

вом доходе, гораздо выгоднее осуществлять за счет вложений ресурсов в отрасли, которые обеспечивают конкурентные преимущества. А для РФ это высокотехнологичные отрасли и наука, требующие крупных затрат. Мировой опыт показывает, что выгоды от высокотехнологичных проектов намного пе-

решивают вероятные риски, тогда как потери, связанные с отказом от технологического соревнования и заведомым поражением в экономической конкуренции, гораздо выше. Среди них главным является нарастающее «отставание в развитии», определяемое действующей в РФ ресурсоемкой экономикой.

1. Гохберг Л. Национальная инновационная система России в условиях «новой экономики» // Вопросы экономики. — 2003. — № 2. — С.26—44.
2. Авдулов А.Н., Кулькин А.М. Системы государственной поддержки научно-технической деятельности в России и США. — М.: ИНИОН, 2003.
3. Наука и государственная научная политика: теория и практика. — М.: Наука, 1998.
4. Зайцев М. Корпорация Россия: видимая рука рынка. — М.: ЗАО «Журнал „Эксперт”», 2005.
5. Варшавский А.Е. О рекомендациях по сохранению и дальнейшему развитию российской науки // Экономика и математические методы. — 2004. — Т. 39, № 2. — С 86—102.
6. Глазьев С.Ю. В очередной раз на те же грабли? // Рос. эконом. журн. — 2002. — № 2. — С. 32.
7. Бекетов Н. Государственная политика инноваций // Экономист. — 2004. — № 9. — С. 64.
8. Агамова Н., Аллахвердян А. Девальвация деклараций // Поиск. — 2003. — № 40. — С 7.
9. Субботина Т. // Вопросы экономики. — 2006. — № 2. — С 46.

Получено 30.11.2006

І.В. Шульгіна

Наука та інноваційні технології як джерело економічного розвитку (світовий досвід і можливості Росії)

Розглядаються роль науки в інноваційній системі передових країн, інноваційна політика і зміни в організації НДІКР. Дано оцінку деяких результатів реформ РФ в економіці та науці з точки зору переходу на інноваційний розвиток.

Birutė Pitrenaitė

Emergency Management System in Lithuania: Functions and Complications to Implement them

Introduction

The State must be able to rule the country effectively not only in favourable times but also in emergency. Emergencies can be evoked by natural, technical, ecological or social factors that bring conditions causing a danger for human lives and health, property, nature or interests of the State. Duty of the State is to forecast threats, to assess them, to get prepared for their defeat, and when they happen, to organize liquidation and elimination of outcomes. For the purpose of these tasks every single country has the Emergency

Management System (hereinafter the EMS) in place. In order to ensure its functioning particular organizational and legal measures are taken and human, financial and material resources are allocated. The extreme events of different nature that have shocked the world during the last decade revealed that functioning of EMS in even vastly experienced countries when localizing emergencies and eliminating their outcomes contain some gaps and shortcomings (for instance, hurricane damage in USA, losses from mass riots in France). Lithuania is located not in

© Birutė Pitrenaitė, 2007

the zone subject to natural disasters of such enormous scale like for instance countries of the Southeast Asia or Central America however obsolescence of equipment in dangerous industrial objects increases risk of ecological disasters, growing flows of immigration enhance the threat of terrorism, more and more often humans and environment experience losses caused by the natural phenomenon. These and other threats require for improvement of Lithuanian preparation to act properly in emergency. It's been several years already that the governmental programs of Lithuania cover some measures for EMS development and for improvement of its functioning. Unfortunately extreme events that have attracted attention of the general public and have been largely highlighted by the media as raising various threats for living environment (large-scale peat bog fires in 2002, fires in Kurpių Nerija in 2006, extreme cold in 2005) revealed that there were some shortcomings in the performance of the public institutions when fighting with them. Problems in concentration of taskforces and means, problems in operation coordination and compatibility for collective actions as well as some other problems allow for supposing that measures applied for development of EMS are not sufficiently effective or proper.

Relevant problems of crisis and emergency management systems are analyzed by foreign scientists, for instance P.Lagadec (France), U.Rosenthal, P.Hart, (Netherlands), B.Porfiriev (Russia), by researchers of Washington National Defence University and other scientific institutions. There are books of this topic published abroad, and scientists that study various dimensions of crisis and EMS publish their works in the specific scientific publications like *Australasian Journal of Disaster and Trauma Studies*, *Journal of Con-*

tingencies and Crisis Management and etc. Scientific papers study problems of EMS structure, of organization and coordination of its operation as well as some other problems arising under extreme and critical conditions, analyze concrete cases, investigate causes of insufficiently effective functioning of the system and of separate its components. However application of experience of foreign countries' researchers for Lithuania's situation might be problematic due to specificity of EMS of every single country. Until now scientific investigations of EMS in Lithuanian are absent and there are only few papers dedicated specifically for the specificity of the public management under extreme conditions (A.K.Orenius, B.Pitrėnaitė). Therefore given the present situation in this field and degree of its exploration, this paper deals with the following key tasks:

- ❖ institutions (components of EMS) that take part in management of emergencies and in localization, elimination of emergencies' impact are identified;
- ❖ changes in public management and in functioning of institutions under extreme conditions are analyzed;
- ❖ factors that mostly influence effectiveness of EMS functioning during preparation for liquidation and during liquidation of emergencies are determined and assessed;
- ❖ problems in EMS development are assessed;
- ❖ causes that reduce effectiveness of Lithuanian EMS functioning and potential outcomes thereof are studied.

When dealing with these tasks traditional, causality, logical and structural-functional analysis are used as well as methods of process simulation, decomposition and synthesis.

Changes in Public Management under Emergencies

On international, regional or national scale because of some threats, extreme conditions can emerge causing a sudden and great danger for human lives and health, property, nature or they can lead to ruination of the hu-

man race, harm and great property losses (Law on Civil Safety, 1998). These dangers can be caused by factors of natural, technical, ecological and social nature or by the sum of different factors. Events when scale

of the factors exceeds the established innocuous level become the extreme ones. According to the nature of extreme situation that is formed by the extreme event or by the sum of different events, all the events or events can be grouped as follows: violence, non-violence, technological events and disasters. It's necessary to ensure State's preparation for emergency management and this requires for provision and implementation of some legal, organizational means and allocation of human, material and finance resources.

Under extreme conditions the fundamental human rights — to life, freedom and safety — fall in danger. Therefore when striving to protect rights, restriction of human freedoms' use can become necessary as well as restriction of the activity of physical and juridical bodies performing under normal conditions.

However in order for the State to start

applying restrictions on human rights and freedoms provided in the Convention for the Protection of Human Rights and Fundamental Freedoms and in the Constitution of the Republic of Lithuania it is necessary to:

- ❖ have introduced special legal regime
- ❖ and after its introduction to have reformed (adjusted to act under extreme conditions) operation of the State and municipality's institutions.

Legal basis for reorganization of the State's governing is ensured through announcement of state of emergency or the state of war. What state to impose on the country depends on the type of emergency.

It is evident that State governing in emergencies becomes complicated and problematic. In order to prevent loss of human lives, of private and State property, in order to retain constitutional system and country's sovereignty it is essential that the State had created and implemented effective and efficient EMS.

Functions of the Emergency Management System

Intricacy of emergency management determines complexity of management system as well. EMS can be decomposed into the following levels: municipality, county and state levels.

In addition to constantly acting institutions every municipality and country contains Centre for Emergency Management that is formed of staff taken from various institutions (Law on Civil Safety, 1998), and on the national scale the Commission of Emergency operates. Functions of these centres and the Commission are dependant on the situation — i.e., under normal conditions these institutions perform functions of planning and preparation for emergency management, and under extreme conditions they perform functions of coordination and management within their competency.

In special cases, when state of emergency or state of war is imposed, specific institutions may be established that operate only under these conditions.

It is evident that this complex EMS performs many different functions. Analyzing the system in accordance with the dimension of performed functions allows for identification of three main activity trends:

- ❖ functions of emergencies forecast, prevention and monitoring;
- ❖ functions of operational management (localization of extreme events, elimination of outcomes, etc.);
- ❖ functions of logistical support (material, technical, financial and etc. provision).

However in order to identify preferential functions, their influence on the whole performance of the system, and to determine inter-functional relations it is necessary to decompose and systematize presented characteristics. After this task was accomplished, functional framework of EMS was constructed that illustrated operation of different institutions in the field of emergency management (ref. to Fig. 1).

The functional framework illustrates that all the fields of system's operation are inter-

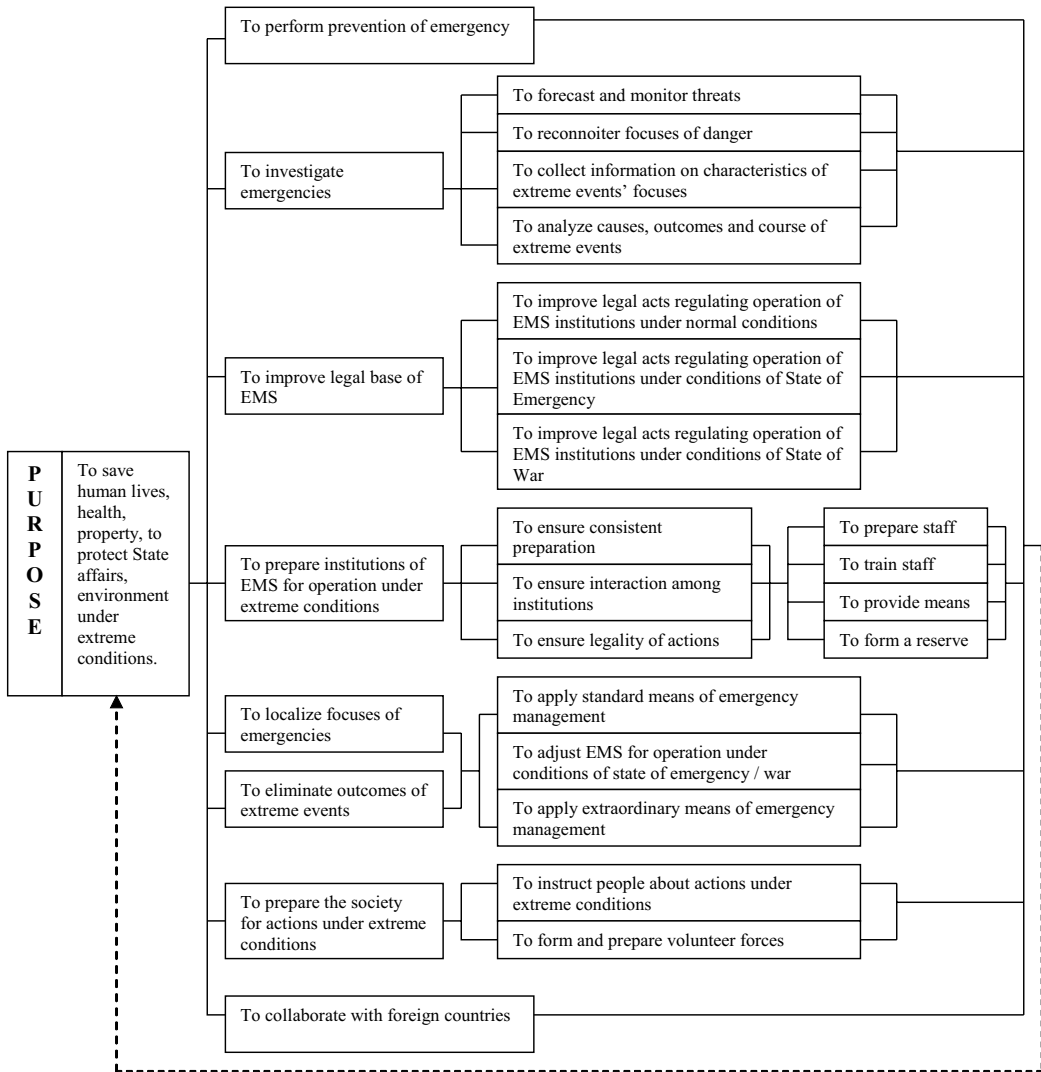


Figure 1. Functional Framework of Emergency Management System (EMS)

related and only when all the functions are properly performed system's operation un-

der extreme conditions is efficient and its purpose is achieved.

Trends in the EMS Development

Today the world is facing disasters on an unprecedented scale: more than 200 million people were affected by natural disasters globally each year, on average, between 1994 and 2003, with a range of 68 million to 618 million. During the same period, these disasters claimed an average of 58000 lives annually, with the range of 10000 to 123000.

In a year 2003, 1 in 25 people worldwide was affected by natural disasters. Scientific predictions and evidence indicates that global climate change will continue to increase the number of extreme events, creating more frequent and intensified natural hazards such as floods and windstorms (Guha-Sapir D. etc., 2004). Such

prognosis challenge governments to pay more attention to EMS development.

There are no identical EMS in the world because every single State shapes this system depending on probable threats, its own geographical and geopolitical situation, public structure, specifics of policy making, of public administration, territorial-administrative division and legal regulation as well as taking into account financial opportunities and other important factors. For instance, some countries have autonomous EMS that are independent of any other system in the public sector (Emergency Ministries are established) whereas management of emergencies in the USA is decentralized and different functions are performed by the specialized agencies. In Lithuania specific EMS functions too that differs from the any other State's system. However irrespective of features and specificity, requirements raised for all EMS are the same — they must produce as precise forecast of threats as possible, timely identification and assessment thereof and when threats come into play — operative response and localization, flexible action in liquidating emergencies and their outcomes (Hagman H., 2002). If system meets these requirements it is possible to presume that it is able to ensure maximum protection of population, property, environment and interests of the State under conditions of emergency.

Today public sector agencies have not seriously committed themselves to preparedness and prevention. Calculations of risks and vulnerability assessments were a lower priority than response. The general approach to emergency management has remained reactive, focusing on relief, followed by rehabilitation and reconstruction (Guha-Sapir D. etc., 2004). Forecasting and monitoring threats, prevention planning was not a policy priority. As a lots of other countries Lithuania invests more in reaction, and too little concerns about forecast and preparedness processes. In such states as Lithuania with poor

enough experience of emergency management should be the purpose to get scholarly contribution. In order to increase the efficiency of emergency management it is essential to ensure proper emergencies' prognostication and operative decision making. To reach the goal composition of the Expert Systems to forecast emergencies can help. It would be advantageous to take the experience of this work from scientists of Dobrov Center for S&T Potential and History Studies of National Academy of Sciences of Ukraine. Applied science can provide EMS with possibility that using modern information technologies EMS experts could forecast emergencies express in order to obviate disaster or to make optimal decisions for effective elimination of it. Expert systems ensure that high-skilled experts would be able to answer the questions promptly on-line from an every point in the world. In the central server processed answers could be used by concerned officers to provide institutions of EMS and others with well-founded information. All the experts could share their experience, and EMS officers could apply experts' recommendations. Expert Systems to forecast emergencies would ensure that evaluation, prognosis of extreme events and references how to escape or eliminate them are science-based. Use of this system would help to make optimal decisions.

Irrespective of no EMS perform ideally however every State has a chance to assess mistakes made by other countries, shortcomings of their systems and to intercept and apply examples of good practice for the conditions of their own country. In order to achieve this it is necessary to analyze and assess what factors and components of the system have a major influence on the activity of institutions that perform functions of emergency management, what determines effectiveness of the whole system, what kind of problems exist, what kind of means could lead to the possibly highest effectiveness of the system. Without having answers to these questions it is unlikely that any efforts to improve performance of EMS could be useful.

When developing or improving any system the attention is concentrated on its functions and structure, on regulation of its activity, logistical procurement and staff. The EMS is not an exception therefore when implementing tasks of its development it is necessary to deal with problems how to create an effective structure, properly regulate its activity, adequately prepare its staff and sufficiently supply the system with logistical means in order to ensure maximum protec-

tion of people, property and nature under the critical conditions. These are the factors (maximal conformity of the structure with the functions of the system, regulation of the activity, staff, logistics) that have a major impact on effectiveness of the system's operation when preparing to liquidate and when liquidating emergencies and eliminating their outcomes. Therefore it is necessary to analyze and assess them.

Complexity of EMS Structure and Weakness in Logistical Procurement

Decision making in modern organizations cannot be adequately understood by interpreting it in terms of the hierarchical structures. Outcomes of their activity are determined not as many by the decisions made in the separate organization as by the complex interaction among organizations and their sections (Parsons W., 2001). EMS cannot bypass complex inter-institutional relationships when preparing for and implementing management of emergencies. In order to ensure operative response to the extreme event in emergency and apply effective measures for its localization, flexibility of the system is absolutely necessary as well as prompt vertical and horizontal coordination of actions and communication among components of the system. However given the present structure of the EMS it is true to say that reliability and precision of communication is lost due to the hierarchical structure of the institutions and the top officers are incapable of controlling staff at the lower levels (Lane J. E., 2001). Clear hierarchical division and subordination, unambiguous establishment of competencies and specialization, inflexible regulations and resulting principle of the official order prevent from the possibility to orientate the organization to solution of new, ever-changing and complex problems in dynamic environment that are absolutely opposite to the previous predictable and typical official circumstances. Such purposes require for more flexible organizational structure — separate from each other, comparatively small, responsible for their own actions and possessed of freedom of action

(Thom N., Ritz A., 2004). Whereas the present difficult, complex, multilevel hierarchical structure containing many collegial institutions can be treated as one of the major causes for the manifestation of various system's shortcomings such as inflexibility, low expedition, problems of feedback and interaction among system's components. Moreover since not the only one institution is usually affected by the extreme event, the key feature of decision-making becomes a growing centralization because the larger danger is raised by the emergency, at the higher level key decisions are being made (Rosenthal U. et al., 1989). However hierarchy in the structure and its complexity can impede this process and aggravate coordination and control of components performance in the lower levels of the system.

It is necessary to emphasize that one of the most important and preferential tasks of the EMS is preparation of its components (separate institutions). Realization of this task is the greatest contribution to the performance of the whole system. Improper performance of preparation functions disturbs functioning of the whole EMS and vice versa — effective preparation conditions good results of various tasks implementation. Problems of the system's structure can also have a negative impact on processes of preparation for action under emergency conditions. Problems of the structure can become a reason of severe outcomes — insufficient preparation for action under extreme condi-

tions and insufficiently effective operation when they come into play can determine additional losses of lives and property and greater damage for nature and interests of the State.

No system can operate without proper provision of its operation. Logistical system is inseparable from the structure because problems of the latter determine provision problems and their mix affects the result of EMS operation. In order to assess logistical problems and potential their outcomes it is necessary to identify specifics of EMS procurement and requirements that it must satisfy.

The following two fields can be distinguished in the EMS logistics:

- ❖ provision to the emergency management.
- ❖ provision to the daily activity, purpose of which is to ensure daily provision to the components of EMS.

Both fields of the logistic are important and interrelated. The following key requirements are raised for the logistics system:

- ❖ to satisfy requirements of the system's components for logistical means;
- ❖ to ensure necessary support for the units that perform liquidation of emergency for the determined period of time;
- ❖ to ensure level of preparation of EMS institutions and conditions of persistence;
- ❖ under normal conditions to operate efficiently and economically, to collaborate closely with the economical elements of the civic sector;
- ❖ to switch quickly from normal conditions to the extreme ones (and to the state of emergency and the state of war).

Due to limited financial resources it is unlikely that EMS could be provided with necessary means for «all the accidents in life». Of course it is not purposeful and not rational to purchase, for example, all the equipment necessary for forecasting earthquakes and typhoons. However there

must be means designed for receiving information on these phenomenon in case if dangerous large-scale disasters approached Lithuanian Territory and there must be a plan stating where to get necessary supplies and support for localization of such phenomenon and liquidations of their outcomes.

Logistical provision to EMS is a very complex and high-priced system. Problems of various levels and complexity are characteristic to this as well as to any other complex system that requires for considerable resources.

The institutions at the lowest level of EMS have a limited amount of means which can be insufficient for effective localization of the emergency. Since the structure is the hierarchical one, the additional logistical provision should be organized through institutions at the higher level. It impedes accessibility to necessary type and amount of the means and reduces expedition of their concentration at the location of emergency.

Institutions from various fields of the public sector (Healthcare, National Defense, Internal Affairs and etc.) that comprise Emergency Management System source autonomously depending on the specifics of their operation. When elements of different fields operate at the location of emergency (for example, when the extreme event is localized by firefighting and rescue, military and healthcare units), the problem of means incompatibility can arise. Because of that it could be impossible to start immediately the emergency management works of some types and the operation could be disturbed by the difficulties confronted in arrangement of actions of different components.

In order that works were started operatively and sanctions were efficient and effective, resources used economically and rationally, it is necessary to allocate logistical means in such a manner that they could be easier accessible (or to simplify procedures for use of additional means) and to standardize (to match) means usable by institutions from different fields that should be used in collective actions.

When searching for means of improvement of structure and logistical provision it

is necessary to bear in mind that any mature theory resulting in the best structure of the institution is nonexistent. Beginning from the 1990s, recognition in the public sector accrued to the tendency to decentralize responsibility and results centres by reducing degree of bureaucratic routine and operational complexity in public institutions. Both at the highest institutional level (...) and at the individual level responsibility and competency should be given to those institutions and those persons that are capable of performing intended functions in the best possible way and have necessary knowledge. This kind of decentralization nevertheless requires for the clear centralized governing that aims at matching between objectives of different autonomous public institutions (Thom N., Ritz A., 2004). However specifics of EMS operation product (a service that can be offered for the public only in exceptional case) and degree of its operation uncertainty (it is not always possible to forecast when it is necessary to concentrate powers and provide services) requires for particularly thorough analysis and reasoned assess-

ment of what functions it would be purposeful (and necessary in general) to decentralize vertically, horizontally or to apply local decentralization. Moreover, it is important to take into consideration that some new means of public management that are effective in other sectors (for instance in healthcare and education) can be unacceptable or even harmful for the exceptional MS.

The other important factor that affects preparation of the State to act in case of emergency and effectiveness of this action is its proper regulation. In order to ensure efficient and effective governing of the State, rational use of human, financial and material resources and to prevent turmoil in the state resulting from the threat manifestation, it is necessary to regulate clearly and precisely procedures for switching to the State of Emergency, to establish restrictions of the activities and specific authority of institutions that take part in the State's governing as well as transfer and takeover of functions and etc. (Pit̄lnait̄l B., 2006).

Defects of Legal Regulation During Public Management in Emergency

Governing of the State — especially under normal conditions — is essentially quite stable, well-trying and comprehensively legally regulated process. In case any inaccuracy or limitation in legal regulation is detected, the Seimas can modify and improve legal acts following the Government's proposal in normal order and, if necessary, in order of urgency. However when the emergency forms there can be no time left for modifications and refinement of even operative legal acts. Therefore legal acts in effect should be analyzed and assessed right now, under normal conditions, and possible problems due to their imperfections should be determined as well as their effect when reorganizing State's governing accordingly to the established emergency situation. It is especially relevant when due to the features and scale of the emergency it is purposeful to impose the State of Emergency or the State of War

— transition from normal conditions to those states is related to some modifications in the State's governing. Expedition and fluency of transition is dependant both on legal base that regulates this process, its duration and particular procedures as well as on practical means. In order that it was possible to assess how well institutions are ready to act in emergency, it is necessary to simulate the extreme conditions. They undoubtedly will never coincide with the real conditions of operations under the State of Emergency or State of War (Orenius A., 2003), therefore it is very important to regulate procedures in order that institutions had no doubts as to what they must do and how they must act under particular conditions. However laws and resolutions of Government lack some legal provisions. The present shortcomings would complicate and prolong

transition to the State of Emergency or State of War, impede adjustment of public management system to act in these situations.

The author after assessment of importance of EMS operation legitimacy has studied legal acts that regulate State's transition to the State of Emergency and State of War as well as reorganization of the State governing in these cases; has analyzed and assessed inaccuracies and limitations and their effect on the State's governing in case of those situations; has determined potential problems of the State governing associated with inaccuracies and limitations in the legal base when localizing emergencies and eliminating their outcomes.

Legal regulation contains some inaccuracies and limitations that could lead to serious problems if not assessed and eliminated.

Procedures of imposition and announcement of the State of Emergency and State of War can drag on as there's a lack of objective criteria that validate imposition of those States, and there are no conditions and terms established for decision-making. Without resolution of the Seimas (the decree of the President) reorganization of the State's governing cannot be started and extraordinary means cannot be applied. If appropriate decisions are not made operatively it is probable that sufficient powers will not be concentrated and insufficiently efficient means will be used for management of the emergency.

In emergencies liquidation some problems of interaction among EMS components can emerge, and insufficiently effective means could be used because there's some uncertainty as to what functions and responsibility should be assumed by the components of the system. Imprecisely regulated order of subordination change under emergency manage-

ment can have an effect on potential limitations of system operation and not prompt the top links to timely takeover management of the situation in order to prevent in advance outspread of the situation (State Audit Report, 2003). There are some shortcomings and inaccuracies in legal regulation of mobilization organization and reserve use, and improper allocation of functions and responsibility related to the mobilization can lead to the risk that necessary mobilization means will remain unplanned, that there will be no readiness to apply them as necessity occurs and that sufficient mobilization reserve will not be accumulated.

Governing of the State after the cancellation of the State of Emergency or State of War becomes not less difficult than after its imposition. In this stage there's a danger that after termination of functioning of institutions that have been established during the State of Emergency or State of War, institutions performing under normal conditions will not be ready yet to perform their functions at required capacity, i.e., to «recover» authority that has been transferred to temporal institutions. This can lead to difficulties when liquidating outcomes of the situation and when measuring its losses. After the cancellation of the State of Emergency or State of War some problems can occur in refunding to economical parties and individuals for the impressed things and forced labour under the State of Emergency or State of War because legal acts contain some inaccuracies and limitations as to the planning and prosecution of requisitions and refunding for the means of private sector that have been used for satisfaction of the State's needs.

In summary of the above identified problems one can come to a conclusion that the legal base in effect that regulates operation of the State during the State of Emergency or State of War, is imperfect.

Preparation and Qualification Improvement of EMS Staff

Staff are another one of the most important factors that influences effective-

ness of the emergency management. On the other hand people are the most sensitive and

vulnerable link in the Emergency Management System. Success of the pending or existent emergency is to a large extent dependant upon the qualifications of the staff however staff itself is influenced by some internal and external factors that must be identified and assessed. Emergency causes great pressure inside the EMS as staff can be required to perform unfamiliar functions in peculiar or even hazardous surroundings. Under these conditions staff is affected by the human, organizational and provision factors.

Success of retaliation depends on personal features, professional competence and skills of the key participants, on suitability of organizational procedures and on adequacy of provision. When emergency occurs it is of course too late to start developing desired capabilities and powers (Lagadec P., Phelps J. M., 1993), therefore it is necessary to prepare for operation under extraordinary conditions in advance. However when preparing staff of EMS the following specific interrelated problems are encountered:

- ❖ strategy of staff preparation to rule in the state of Emergency or War is not implemented on the scale of the whole system that must ensure unified preparation for emergency management and valid order for training, and qualification improvement of statutory and civil servants is not sufficiently matched;
- ❖ insufficiently clear mechanism for matching plans on general actions of institutions of different institutional subordination in order to ensure efficient interaction among different units of emergency management system;
- ❖ problems concerned with improvement of EMS because when amending provisions of the law different attitudes and interests of institutions are encountered as well as irregularities in financing and tasks settled for implementation.

The whole complex of problems can lead to the lack of employees with some particular specialties, and specific functions would be performed by persons having insufficient preparation, lacking necessary knowledge and practical skills required for action under extraordinary conditions. This kind of situation can lead to increasing numbers of staff, burdening management and finally it can enhance level of stress that conditions spontaneous, intuitive and improper decisions.

In pursuance to improve effectiveness of emergency management it is necessary to pay exclusive attention to preparation of specialists and improvement of their qualification. Quality of staff preparation can be ensured only by thoroughly planning, organizing and properly accomplishing tasks of staff preparation, controlling and assessing achieved results and sufficiently providing training processes with necessary means.

In summary it could be said that no means of EMS development will give expected results, unless problems of the structure, logistics, legal regulation and staff preparation are taken into consideration. It is absolutely necessary to analyze them and assess outcomes and search of effective ways to solution of the above-mentioned problems.

Conclusions

The State when doing its duty — to maximally ensure protection of people, property and environment under both normal and extraordinary conditions — forms Emergency Management System (EMS) that is a specific constituent of the Public Management System. The EMS is exclusive in that under the State of Emergency or State of War it is given an exceptional authority to realize ex-

traordinary (specific) means. This authority determines complexity of the system's functions and structure. When realizing received authority the three main activity trends can be identified in operation of EMS — prevention and monitoring, operative management and logistical support. Quality, efficiency and expedition of these activity trends depend on the fol-

lowing factors: structure of the system, logistical provision, legal regulation of operation and staff preparation.

Notably important in emergency management is prognostication of extreme events: on the evaluation of their parameters, characteristics, possible periods of exertion and outcomes etc. depends efficiency of actions in possible extreme situations. In order to increase the efficiency of emergency management it is essential to ensure proper emergencies' forecasting and operative decision making. One of the methods to solve the problem and to improve on EMS performance is to implement science-based Expert Systems to forecast emergencies.

The structure of any system is dependant upon functions performed by that system. However due to some factors the structure can become incapable of ensuring efficient and effective management of functions. The following most important factors can be included: sound attitude towards formation of system's structure is absent, specialists with deep insight in operation of the whole system are lacking, material means and correspondent technologies for development of adequate structure are scarce and etc. Giving insufficient attention to formation of proper structure can lead to situation where the system becomes incapable of realizing its goals. Therefore one of the key tasks of system development is formation of the structure that maximally corresponds to the functions of the system or improvement of the existent structure to the acceptable level of corresponding to functions.

Logistics is one of the key components directly related to development of the system's proper structure. Given its importance it should be treated as a separate subsystem of EMS the key tasks of which are as follows: to satisfy requirements of the system's components by providing

necessary means, to ensure operative logistical support for units that undertake liquidation of emergency, to ensure necessary level of system's preparation, to switch promptly from normal conditions to extraordinary ones, to provide daily operation of EMS and staff preparation processes with all the necessary means. In order to ensure flexible, reliable, economical and effective provision when planning development of EMS it is necessary to design means for logistics improvement too.

When the emergency happens, management of which requires for extraordinary means, it is necessary to reorganize the State's governing system. Reorganization of the State's governing and application of extraordinary means requires for the legal basis. However the law regulating application of extraordinary means and changes in public management contain some inaccuracies and limitations. They can disturb the State's transfer to adequate State (of Emergency or War) and reorganization of State's management. Therefore it is absolutely necessary to improve them under normal conditions because under extreme conditions there will be neither time nor opportunities left for improvement of laws and other legal acts.

Variety of functions performed by Emergency Management System, the multi-level structure and specifics of operation conditions require for specific staff preparation that ensures ability of staff to perform tasks in efficient and operative manner under extreme conditions in cooperation with human, organizational and provision factors. For the preparation of EMS staff, specific staff preparation system must be established that ensures continuous and continual (repetitious) process of planning, organization, implementation, control and assessment. Realization of this process demands for the following: to formulate strategy of staff preparation, to have clear order for matching plans on general actions of institutions of different institutional subordination.

1. *Hagman H.* European Crisis Management and Defence: the Search for Capabilities. — New York: Oxford University Press Inc., 2002.
2. *Law on Civil Safety* // Official Gazette (Valstybės žinios). — 1998. — Nr. 115—3230.
3. *Law on State of Emergency* // Official Gazette (Valstybės žinios). — 2002. — Nr. 64—2575.
4. *Law on State of War* // Official Gazette (Valstybės žinios). — 2000. — Nr. 52—1482.
5. *Lane J.E.* The Public Sector. Concepts, Frameworks and Attitudes. — Vilnius: Margi raštai, 2001.
6. *Guha-Sapir D., Hargitt D. and Hoyois P.* Thirty Years of Natural Disasters 1974—2003: the Numbers. — Belgium: Press Universitaires de Louvain, 2004.
7. *Pitrėnaiė B.* The Influence of Legal Regulation on Efficiency of Emergency Management // Jurisprudencija. — 2006. — Nr.5 (83). — P. 90—101.
8. *Rosenthal U., Charles M.T., Hart P.* Coping with Crises. The Management of Disasters, Riots and Terrorism. — Springfield: Charles C. Thomas, 1989.
9. *Orenius A.* 1990 — 2002m. Analysis of National Defence Development in Lithuania // Viešojo politika ir administravimas. — 2003. — Nr. 6. — P. 81—93.
10. *Thom N., Ritz A.* Public Management: Innovatory Measures of the Public Sector. — Vilnius: LTU, 2004.
11. *Lagadec P., Phelps J.M.* Preventing Chaos in a Crisis: Strategies for Prevention, Control and Damage Limitation. — Berkshire: McGraw-Hill, 1993.
12. *Parsons W.* The Public Policy. — Vilnius: Eugrimas, 2001.
13. *State Audit Report of the Supreme Audit Institution of Lithuania № 2040 — 1 «Assessment of the Implementation of Means» to «Coordinate Activity of Civil Safety» of the Program «Preparation of the Society to Protect the State», 2003 (www.vkontrole.lt).*

Received 02.11.2006

Бируте Питренайте

Система управления экстремальными ситуациями в Литве: функции и сложности их реализации

В каждом государстве под воздействием природных, технических, экологических или социальных факторов могут возникнуть экстремальные ситуации, угрожающие жизни людей, их здоровью, имуществу, природе или интересам страны. Долг государства — обеспечить безопасность людей, их имущества, природы, собственного состояния и развития в случае чрезвычайных происшествий. С этой целью каждое государство создаёт систему управления экстремальными ситуациями (далее — система УЭС). Учитывая эти обстоятельства, правительство Литвы стремится постоянно совершенствовать действующую систему УЭС страны. Однако, к сожалению, пока в ее деятельности имеются определенные недостатки, которые необходимо анализировать, оценивать и устранять. Успех этой работы непосредственно связан с точным и своевременным определением причин возникновения этих недостатков.

Научно доказано, что в мире из-за глобального изменения климата экстремальных происшествий в недалеком будущем будет все больше. Однако во многих странах ещё преобладает тенденция ориентации политики УЭС на реагирование и ликвидацию последствий экстремальных происшествий, а не на мониторинг угроз, прогноз экстремальных ситуаций и их предотвращение. В статье показано, что, стремясь увеличить действенность системы УЭС, целесообразно совершенствовать прогнозирование экстремальных ситуаций. Один из методов — используя имеющийся опыт ученых Центра исследований научно-технического потенциала и истории науки им. Г.М.Доброва НАН Украины, внедрить экспертные системы для прогнозирования экстремальных ситуаций. Это могло бы специалистам системы УЭС оперативно принимать научно обоснованные оптимальные решения.

В статье анализируются действия государства в условиях экстремальных ситуаций, описывается структура системы УЭС, определены институции, участвующие в управлении экстремальными ситуациями, анализируются их функции. Предложены процедуры введения чрезвычайного и военного положений с целью обеспечения максимальной действенности управления экстремальными ситуациями и устранения их последствий. Используя методы традиционного, логического, основанного на причинности, структурно-функционального анализа, моделирования процессов, декомпозиции и синтеза, автор формулирует проблемы, оказывающие решающее влияние на развитие системы УЭС. Обосновано, что основными факторами, влияющими на успешное развитие системы УЭС, являются её структура, логистика, правовое регламентирование её деятельности и подготовка персонала.

Определено, что недостатки в результатах деятельности системы УЭС могут быть вызваны сложностью и многоступенчатостью её структуры. В статье освещены структурные проблемы, причины их возникновения и возможные их последствия. Совершенствуя систему, очень важно эффективно обеспечить её логистикой. Одновременно автор делает вывод, что проблемы структуры в существенной степени определяют возникновение проблем и в логистике.

Одними из основных элементов, обуславливающих готовность системы к управлению в экстремальных ситуациях, являются степень и качество регламентирования этой деятельности. В ходе исследования выявлено, что в ныне действующих правовых актах страны, регламентирующих управление экстремальными ситуация-

ми, має ряд недостатків і неточностей. В статті аналізуються проблеми, які можуть виникнути із-за цих недостатків при введенні в країну надзвичайних заходів — надзвичайного чи воєнного стану.

Люба діяльність в екстремальних ситуаціях дуже складна. По тому діяльність системи УЗС в цих умовах повинна бути забезпечена не тільки фінансовими, спеціальними матеріальними і організаційними ресурсами, але і наявністю спеціально теоретично і практично підготовленого персоналу. Автор досліджує роль персоналу системи УЗС в умовах екстремальних ситуацій і можливі проблеми, які можуть виникнути при його підготовці.

Недостатки і недоліки в структурі системи УЗС, логістиці, неперфектності правових актів, недостатня підготовка персоналу можуть створити проблеми в ході локалізації екстремальних ситуацій і усунення їх наслідків, призвести до небажаних додаткових людських і майнових втрат. Необхідно підкреслити, що в умовах екстремальних ситуацій виключена можливість удосконалення структури системи УЗС, логістики, законів, навичок персоналу. По тому проблеми, розглядаються в статті, необхідно вирішувати заздалегідь, ще в звичайних умовах.

Біруте Пітренайте

Система управління екстремальними ситуаціями у Литві: функції і складності їх реалізації

У кожній державі під дією природних, технічних, екологічних або соціальних чинників можуть виникати екстремальні ситуації, що загрожують життю людей, їх здоров'ю, майну, природі або інтересам країни. Обов'язок держави — забезпечити безпеку людей, їх майна, природи, власного стану і розвитку у випадку надзвичайних подій. З цією метою кожна держава створює систему управління екстремальними ситуаціями (далі — система УЗС). Враховуючи ці обставини, уряд Литви намагається постійно вдосконалювати діючу систему УЗС країни. Однак, на жаль, поки що в її діяльності є певні недоліки, які необхідно аналізувати, оцінювати і усувати. Успіх даної роботи безпосередньо пов'язаний з точним і своєчасним визначенням причин виникнення цих недоліків.

Науково доведено, що в світі через глобальні зміни клімату екстремальних подій в недалекому майбутньому буде все більше. Проте в багатьох країнах ще переважає тенденція орієнтації політики УЗС на реагування та ліквідацію наслідків екстремальних подій, а не на моніторинг загроз, прогноз екстремальних ситуацій і їх попередження. У статті показано, що, прагнучи збільшити дієвість системи УЗС, доцільно вдосконалювати прогнозування екстремальних ситуацій. Один з методів — використовувати існуючий досвід вчених Центру досліджень науково-технічного потенціалу та історії науки ім. Г.М.Доброва НАН України, впровадити експертні системи для прогнозування екстремальних ситуацій. Це допомогло б фахівцям системи УЗС оперативно приймати науково обґрунтовані оптимальні рішення.

У статті аналізуються дії держави в умовах екстремальних ситуацій, описано структуру системи УЗС, визначено інституції, що беруть участь в управлінні екстремальними ситуаціями, аналізуються їх функції. Запропоновано процедури запровадження надзвичайного і воєнного станів з метою забезпечення максимальної дієвості управління екстремальними ситуаціями і усунення їх наслідків. Застосовуючи методи традиційного, логічного, заснованого на причинності, структурно-функціонального аналізу, моделювання процесів, декомпозиції і синтезу, автор формулює проблеми, які чинять вирішальний вплив на розвиток системи УЗС. Обґрунтовано, що основними чинниками, які впливають на успішний розвиток системи УЗС, є її структура, логістика, правове регламентування її діяльності та підготовка персоналу.

Визначено, що недоліки в результатах діяльності системи УЗС можуть викликатися складністю і багатоступінчатістю її структури. У статті висвітлено структурні проблеми, причини їх виникнення та можливі наслідки. Вдосконалюючи систему, дуже важливо ефективно забезпечити її логістикою. Водночас автор робить висновок, що проблеми структури в істотному ступені визначають виникнення проблем і в логістиці.

Одними з основних елементів, котрі зумовлюють готовність системи до управління в екстремальних ситуаціях, є ступінь і якість регламентування цієї діяльності. У ході дослідження виявлено, що у нині діючих правових актах країни, регламентуючих управління екстремальними ситуаціями, є ряд недоліків і неточностей. У статті аналізуються проблеми, які можуть виникнути через ці недоліки при запровадженні в країні надзвичайних заходів — надзвичайного чи воєнного стану.

Будь-яка діяльність в екстремальних ситуаціях дуже складна. Тому діяльність системи УЗС у цих умовах має бути забезпечена не тільки фінансовими, спеціальними матеріальними і організаційними ресурсами, але і наявністю спеціально теоретично і практично підготовленого персоналу. Автор досліджує роль персоналу системи УЗС в умовах екстремальних ситуацій і ймовірні проблеми, що можуть виникнути при його підготовці.

Недоліки і прорахунки в структурі системи УЗС, логістиці, недосконалість правових аспектів, недостатня підготовка персоналу здатні створити проблеми у ході локалізації екстремальних ситуацій і усунення їх наслідків, викликати небажані додаткові людські і майнові втрати. Необхідно підкреслити, що в умовах екстремальних ситуацій виключена можливість займатися удосконаленням структури системи УЗС, логістики, законів, навичок персоналу. Тому проблеми, які розглядаються у статті, необхідно вирішувати заздалегідь, ще у звичайних умовах.