

УДК 351

JEL Classification: A12; H10; P43

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Наталія Лега**THE FORMATION OF ORGANIZATIONAL AND ECONOMIC MECHANISM  
OF STATE FIRE SAFETY MANAGEMENT****ФОРМУВАННЯ ОРГАНІЗАЦІЙНО-ЕКОНОМІЧНОГО МЕХАНІЗМУ  
ДЕРЖАВНОГО УПРАВЛІННЯ ПОЖЕЖНОЮ БЕЗПЕКОЮ**

*The purpose of this study is to analyze and summarize the main elements of organizational and economic mechanism of state fire safety management, the causes of low degree of fire safety in Ukraine. The lack of funding leads to the search for new innovative models of additional fire safety funding.*

*This paper examines issues that affect the formation of organizational and economic mechanism of state fire safety management. The reasons of fire and material damage from fires in Ukraine are identified. The causes of low availability of fire safety in Ukraine are analyzed. Being a special organizational and economic tool for attracting and accumulating money, fundraising is suggested to be one of the forms of funding agencies and departments that provide fire safety.*

**Keywords:** *fire, fire safety, organizational and economic mechanism, fundraising.*

**Challenge problem and its connection with important scientific and practical tasks.** Fire safety is an important aspect of the life safety of citizens, which solves the problem of not only property loss prevention due to fires, but also life and health protection of Ukraine citizens. The main factor in ensuring a sufficient level of fire safety of the state is the formation of the organizational and economic mechanism of state fire safety management.

**A review of recent papers in topic area.** The problem of fire safety recently is engaged in many countries. Studies of its different aspects, such as the role of government in ensuring fire safety, legal groundwork of the system functioning, the influence of fire safety status of settlements and facilities on social and economic development of the state, the environment and the population welfare, etc. are presented in scientific publications of V. A. Domanskiy (Domanskiy, 2004), O. O. Kalashnikov (Kalashnikov, 2012), V. V. Lipynskyy (Lipynskyy, 2011), O. N. Martyn (Martyn, 2013), V. Y. Nazarenko (Nazarenko, 2013), O. V. Sydoruk (Sydoruk, 2011), O. O. Tursh (Tursh 2003), M. Rahn (Rahn, 2009), T. O. Scherba (Scherba, 2010).

However, the raised problem needs further fundamental research aimed at finding ways of forming effective organizational and economic mechanism of state fire safety management.

**The formulation of research objectives.** The purpose of this study is to analyze and summarize the main elements of the formation of organizational and economic mechanism of state fire safety management, analysis of the causes of low availability of fire safety in Ukraine. Lack of funding leads to search for new innovative models of additional fire safety funding. Multi-financing of fire safety based on a combination of budgetary and extra-budgetary sources becomes dominant.

**The presentation of the main results and their justification.** The mechanism may be complex and include several independent subsystems, as in our case – it is the economic and organizational, and also cover the social component of fire safety. The interaction of organizational and economic mechanism elements forms the organizational and economic mechanism of state fire safety management.

Fire safety is an absence of unacceptable risk of fires, fire growth and related possibilities of harming living beings, property and the environment (Code of Civil Protection, October 2012).

For comparison the total cost of fire in the United States is a combination of the losses caused by fire and the money spent on fire prevention, protection and mitigation to prevent worse losses, by preventing them, containing them, detecting them quickly, and suppressing them effectively. For 2011, that total cost is estimated at \$ 329 billion, or roughly 2.1 % of U.S. gross domestic product. Economic loss (property damage) – direct or indirect – represents only \$ 14.9 billion of this total. The net costs of insurance coverage

(\$ 20.2 billion), the cost of career fire departments (\$ 42.3 billion), new building costs for fire protection (\$ 31.0 billion), other economic costs (\$ 48.9 billion), the monetary value of donated time from volunteer firefighters (\$ 139.8 billion), and the estimated monetary equivalent for the civilian and firefighter deaths and injuries due to fire (\$ 31.7 billion), all are larger components than property loss (John R. Hall, 2014).

According to deck of fire account cards (Analysis of deck of cards ..., 2014) received from the local authorities of DSNS of Ukraine, excluding the Crimea and Sevastopol, and data in the Luhansk region for 7 months of 2014 and 9 months of 2014, 53024 fires were registered in Ukraine. Number of fires increased by 15.4 %, direct material losses increased by 2.0 times, indirect – by 3.2 times (Tab. 1).

Table 1

**Key figures of fire statistics in Ukraine for 9 months of 2014  
compared to the same period of 2013**

№	Item name	2014	2013	Tend in the country, %	% of total
General information about fires					
1.	Number of fires	53024	45934	15,4	-
2.	Direct losses, thousand UAH	1017997	502767	102,5	-
3.	Indirect losses, thousand UAH	5416469	1679109	222,6	-
4.	People died because of fires	1459	1549	-5,8	
	Including children and adolescents up to 18	42	48	-12,5	2,9
5.	People died because of fires in urban areas	729	766	-4,8	50,0
6.	People died because of fires in rural areas	730	783	-6,8	50,0
7.	Persons injured	1077	1062	1,4	-
8.	Destroyed or damaged buildings, structures (units)	20467	15781	29,7	-
9.	Destroyed or damaged equipment (units)	3445	2556	34,8	-
10.	Destroyed feed (tons)	11528	6154	87,3	-
11.	People died because of fires, over 100 thousand of population	3,4	3,4	-	-
12.	The number of fires per 10 thousand of population	12,3	10,1	21,8	-
13.	Direct losses per 10 thousand of population, thousand UAH	236,8	110,5	114,3	-
14.	The number of fires in cities and towns	33363	29567	12,8	62,9
15.	The number of fires in villages	19661	16367	20,1	37,1
Objects of fires					
1.	Industrial installations	388	329	17,9	0,7
2.	Trade and warehouse installations	783	633	23,7	1,5
3.	Socio-cultural, public and administrative buildings	537	274	96,0	1,0
4.	Livestock buildings	16	13	23,1	0,1
5.	Other agricultural objects	84	46	82,6	0,2
6.	Buildings of housing sector	39579	35811	10,5	74,6
	- Including residential houses	13450	12516	7,5	25,4
7.	Other objects	11637	8828	31,8	21,9

*Source: composed by the authors according to the data (Analysis of deck of cards..., 2014)*

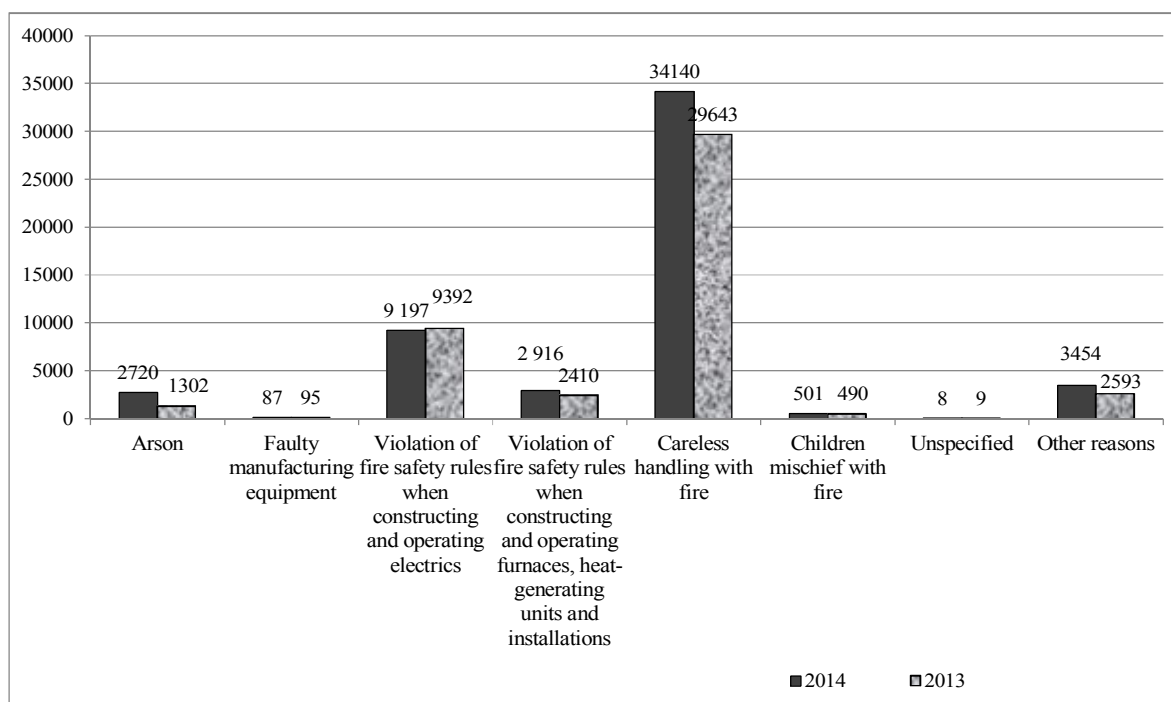
The number of people killed as a result of fires has decreased by 5.8 %; number of injured in fires increased by 1.4 %. 42 children died as a result of the fires. At 29.7 % more destroyed and damaged buildings and structures, at 34.8 % more of vehicle and other type equipment, at 87.3 % more of destroyed roughage, at 2.9 times more animals died.

Losses from fires totaled 6 billion 434 million 466 thousand UAH (including direct material losses of 1 billion 17 million 997 thousand UAH and indirect material losses of 5 billion 416 million 469 thousand UAH). During the first 9 months of 2014 1636 people were found dead on the site of fire, among them – 42 children. 1459 people were killed by fires, including 42 children, 1077 people were injured, including 75 children.

On average every day 194 fires occurred in Ukraine; material losses amounted to 23 million 569 thousand UAH. On average each fire caused direct material loss of 19.2 thousand UAH.

Every day because of fires 5 people were killed and 4 people were injured, 5 farm animals were killed, 75 buildings or structures and 13 units of equipment were destroyed or damaged by fire.

In recent years number of arsons has been dynamically increased, in 2014 this figure increased more than 2 times (Fig. 1).



**Fig. 1. Causes of fires in Ukraine during 2013-2014 years**

*Source: composed by the authors according to the data (Analysis of deck of cards..., 2014)*

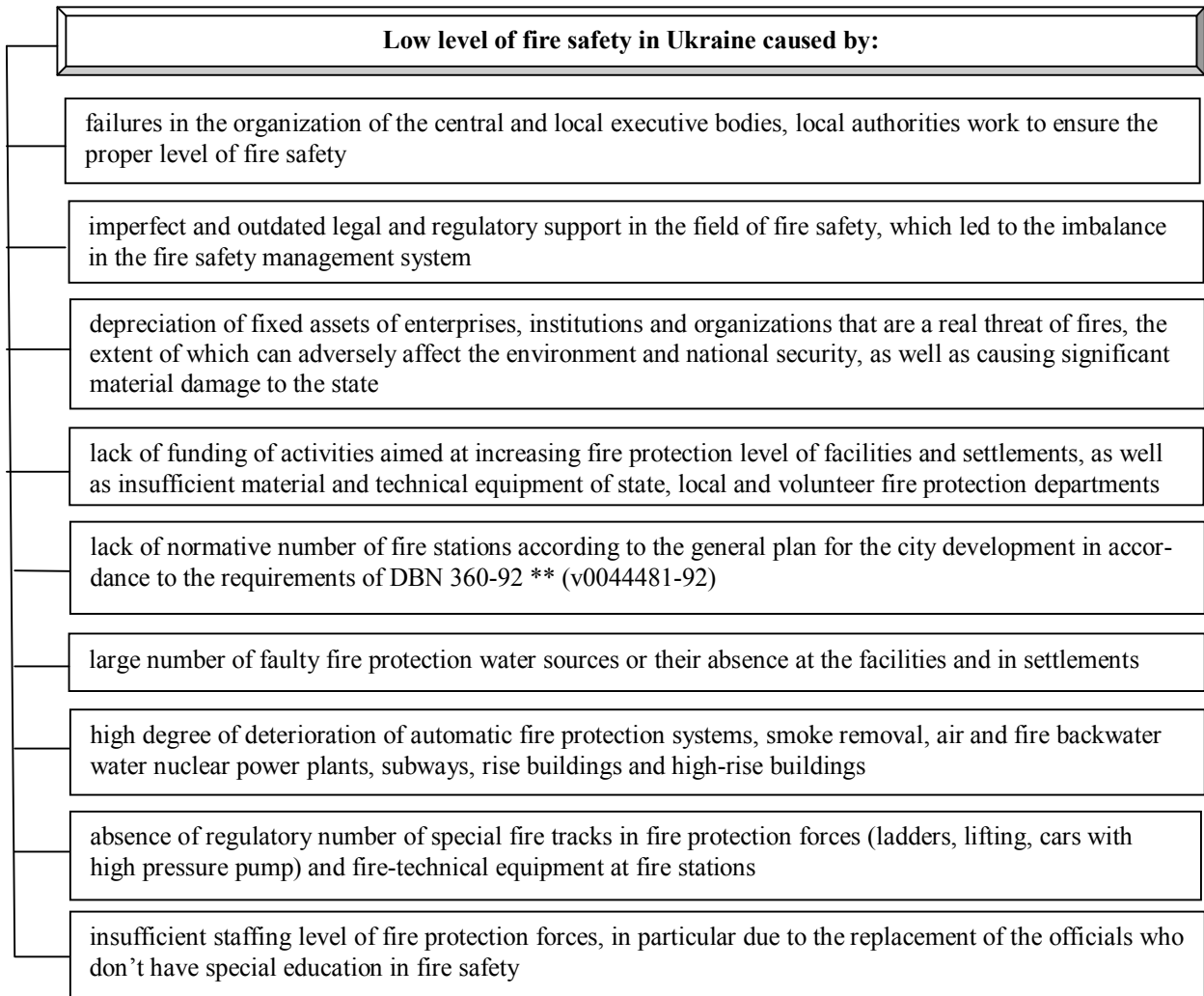
Of course, the increase of fires in Ukraine was caused by military actions in eastern Ukraine in particular. From June to September in the area of anti-terrorist operations about three thousand fires occurred – it's 15 times more than during the same period last year. Majority of fires occurred on forest, woodland belt and steppe territories. This data is shown in a study conducted by the International Charity Organization "Environment-Law-People".

The unsatisfactory situation with fires and their after-effects shows the need to solve the problem of human lives protection, national wealth and environment, that needs fire protection strengthening of population and state territory.

The main causes of the problem are:

- Lack of funding of activities aimed at technical re-equipment of fire-rescue units of Operational Rescue Service by modern samples of fire appliances and equipment;
- Lack of the required number of units of local fire protection, insufficient provision of fire trucks and low professional preparation level of workers.

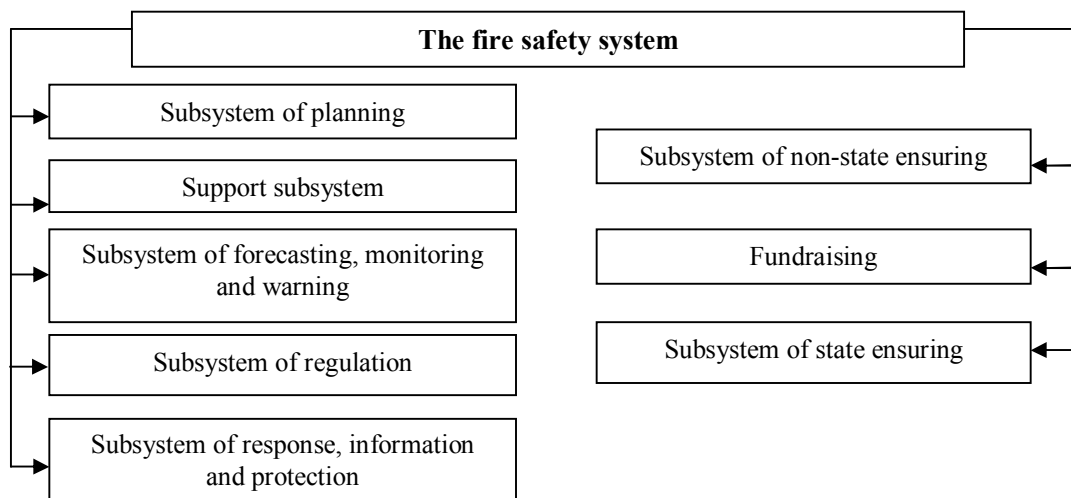
These factors adversely affect the level of fire protection of the population and state territory and lead to an increase in the number of victims because of fires and increased state's economy losses. Analysis of the causes of low level of fire safety in Ukraine is shown in Fig. 2.



**Fig. 2. Analysis of the causes of low level of fire safety in Ukraine**

*Source: developed by the authors based on (Concept of the State ..., December 2010)*

The object of management of the organizational and economic mechanism of fire safety state management is the fire safety system (Fig. 3).



**Fig. 3. Structure of the fire safety system**

*Source: developed by the authors*

The system of fire safety security is created and developed in accordance with the Constitution of Ukraine, decrees of the President of Ukraine, Governmental Regulation, Laws of Ukraine, the Code of Civil Defense of Ukraine, government programs in this area. This system is based on authorities who ensure implementation of the state policy in fields of civil protection of population and territories from emergency situations and their prevention, emergency response, rescue work, firefighting, fire and technological safety, work of emergency service, prevention of non-production accidents, and also hydro meteorological activity.

The system of fire safety, in our opinion, includes the following subsystems in terms of action on the object of management:

- subsystem of planning which can be considered as a process of setting goals and objectives for long term fire safety management, and choose the best way of achieving them and resource provision;
- support subsystem, which is a set of socio-economic measures directed to maintenance of fire safety management process;
- subsystem of forecasting, monitoring and warning, which includes prediction measures, is based on scientific research and achieves the main goal of fire safety management;
- subsystem of regulation, which is a state activity to establish legal, economic and social prerequisites necessary for effective fire safety;
- subsystem of response, information and protection.

In its turn, the system of fire safety security includes: a) a subsystem of state ensuring and b) subsystem of non-state ensuring. Usually the key to the effective functioning of the fire safety system is financial security. Traditionally, the most significant source of financial security of agencies and units that provide fire safety is the state and local budgets, while funds received from other sources are only additional financial resources. Thus, the main form of financial security of agencies and units that provide fire safety is budgetary financing. But the role of extra-budgetary financing is growing. Extra-budgetary cash inflow and income in tangible or intangible forms which budgetary institution receives is the result of its independent financial and economic activity. The main sources of extra-budgetary funds are services payment and sponsors' support which have recently become widely used. One of the forms of financing social projects and budgetary institutions' target programs may be fundraising, which is a specially organized process of collecting funds for projects of non-profit organizations (Crystal, 2012).

Funding of agencies and departments that provide fire safety on the basis of the fundraising is carried out with the following tools:

- Grant – charity donation (fee) provided by donor organization for the implementation of nonprofit project or program;
- Interest-free repayable financial assistance (grant rotary) provided to non-profit organizations for projects which involve revenue as the result of the implementation of the project. Reimbursable financial assistance involves full or partial refund of provided funding;
- Service payment on a contractual basis for holding of seminars, researches for the non-profit organization by fundraising companies.

Nonprofit activity of agencies and departments that provide fire safety, is not intended to make a profit, and is carried out in the national interest in order to attract additional financial resources.

**Summary and further research perspectives.** So, ensuring the fire safety is an important factor of stable development of the country and its regions. To summarize the above, we believe that it is possible to recognize the organizational and economic mechanism of state fire safety management is based on a number of organizational and economic methods, tools and instruments, and is supported by legal, organizational, technical, socio-cultural, institutional and informational support.

Lack of funding leads to the search for innovative models of additional financing of fire safety. One of the forms of funding agencies and departments that provide fire safety may be fundraising (special organizational and economic tool for attracting and accumulation of funds).

Improve procedures of the effective organizational and economic mechanism of state fire safety management and its implementation stages on practice are going to be one of the directions for our future research.

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**Viktoriya Chuban, Nataliya Lega**

### **FORMATION OF ORGANIZATIONAL AND ECONOMIC MECHANISM OF STATE FIRE SAFETY MANAGEMENT**

*Fire safety is an important aspect of life safety of citizens, which solves the problem not only of property loss prevention due to fires, but also of life and health protection of Ukrainian citizens. The formation of organizational and economic mechanism of state fire safety management is the main factor in ensuring a sufficient level of fire safety of the state.*

*The purpose of this study is to analyze and summarize the main elements of organizational and economic mechanism of state fire safety management and the causes of low degree of fire safety in Ukraine. The lack of funding leads to the search for new innovative models of additional fire safety funding. Multi-financing of fire safety based on a combination of budgetary and extra-budgetary sources becomes dominant.*

*This paper examines issues that affect the formation of organizational and economic mechanism of state fire safety management. The reasons of fire and material damage from fires in Ukraine are identified. The causes of low availability of fire safety in Ukraine are analyzed. Being a special organizational-economic tool for attracting and accumulating money, fundraising is suggested as one of the forms of funding agencies and departments that provide fire safety.*

*Therefore, ensuring of fire safety is an important factor of sustainable development of the country and its regions. Summing up the above mentioned, we believe that it is possible to admit that organizational and economic mechanism of state fire safety management is based on a number of organizational and economic methods, tools and instruments, and is supported by regulatory, organizational, technical, socio-cultural, institutional and informational mechanisms.*

*The lack of funding leads to the search for new innovative models of additional fire safety funding. Fundraising (special organizational and economic tool for attracting and accumulation of funds) can be one of the forms of funding agencies and departments that provide fire safety.*

*Procedures for improving of effective organizational-economic mechanism of state management of fire safety and implementation of the phases in practice become one of the directions of our future research.*

**Keywords:** *fire, fire safety, organizational and economic mechanism, fundraising.*