

Technical systems include electrical systems, ventilation systems, smoke exhaust systems, information cables, optical cables; stairwells for pedestrians, elevator shafts; waste pipes; plastic wastewater pipes, etc. installed synchronously, with fireproof covers, separation between floors, technical pipes between floors. In addition, at higher education institutions, there are also anti-smoke systems, traffic systems, water sources... which also need to comply with relevant fire prevention and fighting regulations and standards such as QC 06:2022/BXD (amended 1:2023); TC3890:2023.

Communication system (speakers, security cameras, LAN, internet, television, telephone, security surveillance). The communication system is directly connected to the duty room, technical room, with a server system to store information, also known as the low voltage system. Here, the duty officer will recognize the fire alarm signal, as well as other signals, observe through the camera system (closed-circuit-television security system – CCTV) to identify where the fire occurs, the direction of development and broadcast the announcement loudspeaker (public address system – PA).

(4) Characteristics of fire and explosion hazards at higher education institutions

At higher education institutions, as mentioned above, there exists a large amount of flammable substances, in many different types. There are flammable substances, some are easy to burn, some are difficult to burn... but when a fire occurs, the fire spreads very quickly. These are the flammable substance systems in libraries, cafeterias, cabinets, paper, information equipment systems such as computers...; these are wooden furniture, decorative objects, plastic, foam, leather goods... in offices, meeting halls... In addition, at higher education institutions, basements are also arranged as parking lots for motorbikes and cars, where a large amount of flammable substances such as gasoline and oil are stored.

Along with flammable substances is a heat source, because in educational institutions, the possibility of forming a heat source causing fire is also very diverse; mainly in the kitchen, this is the largest source of fire and explosion hazard. In addition, laboratory areas, electrical cabinets, garages, electrical outlet areas, etc. always have the potential for heat sources. Due to the characteristics of educational facilities with many types of flammable substances, some places containing large amounts of chemicals in laboratories are very flammable, and the possibility of fire spreading also occurs quickly, if not handled promptly. From the process of forming a dangerous environment for fire and explosion, the fire spreads from one room to another, from one area to another, from one floor to another... is very large. Along with that, the smoke system appears due to many flammable substances spreading with the fire, making escape work more difficult. Therefore, along with not allowing the formation of a dangerous environment, having measures to prevent smoke accumulation in higher education facilities is very important. With the characteristics of fire spreading, smoke gathering... so when designing, accepting, propagating, training... it is necessary to pay special attention to the issue of escape as well as ensuring safety during the escape process by lighting system, by escape stairs, by refuge floors.

2.2. Forecast of related situations and issues arising in fire prevention and fighting

(1) Forecast

– In the coming years, Vietnam's economy will continue to grow at a high speed, the population will grow on a large scale, the people's education level and living standards will be increasingly improved and enhanced, the people's demand for teaching and learning will increase. Therefore, the system of higher education institutions in the whole country will develop further in the coming time to meet the needs of the people.

– According to the planning for the development of higher education institutions up to now, higher education institutions in Vietnam will continue to develop. From that, it can be affirmed that higher education institutions will increase in number and scale, at the same time leading to the diversity and richness of types of higher education institutions. From the perspective of research on fire safety, it shows that the increase in the types of higher education institutions, the construction structure of higher education institutions, the number of works and the functions of the works in higher education institutions will increase the amount of flammable substances in higher education institutions, including flammable substances such as: books, newspapers, chemicals, tables, chairs, blankets, sheets, pillows, mattresses; gasoline, oil; paper, cabinets, computer systems; ... these are the main flammable substances of higher education institutions not only in Vietnam but also in other countries in the world. Therefore, the investment in construction and development of higher education institutions will be increasingly diverse, at the same time the number of accompanying flammable substances will be more diverse

and lead to a higher risk of fire and explosion for higher education institutions. Thus, from the above analysis, it has been shown that, in terms of flammable substances in higher education institutions, not only are they increasing but they are also diverse and abundant, with many flammable items existing.

(2) Some issues arising in the state management of fire prevention and fighting need to be further studied

Proactively advise, propose the promulgation and implementation of legal regulations on fire prevention and fighting for higher education institutions;

Continue to study ways to organize propaganda, dissemination and education of knowledge and laws on fire prevention, fighting and rescue; guide the development of a mass movement to participate in fire prevention, fighting, rescue and rescue;

Research the work of design appraisal and inspection of fire prevention and fighting acceptance for works in higher education institutions;

Strengthen the inspection and strict and thorough handling of violations of regulations on fire prevention and fighting for higher education institutions;

Continue to study the process of organizing, consolidating, maintaining the activities of the grassroots fire prevention and fighting force and improving the quality of professional training for the grassroots fire prevention and fighting force for higher education institutions;

Study the development and practice of fire prevention and fighting plans and fire fighting organization for higher education institutions;

Study the coordination relationship in state management of fire prevention and fighting for higher education institutions...

3. Conclusion

The article presented the research results, including pointing out the characteristics of higher education institutions in Vietnam related to fire prevention and fighting; made predictions and pointed out issues that need further research to improve the effectiveness of state management of fire prevention and fighting for higher education institutions in Vietnam, contributing to ensuring security, safety, and ensuring sustainable development of the education and training sector in Vietnam today.

References

Nguyen Ngoc Anh. (2019). “Overview of the legal system in the field of Fire Prevention, Fire Fighting and Rescue and Directions for Supplementation and Improvement”, Proceedings of the scientific conference on Law on Fire Prevention, Fire Fighting and Rescue in Practice and Application, Fire Prevention University, Hanoi.

Dao Huu Dan, Vu Van Binh, Hoang Ngoc Hai. (2021). Theoretical and practical issues on state management of fire prevention and fighting and search and rescue in the current period, Monograph for PhD training, CAND Publishing House, Hanoi.

Hoang Ngoc Hai, Dao Huu Dan. (2020). Monograph on State management of fire prevention and fighting and search and rescue, CAND Publishing House, Hanoi.

National Assembly. (2024). Law on fire prevention and fighting and search and rescue, 2024, Hanoi.

submitted 10.04.2025;
accepted for publication 24.04.2025;
published 31.05.2025

Contact: tudt@daihocpccc.edu.vn