

Analysis of Database Collected from “Net Fire News of East Asia by GCOE”

Hiroki Tanaka and Makoto Tsujimoto

Tokyo University of Science, Japan

1. INTRODUCTION

Tokyo University of Science, Global COE Program (“GCOE”) has developed a mail delivery system “Net Fire News of East Asia by GCOE” (“the Net News”) for the purpose of understanding the current situation of fires occurred in East Asia. The Net News delivery started on January 20, 2009. GCOE Net News coordinators collect all fire-related news from news websites in fifteen countries indicated in *Table 1*. Collected information is delivered to subscribers every week and also posted on the GCOE website http://gcoe.moritalab.com/?page_id=237.

Based on fire news collected so far, this article investigates the recent trend of fire occurred in Asia and presents the result of analysis.

Table 1 Online news websites from which fire news are obtained

Country/District	Websites
China	China Daily, China.org.com, People
South Korea	Chosun Online, The JoongAng Ilbo
Taiwan	The Taipei Times, Taiwan Headline
Indonesia	The Jakarta Post
Singapore	The Straits Times
Thai	The Nation, Bangkok Post
Philippines	The Philippine Star, GMA Network
Malaysia	BERNAMA
Brunei	Borneo Bulletin
Viet Nam	VIETJO
Myanmar	BurmaInfo
Laos	LAO NEWS AGENCY
Cambodia	Phnom Penh Post
India	The Times of India
Bangladesh	The Daily Star

2. TREND OF FIRE IN FOUR COUNTRIES IN ASIA

In this chapter, the trend of fire in four countries in Asia is analyzed based on news collected from news websites. Fires occurred in China, Indonesia, Philippines and Malaysia are investigated. The four countries are selected because they offer more abundant data than others (both in the number of articles and the amount of information) that makes our analysis easier.

We examine the following five aspects of fire by using nearly two years' of information of the Net News No. 1 through No. 104 (delivered from January 20, 2009 to January 31, 2011). All four countries have over a hundred cases of fire.

* Types of fire

* Number of building fires by the occupancy of building

* Number of fatal fires in buildings by the occupancy of building

* Connection between the number of buildings damaged by fire and fatal fire

* Cause of fire

As mentioned above, note that the analysis is limited to the articles collected from online news only.

2.1 Types of Fire

Figure 1 shows the number of fires in each country according to fire types: building fire, forest fire, automobile fire, shipboard fire, railway fire, aircraft fire and other fire. (The number of fires includes those covered in news articles only and thus not necessarily identical as the actual fire cases.)

Frequency of "building fire" news is predominant in all four countries. Especially in Philippines, more than 90 percent of all fires were building fire. China presents a unique trend of having many "forest fire" and "automobile fire" cases. "Other fire" in China mostly broke out in coal or gold mines that may fall under work-related accidents, but they are counted as fire accidents in this article. This kind of fire has high possibility of killing people as well as is very likely to take heavy toll of lives at a time.

"Forest fire" in China broke out in the arid area from central to northwest region while few cases are seen in southeast cities or humid area. However, by closely examining each piece of news articles, we found that forest fire happened in Indonesia during dry season.

Indonesia also had more shipboard fires than other countries.

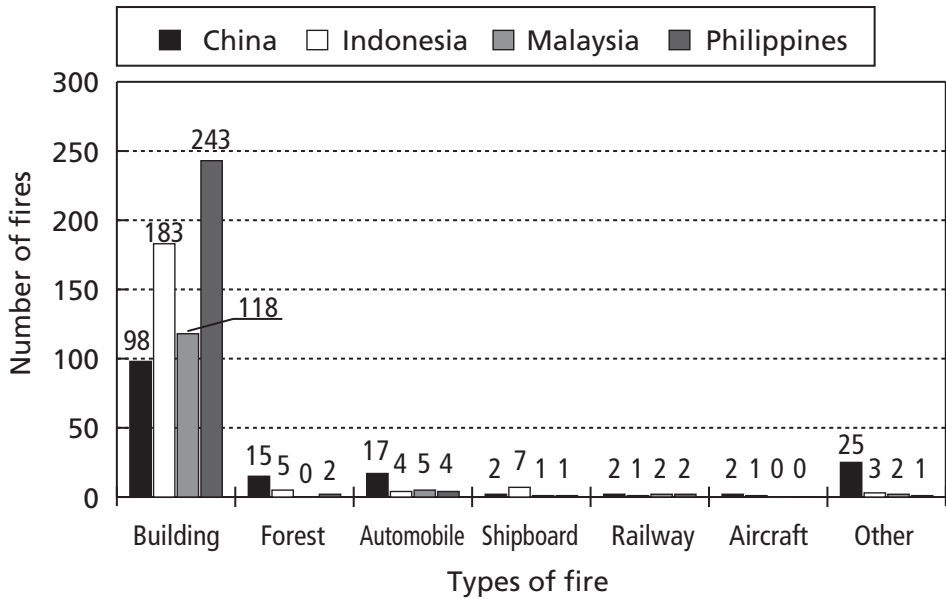


Figure 1 The number of fires by the types in each country

2.2 Number of Fatal Fires in Buildings by the Occupancy of Building

As news reports of building fires excel other types of fire, we focus on building fires in this section. Figure 2 shows the breakdown of building fires in each country according to the occupancy of building where a fire broke out. Values indicate the number of fires in each category.

Buildings are classified into ten groups; houses, stores, factories, office buildings, warehouses, complex buildings, hospitals, schools, apartment houses and other buildings. “Houses” mean stand-alone houses and “factories” include plants such as power plants. “Other buildings” refer to religious institutions, hotels and so on.

Although the total number of fires [N] varies from one country to another, Indonesia and Malaysia presents similar distribution. Approximately 40 percent comes from fire in houses and 20 to 30 percent from stores. When those in factories and office buildings are added, it amounts to over 75 percent.

In Philippines, fire in houses accounts for about 60 percent. The risk of fire in ordinary living circumstances in Philippines is considered to be higher than in other countries due to short circuit of home appliance, gas appliance troubles and forgetting to blow candles.

On the other hand, fires in factories are most common in China. While it has fewer cases in houses and stores, there are more fires occurred in apartment houses and complex buildings compared to the other three countries. This suggests that the economic development and urbanization in recent years are reflected in the frequency of fire news.

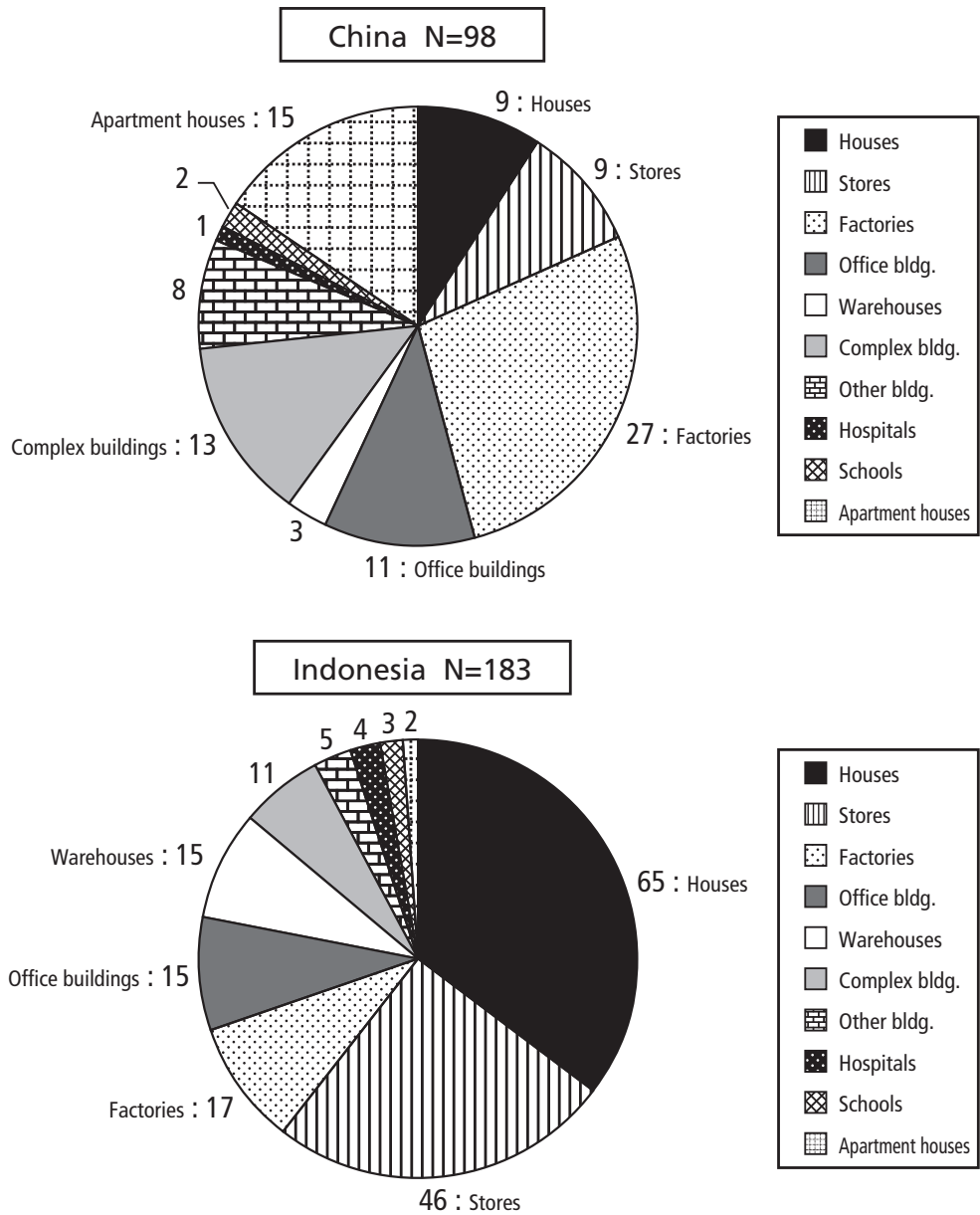


Figure 2 Number of building fires by the occupancy of building in each country

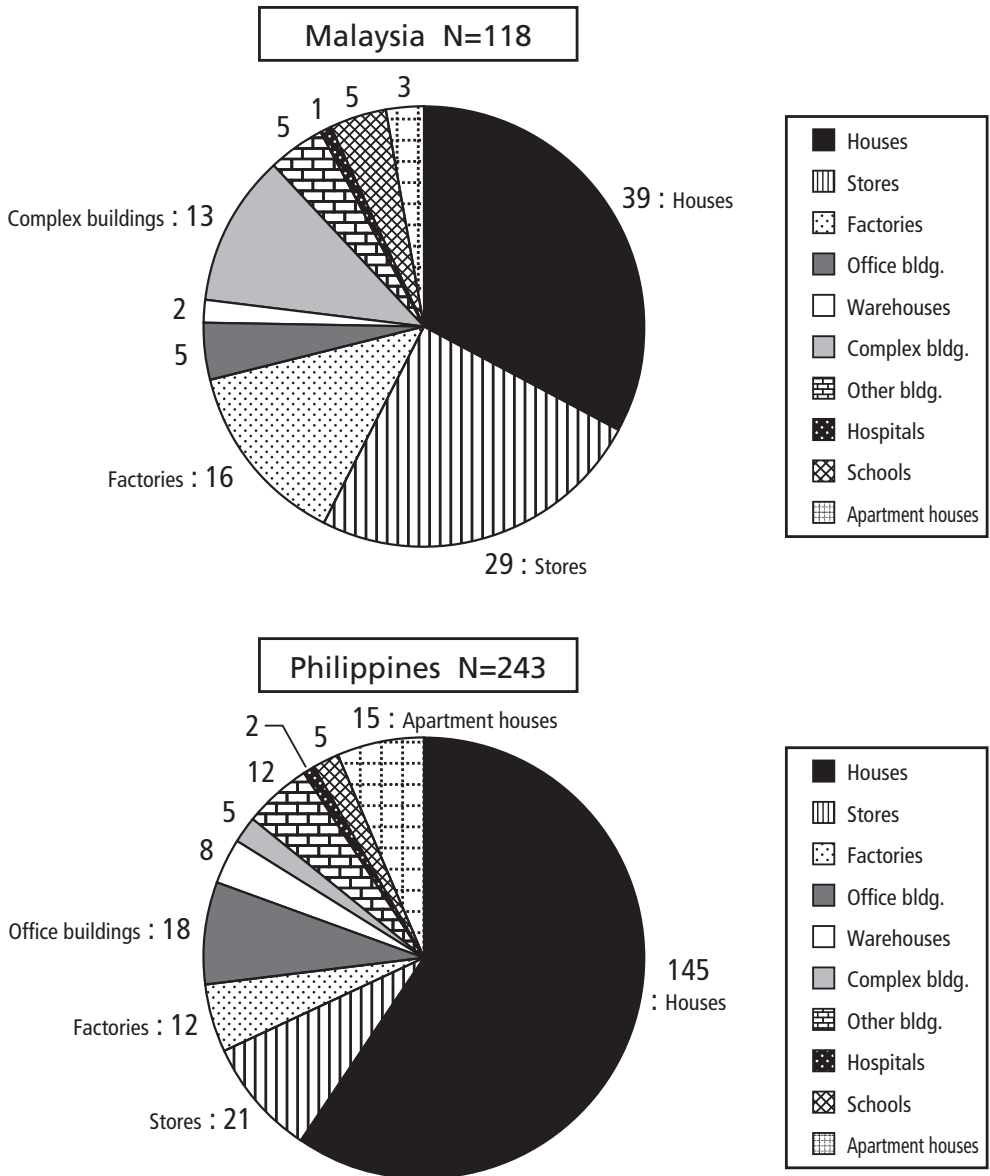


Figure 2 (continued) Number of building fires by the occupancy of building in each country

2.3 Number of Fatal Fires in Buildings by the Occupancy of Building

In order to identify the occupancy of building that tends to take heavy toll of lives in fire, the number of fatal fires (fires caused death) is counted by the occupancy of building as indicated in Figure 3.

Note that the total number of fires is fairly smaller in Malaysia than in other countries.

In Philippines and Malaysia, quite a lot of people died in fire in houses. Indonesia also shows a similar tendency with many victims of fire in houses.

In China, many people are killed in factory fires and considerable number of fatal fires occurred in apartment houses. Through the research, we found fifteen fire cases in apartment houses, of which eleven cases were fatal fires. That means approximately 70 percent of fires in apartment houses are fatal fires.

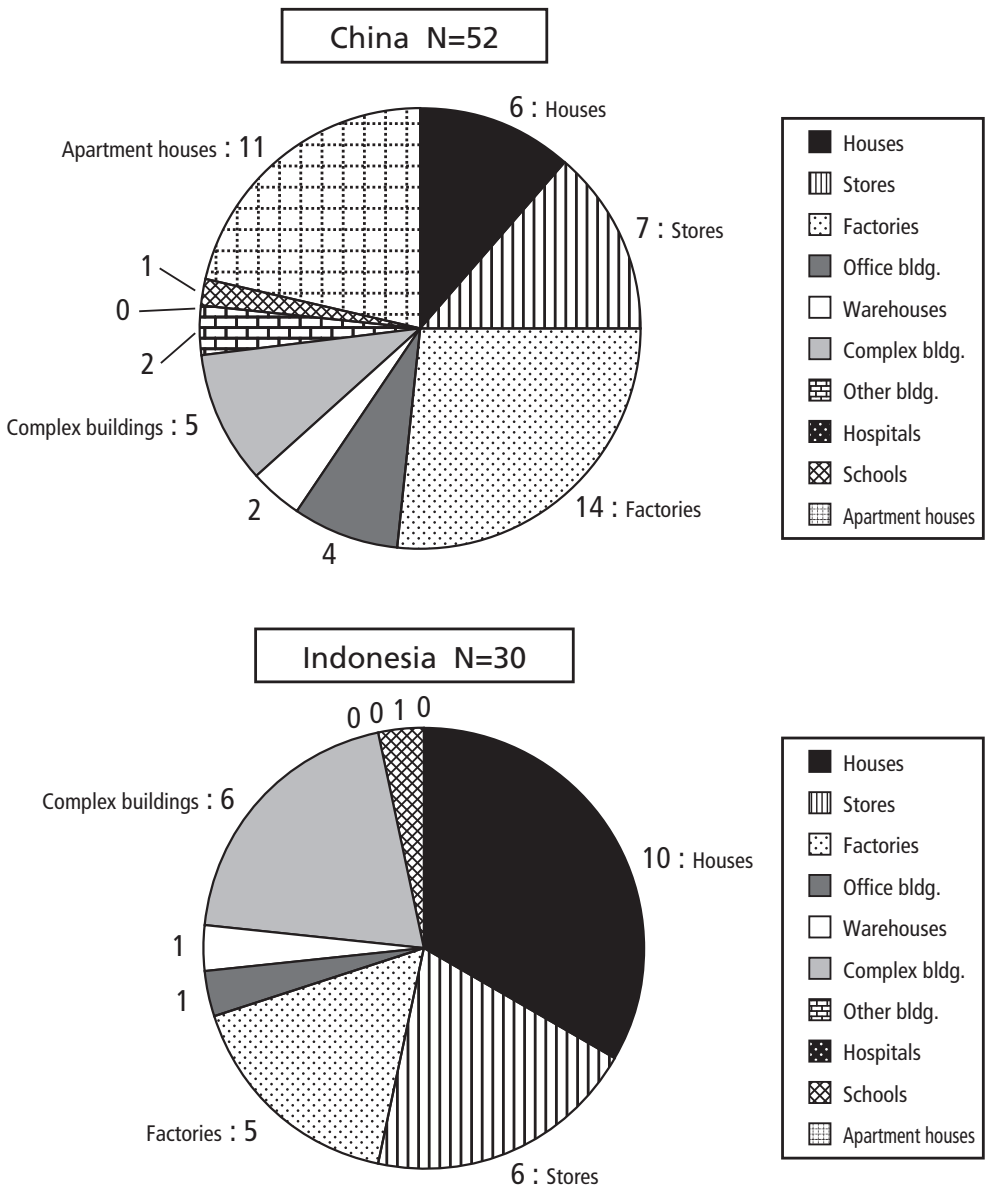


Figure 3 Number of fatal fires in buildings by the occupancy of building in each country

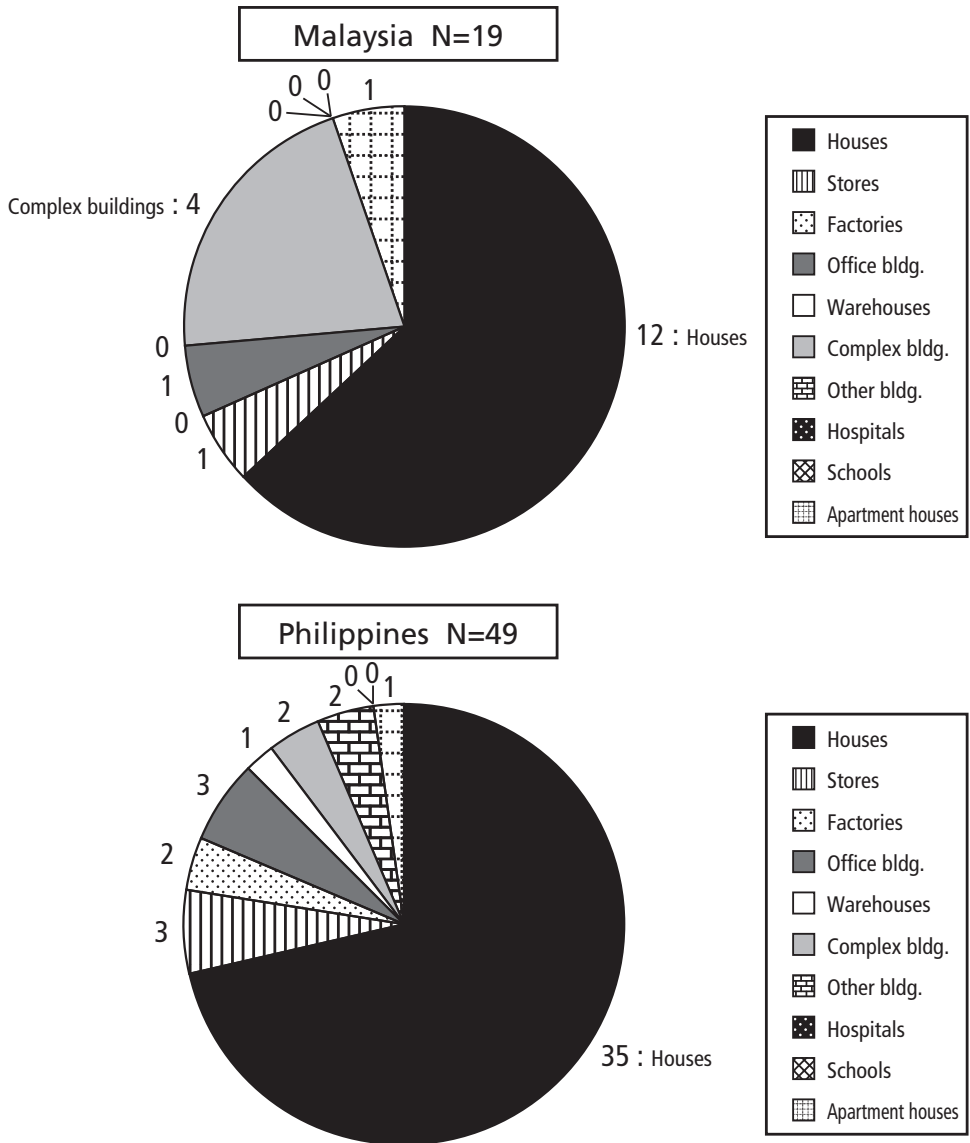


Figure 3 (continued) Number of fatal fires in buildings by the occupancy of building in each country

2.4 Connection between the Number of Buildings Damaged by Fire and Fatal Fire

Aiming to examine the connection between the number of buildings damaged by fire and fatal fire, the number of damaged buildings was divided into seven groups, namely 1, 2 to 5, 6 to 10, 11 to 20, 21 to 50, 51 to 100 and over 100. Figure 4 indicates the distribution of the number of total fires and fatal fires according to the groups of damaged buildings. When the exact number of damaged buildings is unknown, because

the news tells that two or more buildings are damaged by a fire but does not mention the exact number (they say “dozens of houses,” for example), the fire case falls under “exact number unknown” group.

First thing we notice is that fire involving a single building is most common in every country. In China, the majority is one-building fire and there are almost no news of spreading fires. Though fires that damaged more than a hundred buildings happened in China, they broke out in rural area such as the Xinjiang Uygur Autonomous Region but never in urban area. Thus it seems spreading fire has not occurred in cities in China. Another remarkable finding is that China shows higher percentage of fatal fire, which accounts for nearly 50 percent of total fires compared to less than 20 percent in other countries. However, we need to mention that they are unlikely to report fires with no fatality in China.

In Indonesia and Philippines, fires spreading to and damaging more than a hundred buildings happen frequently. It is surprising that fires involving more than fifty buildings occur once a month in average. Being large in scale, however, only a few cases of fatal fires are seen. As for the number of buildings damaged in fire, small scale fires happen as almost many times as larger ones, but again, they do not bring death. Malaysia does not have fires in which over a hundred buildings are damaged, and similarly to Indonesia and Philippines, it has few spreading fires that cause death.

Assuming that the above mentioned trend relates to economic development (namely the nominal GDP) of each country, economic development accompanied with the acceleration of urbanization decrease spreading fires. At the same time, the portion of fatal fires will increase within the total number of reported fires. We would like to further investigate whether this trend is associated with the increase of the risk of death in actual fire accidents.

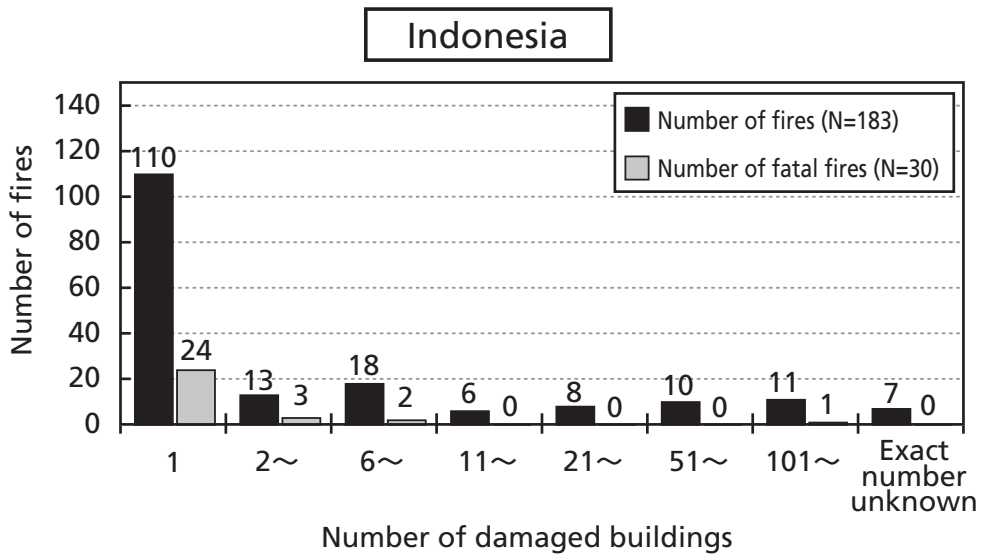
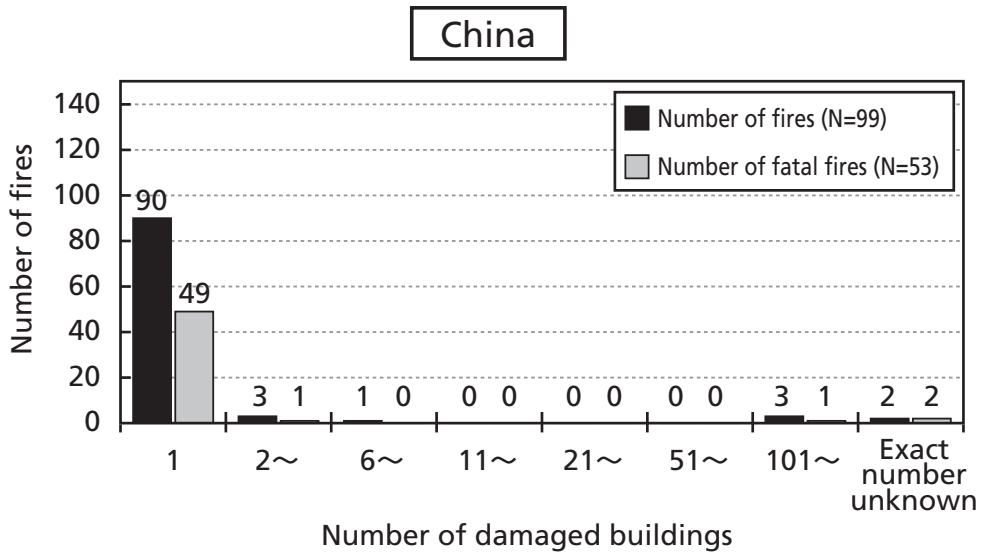


Figure 4 Number of fires by the number of damaged buildings in each country

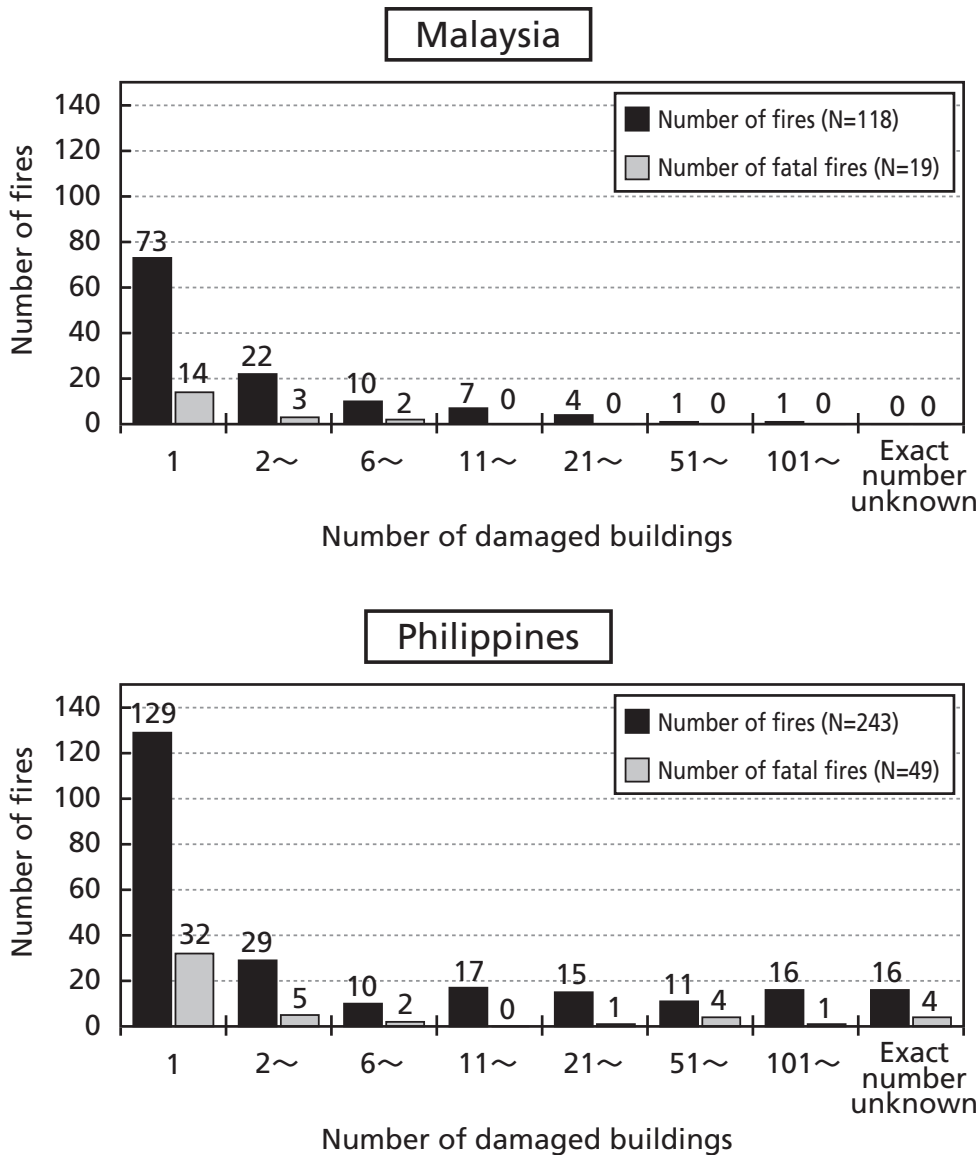


Figure 4 (continued) Number of fires by the number of damaged buildings in each country

2.5 Cause of Fire

Figure 5 shows the cause of fire (including the suspected cause) described in news articles. Causes are summarized by categories: short circuit, mechanical trouble, gas leak, gas explosion, gas stove, arson, candles, playing with fire, cigarettes, and others.

“Short circuit” includes those literally mentioned as short circuits and leak of electricity. “Mechanical trouble” includes troubles of operating machines, troubles of home appliances and overheating. “Gas leak,” “gas explosion” and “gas stove” all refer to

gas-related causes but we put them into separate categories.

From *Figure 5*, it is apparent that the major cause of fire is short circuit. Especially in three countries in Southeast Asia, 40 to 50 percent of fires are caused by short circuit. Reasons behind this trend vary from shortage of electricity supply, instability of voltage, houses not installed with circuit breakers to wiring without permission. However, since this problem seems to be common, they need to work together in analyzing the problem to find solutions and then making them widely known.

We can observe that gas-caused fires also happen frequently. Causes are different such as “gas explosion” in factories or fire breaking out of “gas stove” in houses, but there seems to be certain problem in gas supply system or the way of gas use.

While in Philippines, fires caused by candles sometimes occur. We cannot tell from the news whether candles are used for religious purpose (like offering light to god in Japan) or for lighting of daily life, but infrastructure of electricity and gas supplies still seems to be undeveloped anyway. Whatever the case, they use candles daily.

On the other hand, “others” account for a large proportion of fire cause in China. “Others” include fireworks, welding spark, explosion of chemicals and the like. This suggests that sources of fire or heat tend to increase and become diversified along with the economic development and urbanization.

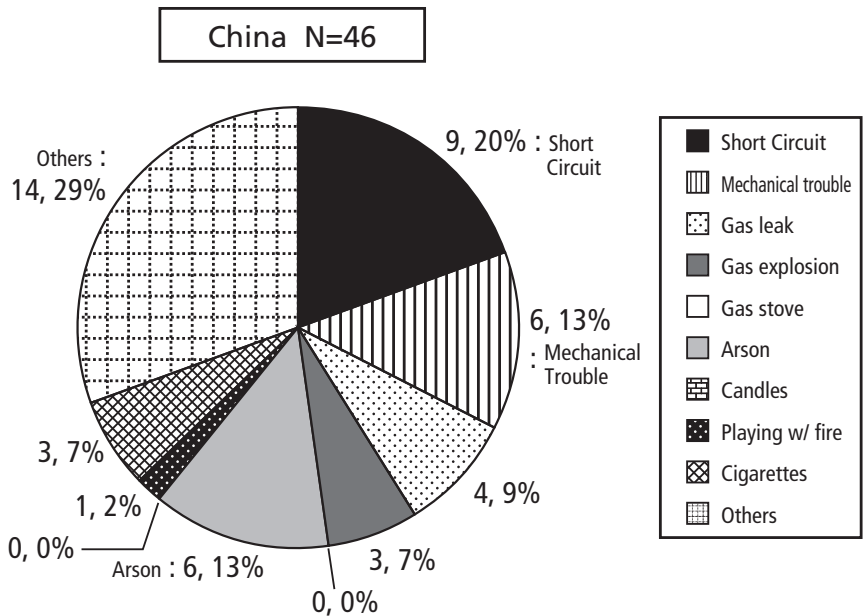


Figure 5 Cause of fire in each country

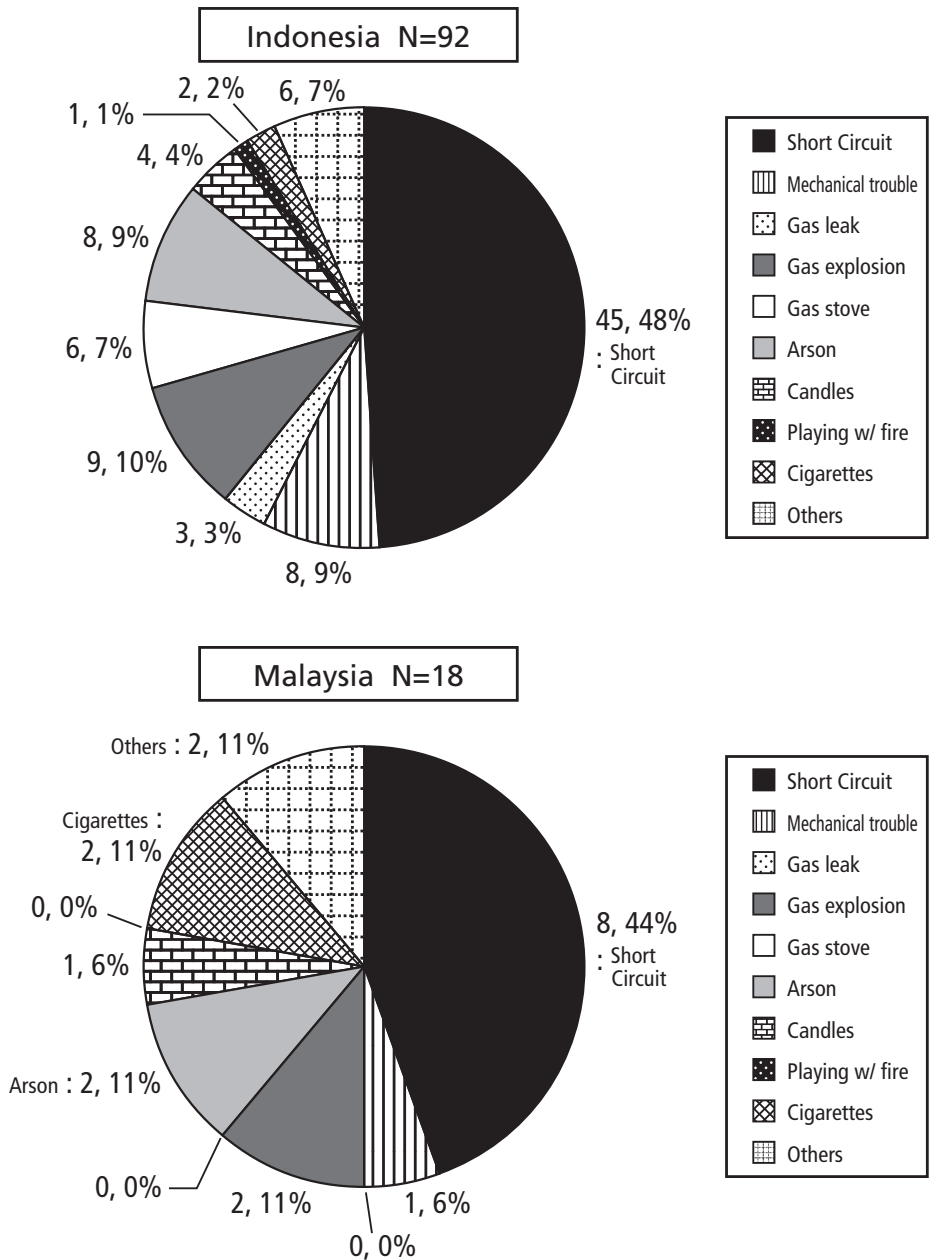


Figure 5 (continued) Cause of fire in each country

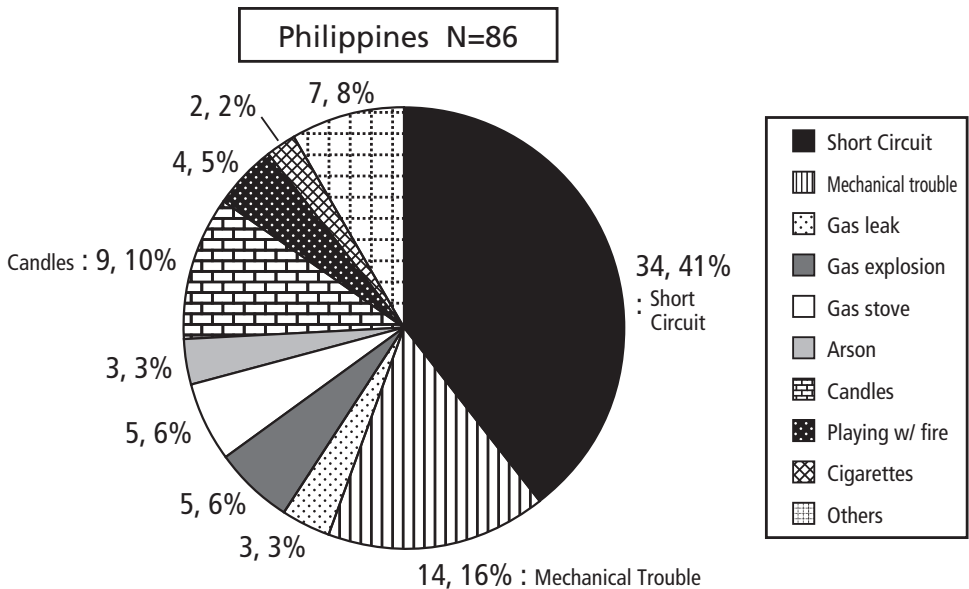


Figure 5 (continued) Cause of fire in each country

3. CONCLUSION

Analysis of current trend of fire in four countries in Asia based on the information from the Net News proposes the connection between economic development and fire. In China where rapid urbanization is progressing, fatal fire news are reported more frequently and fire sources are more diversified than in Indonesia, Philippines or Malaysia. The possible reasons of this tendency include the increase of high-rise buildings, complicated space structure, features of space such as extreme airtightness. In addition, various use of fire and heat as well as improvement of infrastructure may also affect the situations in China.

Philippines and Indonesia often have large-scale fires that destroy more than a hundred houses but fatal fires are less frequent. Without doubt, in districts where large fires break out, they are not familiar with using fire alarms and firefighting abilities have not been well developed. Even though, fatal fire scarcely occurs primarily because two reasons. Firstly, each house is small and has simple structure that allows people living there to be easily aware of fire and escape from it. Secondly, residents in the community can act in cooperation with each other in the case of disaster.

On the contrary, fatal fires increase in China probably because of the rapid urbanization. As ASEAN countries also expect further economic development in near future, they are likely to experience fire situations similar to China with the change in life circumstances including the increase of apartment houses. In other words, the trend in these countries possibly turn from “large but with few deaths” to “small but with

many deaths” fires. What is required for East Asian countries now is to prevent from such a change and hopefully to prepare the safety measures to keep fires to be “small and with few deaths.”

ACKNOWLEDGEMENTS

“Net Fire News of East Asia by GCOE” is operated with support from the Global COE Program granted by the Ministry of Education, Culture, Sports, Science and Technology (Tokyo University of Science “Center for Education and Research on Advanced Fire Safety Science and Technology in East Asia”). Here we express our gratitude for its contribution.

Note: *Table 2* below shows the nominal GDP of subject countries and their rank among 181 countries in 2009.

Table 2 The nominal GDP of subject countries in 2009

Country	Nominal GDP (in billion US dollar)	Rank
China	4,984.73	3
Indonesia	539.38	18
Malaysia	192.96	41
Philippines	161.20	49