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# Suggestions on Grassroots Fire Safety Management for Smart City Construction

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***Abstract:*** ***In this context, China has proposed "adhering to the overall concept of national security" and "adhering to the positive interaction between high-quality development and high-level security" to ensure the safety of life and property of the people in their pursuit of a better life. In the field of safety in China, fire safety has always been the top priority, and its impact has been widely reflected in the social, scientific and technological and economic fields, but there are still large shortcomings in the grass-roots fire safety management in China, so it is particularly important to find a suitable management approach. Based on this, this paper synthesizes the views of various scholars, summarizes and analyzes the exploration of grass-roots fire safety governance and the existing problems, and finds the appropriate governance approach, in order to provide a certain reference for China's grass-roots fire safety governance.***
***Key words: Fire safety, Grassroots fire protection, Literature review***

## I. INTRODUCTION

With the rapid growth of modern population and the development of urbanization, the danger of fire is becoming more and more serious. Fire not only causes property losses, but more importantly, it brings great threat to people's life and property safety. Therefore, fire safety is particularly important. The 20th report also put forward to improve the level of public safety management, adhere to safety first, prevention first, improve the public safety system, improve disaster prevention and relief and emergency difficult and dangerous public emergency handling and security capabilities. Therefore, this paper provides a comprehensive literature review in the field of grass-roots fire safety governance, aiming at summarizing and analyzing the current status, trends and key issues of grass-roots fire management research. This review includes several key aspects in the field of grass-roots fire safety governance, such as theoretical exploration, practical exploration, existing problems and solutions.

## II. THE EXPLORATION OF GRASS-ROOTS FIRE SAFETY MANAGEMENT

This paper summarizes the exploration methods of grass-roots fire safety management by comprehensive scholars, which is divided into two parts: theoretical exploration and practical exploration. For theoretical exploration on fire safety governance methods, 이상호(2021)[1] innovatively puts forward an experimental idea of using fire risk index (FRI) to measure and test regional government fire risk. Watson Kellie(2006) believes that the Bush Fire[2] Cooperative Research Centre (CRC) Community Fire Safety Self-reliance program focuses on how communities in the urban and rural junction of Australia and New Zealand are prepared for bushfires, and the role of communities and individuals in reducing bushfire risk; Zhang Lu (2019) adopted the fuzzy evaluation system[3] to establish a safety training management early warning system model and pointed out that there were potential safety problems in the field command training, the actual use instructions of equipment and equipment, the training environment atmosphere, the safety and accident prevention education and training techniques of the assessed objects. Xu Fangfang (2023) put forward a new fire management[4] concept -- the diversified and participatory management mode of grass-roots fire control. She believes that fire control is no longer only the responsibility of professional fire teams, but needs the participation and support of the whole society, especially the input and cooperation of grass-roots forces.

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Yang Zhu (2023) innovatively proposed the "Fire safety inter-departmental cooperation governance model" based on the current situation and[5] problems of grassroots fire safety governance. Based on the above scholars' views, this paper holds that the theoretical exploration of grass-roots fire safety governance includes the scientific governance means and the efficiency of governance mode, etc. Theoretical exploration provides conditions for practical exploration.

As for the practical exploration of grassroots fire safety governance, Sangmin Park (2023) believes[6] that to realize rapid evacuation and rescue, it is necessary to build city-level fire safety service and digital system based on intelligent technology. In this regard, an intelligent fire safety system based on artificial intelligence is developed for efficient comprehensive urban management. Sang Pil Han (2020) concluded through questionnaire[7] that fire safety managers have a high perception of fire safety management, but their ability to prepare and respond to accidents still needs to be improved; Danielle Every (2016) found that the key[8] elements of successful coordination of community fire safety teams are active face-to-face communication with existing community residents, newcomers and "non-group" people and personalized communication to adapt to the needs of different groups; Li Jing (2023) put forward corresponding countermeasures for the construction of grass-roots township (street) fire protection organizations, the promotion of efficient operation of the mechanism[9] and the effectiveness of governance; Mo Fan (2023) proposed the application measures of grid in grass-roots fire safety management through in-depth analysis[10] and research on the current trend of grid fire safety management; Luo Wuming (2023) analyzed the current situation and[11] opportunities of comprehensive supervision of grass-roots fire protection through investigation and research, and proposed countermeasures and measures to strengthen the comprehensive supervision capacity of grass-roots fire protection in the new era. Based on the above views, this paper believes that practical exploration can be divided into fire technology, fire management personnel, fire audiences, fire organization construction and fire supervision. Practical exploration can often better verify the feasibility of the method, and promote the grass-roots fire control to actively find the path to realize.

### *A. Problems Existing in Grassroots Fire Control Safety Management*

This paper reviews the literature on the problems existing in grass-roots fire safety management, synthesizes the views of various scholars, and roughly summarizes it into three aspects. The weakness of the grass-roots fire control force affects the efficient development of the grass-roots fire control work, the unsound grass-roots public fire control infrastructure leads to the grass-roots fire control can not meet the safety needs of the grass-roots people, and the grass-roots people's weak fire safety knowledge affects the degree and effect of grass-roots fire control, so these three problems should be paid attention to.

### *B. Weak Grass-roots Fire Fighting Force*

The weakness of grass-roots fire fighting forces is mainly manifested in the lax implementation of grass-roots fire fighting responsibilities, the unclear grass-roots fire management institutions and the insufficient number of grass-roots professional fire fighters. At present, although the "Fire Law of the People's Republic of China" and "Measures for the Implementation of the fire safety responsibility system" and other laws and regulations have clearly defined the fire safety management responsibilities of township streets, public security police stations and village committees, the vast majority of them are virtually useless. Once a fire occurs, the grass-roots personnel cannot effectively contain the fire due to the lack of safety management institutions. Even if the township grass-roots cadres concurrently take up the fire work responsibilities, but also because most of them do not have professional fire safety knowledge resulting in fire work is difficult to carry out, which is a major obstacle to the grass-roots fire safety management, the lack of full-time fire personnel caused the grass-roots emergency force shortboard. Li Jing (2023) also[12] believes that the deployment and requirements of superiors are difficult to be effectively implemented at the grassroots level, and the problem of out-of-control work leakage is more prominent.

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*C. The Basic Level of Public Fire Protection Infrastructure Is Not Sound*

Due to the lack of funds, equipment and technology, grass-roots fire protection can hardly cope with large-scale or special types of fires. In particular, grass-roots self-employed households, in the business premises are not equipped with the corresponding fire equipment, most even equipped with fire equipment do not pay attention to the timely inspection of fire equipment and replacement of fire equipment, resulting in these equipment in the fire place failed to play an effective role. In addition, the rural population is dense but the fire equipment is only configured in the village committee, which can not give many people safety protection. Gu Yong (2023)[13] argues that grass-roots fire departments are often limited by budget allocation, which affects their equipment procurement, personnel training and daily operations.

*D. Grassroots People's Knowledge of Fire Safety Is Weak*

At present, the elderly and children are the majority of the permanent residents in China's rural areas. These people tend to ignore the importance of community participation, have little understanding of fire risk and prevention measures, do not understand fire knowledge and have weak self-prevention and self-rescue ability, resulting in 70% of rural fire accidents caused by these people. In addition to these groups, most other groups also have the same problem, which puts a certain pressure on the popularization of fire safety knowledge. Zhao Peiren (2023) proposed[13] that grass-roots fire rescue personnel, public security police, rural community grid personnel, fire volunteers, etc., should take the initiative to go into rural areas and community residents' families, walk into shops, workshops, group rental and other places, carry out "knocking action" and "door-to-door training" on a regular basis, and publicize fire knowledge face to face.

## III. WAYS TO SOLVE THE PROBLEM OF GRASS-ROOTS FIRE SAFETY MANAGEMENT

According to the above problems in grass-roots fire safety management, this paper puts forward one-to-one corresponding measures, aiming at the weak grass-roots fire fighting force, fire education and training and increasing grass-roots fire fighting full-time personnel, while grass-roots public fire fighting infrastructure is not perfect, it needs the government to provide financial support. Grassroots fire safety knowledge is weak, we need to pay attention to the popularization of fire safety knowledge.

*A. Attach Importance to Fire Education and Training and Increase the Number of Grass-roots Fire Full-time Personnel*

Attaching importance to fire education and training as well as increasing the number of grass-roots fire fighting full-time personnel, lectures can be held regularly and the introduction of full-time fire fighting personnel, advanced incubation mechanism can be established to train new cadres with fire fighting knowledge. Zhao Peiren (2023) believes[14] that the township (street office) level government should establish a fire prevention and safety committee, and the main person in charge of the township (street office) should be the first responsible person of the fire prevention and Safety Committee, and the township (street office) level fire workstation (station) can be set up by relying on the existing township social affairs office, street office public safety office or safety construction office. Secondly, with the township (street office) fire staff, each fire workstation (office) in principle should be equipped with at least 3 to 5 dedicated (part-time) workers as staff, responsible for the fire work in the area; In addition, should strengthen the township (street office) fire inspection force, clear fire workstation (office) work responsibilities, work requirements, work flow and other systems, establish a work incentive mechanism.

*B. Increase the Capital Investment of Grassroots Fire Fighting Facilities*

Infrastructure is an important guarantee to ensure the smooth development of fire rescue work, but the construction of public infrastructure is still the most important need for a large amount of financial support, therefore, grass-roots public basic fire safety facilities can not be separated from continuous capital investment.

Zou Hua (2023)[15] believes that the operation of fire rescue agencies, equipment and other funds should be included in the financial budget, increase the funding investment in grass-roots fire organizations, and ensure the substantive operation of "one team, one station" in towns and townships (streets). Secondly, in order to fulfill the responsibilities of fire safety, effectively carry out supervision and inspection, team training, personnel treatment optimization, vehicle equipment and equipment equipment, so that the grass-roots fire control work continues to develop in the direction of systematization, standardization and unification.

### *C. Continue to Promote Grassroots fire Safety Knowledge Popularization*

Grassroots people have the problem of weak fire safety knowledge, indicating that the grassroots level of fire safety knowledge is shallow, and there is still a large room for improvement. Sun Bing (2021) believes that the optimization[16] of grass-roots fire protection publicity can be started from the following aspects: First, encourage the government and various functional departments to participate in and strengthen fire protection publicity; The second is to integrate the characteristics of The Times with the grass-roots fire protection publicity; The third is to innovate the form of publicity and build a diversified publicity system; Fourth, strengthen the people's consciousness of the subject; Fifth, establish a long-term publicity mechanism.

## IV. CONCLUSION

To sum up, in the past five years, more and more scholars at home and abroad have paid attention to the issue of grass-roots fire safety management, and good results have been achieved, such as the technological breakthrough in intelligent fire protection; More innovative improvements have been made in governance approaches; And a more comprehensive, rational and scientific layout in creating a fire management system at the grassroots level. However, it can not be ignored that there are still a lot of problems to be solved in the research of grass-roots fire safety management. For example, there is no clear framework in the direction of economic benefits of grass-roots fire fighting facilities. In the research of grassroots fire safety governance, there is a lack of theoretical model; As for the results of grass-roots fire safety management direction, there are problems of undervaluing theory and overvaluing practice.

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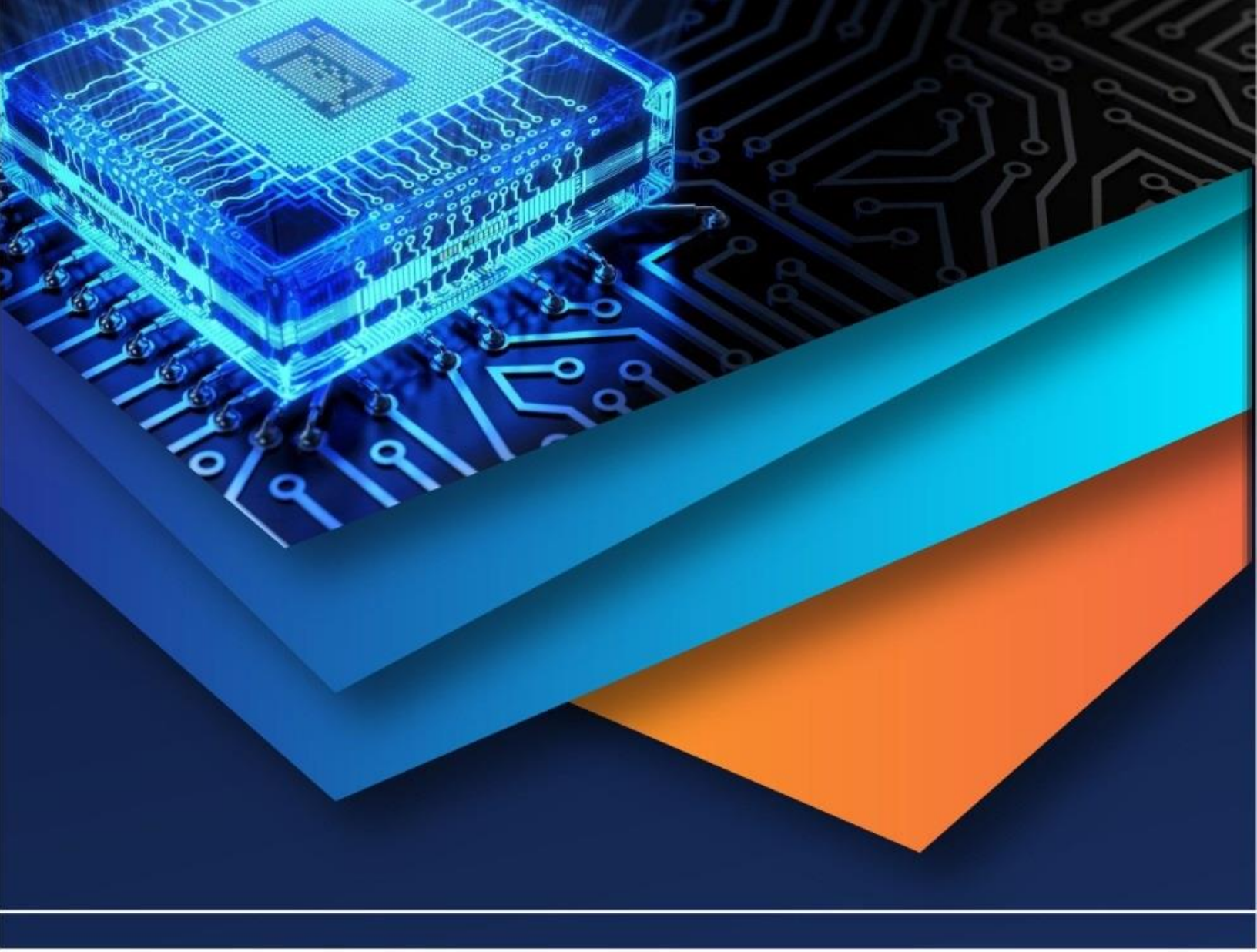
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